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# SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

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## SCHEDULE 13D

Under the Securities Exchange Act of 1934  
(Amendment )\*

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### Syros Pharmaceuticals, Inc.

(Name of Issuer)

Common Stock, \$0.001 par value per share  
(Title of Class of Securities)

87184Q107  
(CUSIP Number)

Noubar B. Afeyan, Ph.D.  
Flagship Ventures  
One Memorial Drive, 7th Floor  
Cambridge, MA 02142  
(617) 868-1888

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

July 6, 2016  
(Date of Event Which Requires Filing of this Statement)

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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.

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**Note:** Schedules filed in paper format shall include a signed original and five copies of the schedule, including all exhibits. See Section 240.13d-7 for other parties to whom copies are to be sent.

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\* 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, as amended ("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.<br><br>Flagship Ventures Fund IV General Partner LLC   |   |
| 2.  | Check the Appropriate Box if a Member of a Group (See Instructions)<br>(a) <input type="checkbox"/> (b) <input type="checkbox"/> |   |
| 3.  | SEC Use Only   |   |
| 4.  | Source of Funds (See Instructions)<br><br>AF   |   |
| 5.  | Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e) <input type="checkbox"/>                     |   |
| 6.  | Citizenship or Place of Organization<br><br>Delaware   |   |
| Number of Shares Beneficially Owned by Each Reporting Person With | 7.   | Sole Voting Power<br><br>0                |
|   | 8.   | Shared Voting Power<br><br>4,806,656      |
|   | 9.   | Sole Dispositive Power<br><br>0           |
|   | 10.  | Shared Dispositive Power<br><br>4,806,656 |
| 11.   | Aggregate Amount Beneficially Owned by Each Reporting Person<br><br>4,806,656  |   |
| 12.   | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) <input type="checkbox"/>                    |   |
| 13.   | Percent of Class Represented by Amount in Row (11)<br><br>20.6%  |   |
| 14.   | Type of Reporting Person (See Instructions)<br><br>OO  |   |

|   |  |   |
|---|--|---|
| 1.  | Names of Reporting Persons.<br><br>Flagship Ventures Fund IV, L.P.   |   |
| 2.  | Check the Appropriate Box if a Member of a Group (See Instructions)<br>(a) <input type="checkbox"/> (b) <input type="checkbox"/> |   |
| 3.  | SEC Use Only   |   |
| 4.  | Source of Funds (See Instructions)<br><br>WC   |   |
| 5.  | Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e) <input type="checkbox"/>                     |   |
| 6.  | Citizenship or Place of Organization<br><br>Delaware   |   |
| Number of Shares Beneficially Owned by Each Reporting Person With | 7.   | Sole Voting Power<br><br>0                |
|   | 8.   | Shared Voting Power<br><br>3,887,992      |
|   | 9.   | Sole Dispositive Power<br><br>0           |
|   | 10.  | Shared Dispositive Power<br><br>3,887,992 |
| 11.   | Aggregate Amount Beneficially Owned by Each Reporting Person<br><br>3,887,992  |   |
| 12.   | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) <input type="checkbox"/>                    |   |
| 13.   | Percent of Class Represented by Amount in Row (11)<br><br>16.6%  |   |
| 14.   | Type of Reporting Person (See Instructions)<br><br>PN  |   |

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|---|--|---|
| 1.  | Names of Reporting Persons.<br><br>Flagship Ventures Fund IV-Rx, L.P.  |   |
| 2.  | Check the Appropriate Box if a Member of a Group (See Instructions)<br>(a) <input type="checkbox"/> (b) <input type="checkbox"/> |   |
| 3.  | SEC Use Only   |   |
| 4.  | Source of Funds (See Instructions)<br><br>WC   |   |
| 5.  | Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e) <input type="checkbox"/>                     |   |
| 6.  | Citizenship or Place of Organization<br><br>Delaware   |   |
| Number of Shares Beneficially Owned by Each Reporting Person With | 7.   | Sole Voting Power<br><br>0              |
|   | 8.   | Shared Voting Power<br><br>918,664      |
|   | 9.   | Sole Dispositive Power<br><br>0         |
|   | 10.  | Shared Dispositive Power<br><br>918,664 |
| 11.   | Aggregate Amount Beneficially Owned by Each Reporting Person<br><br>918,664  |   |
| 12.   | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) <input type="checkbox"/>                    |   |
| 13.   | Percent of Class Represented by Amount in Row (11)<br><br>3.9%   |   |
| 14.   | Type of Reporting Person (See Instructions)<br><br>PN  |   |

|   |  |   |
|---|--|---|
| 1.  | Names of Reporting Persons.<br><br>Flagship VentureLabs IV, LLC  |   |
| 2.  | Check the Appropriate Box if a Member of a Group (See Instructions)<br>(a) <input type="checkbox"/> (b) <input type="checkbox"/> |   |
| 3.  | SEC Use Only   |   |
| 4.  | Source of Funds (See Instructions)<br><br>WC   |   |
| 5.  | Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e) <input type="checkbox"/>                     |   |
| 6.  | Citizenship or Place of Organization<br><br>Delaware   |   |
| Number of Shares Beneficially Owned by Each Reporting Person With | 7.   | Sole Voting Power<br><br>0              |
|   | 8.   | Shared Voting Power<br><br>213,332      |
|   | 9.   | Sole Dispositive Power<br><br>0         |
|   | 10.  | Shared Dispositive Power<br><br>213,332 |
| 11.   | Aggregate Amount Beneficially Owned by Each Reporting Person<br><br>213,332  |   |
| 12.   | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) <input type="checkbox"/>                    |   |
| 13.   | Percent of Class Represented by Amount in Row (11)<br><br>0.9%   |   |
| 14.   | Type of Reporting Person (See Instructions)<br><br>OO  |   |

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|---|--|---|
| 1.  | Names of Reporting Persons.<br><br>Noubar B. Afeyan, Ph.D.   |   |
| 2.  | Check the Appropriate Box if a Member of a Group (See Instructions)<br>(a) <input type="checkbox"/> (b) <input type="checkbox"/> |   |
| 3.  | SEC Use Only   |   |
| 4.  | Source of Funds (See Instructions)<br><br>AF   |   |
| 5.  | Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e) <input type="checkbox"/>                     |   |
| 6.  | Citizenship or Place of Organization<br><br>United States of America   |   |
| Number of Shares Beneficially Owned by Each Reporting Person With | 7.   | Sole Voting Power<br><br>0                |
|   | 8.   | Shared Voting Power<br><br>4,806,656      |
|   | 9.   | Sole Dispositive Power<br><br>0           |
|   | 10.  | Shared Dispositive Power<br><br>4,806,656 |
| 11.   | Aggregate Amount Beneficially Owned by Each Reporting Person<br><br>4,806,656  |   |
| 12.   | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) <input type="checkbox"/>                    |   |
| 13.   | Percent of Class Represented by Amount in Row (11)<br><br>20.6%  |   |
| 14.   | Type of Reporting Person (See Instructions)<br><br>IN  |   |

|   |  |   |
|---|--|---|
| 1.  | Names of Reporting Persons.<br><br>Edwin M. Kania, Jr.   |   |
| 2.  | Check the Appropriate Box if a Member of a Group (See Instructions)<br>(a) <input type="checkbox"/> (b) <input type="checkbox"/> |   |
| 3.  | SEC Use Only   |   |
| 4.  | Source of Funds (See Instructions)<br><br>AF   |   |
| 5.  | Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e) <input type="checkbox"/>                     |   |
| 6.  | Citizenship or Place of Organization<br><br>United States of America   |   |
| Number of Shares Beneficially Owned by Each Reporting Person With | 7.   | Sole Voting Power<br><br>0                |
|   | 8.   | Shared Voting Power<br><br>4,806,656      |
|   | 9.   | Sole Dispositive Power<br><br>0           |
|   | 10.  | Shared Dispositive Power<br><br>4,806,656 |
| 11.   | Aggregate Amount Beneficially Owned by Each Reporting Person<br><br>4,806,656  |   |
| 12.   | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) <input type="checkbox"/>                    |   |
| 13.   | Percent of Class Represented by Amount in Row (11)<br><br>20.6%  |   |
| 14.   | Type of Reporting Person (See Instructions)<br><br>IN  |   |

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**Item 1. Security and Issuer**

This Schedule 13D relates to the shares of common stock, \$0.001 par value per share ("Common Stock"), of Syros Pharmaceuticals, Inc. (the "Issuer"). The address of the principal executive offices of the Issuer is 620 Memorial Drive, Suite 300, Cambridge, Massachusetts 02139.

**Item 2. Identity and Background**

This Schedule 13D is being filed by the following persons (each a "Reporting Person"):

- i. Flagship Ventures Fund IV General Partner LLC, a Delaware limited liability company ("Flagship IV LLC"). Noubar B. Afeyan, Ph.D. ("Dr. Afeyan") and Edwin M. Kania, Jr. ("Mr. Kania") are the managers of Flagship IV LLC.
- ii. Flagship Ventures Fund IV, L.P., a Delaware limited partnership ("Flagship IV"). Flagship IV LLC is the general partner of Flagship IV.
- iii. Flagship Ventures Fund IV-Rx, L.P., a Delaware limited partnership ("Flagship IV-Rx"). Flagship IV LLC is the general partner of Flagship IV-Rx.
- iv. Flagship VentureLabs IV, LLC, a Delaware limited liability company ("VentureLabs IV"). Flagship IV is the manager of VentureLabs IV.
- v. Dr. Afeyan, a citizen of the United States of America.
- vi. Mr. Kania, a citizen of the United States of America.

The principal business of each Reporting Person is the venture capital investment business. The principal business address of each Reporting Person is One Memorial Drive, 7th Floor, Cambridge, Massachusetts 02142.

During the last five years, none of the Reporting Persons has been convicted in a criminal proceeding (excluding traffic violations or similar misdemeanors).

During the last five years, none of the Reporting Persons has been party to a civil proceeding of a judicial or administrative body of competent jurisdiction and as a result of such proceeding were or are 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.

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

Flagship IV and Flagship IV-Rx purchased the shares set forth in Item 5(c) using funds from working capital. The information in Item 5(c) is incorporated into this Item 3 by reference.

**Item 4. Purpose of Transaction**

The Reporting Persons acquired the shares of Common Stock set forth in Item 5(c) and hold their shares of Common Stock for investment purposes. Subject to a number of factors, including market conditions and their general investment and trading policies, the Reporting Persons may, in the ordinary course of their business, dispose of the shares of Common Stock that they beneficially own. These dispositions may occur in open market transactions, privately negotiated transactions or through other methods. Additionally, Flagship IV and Flagship IV-Rx may distribute the shares of Common Stock that they directly hold to their respective limited partners.

Stéphane Bancel, who is a limited partner of Flagship IV and a member of Flagship IV LLC, is a director of the Issuer. The Reporting Persons, either directly or indirectly through Mr. Bancel, may engage in discussions from time to time with the Issuer's board of directors, the Issuer's management or the Issuer's other stockholders. These discussions may be with respect to (i) acquiring or disposing shares of Common Stock or other securities of the Issuer (collectively, the "Securities");



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(ii) maintaining or changing the Issuer's business, operations, governance, management, strategy or capitalization; or  
(iii) implementing transactions that may relate to or may result in any matter set forth in paragraphs (a) through (j) of Item 4 of Schedule 13D. Additionally, the Reporting Persons may acquire additional Securities through open market transactions, privately negotiated transactions or other methods.

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

(a)-(b) The information set forth in rows 7 through 13 of the cover pages to this Schedule 13D is incorporated by reference. The percentage set forth in row 13 is based on 23,360,161 outstanding shares of Common Stock immediately following the Issuer's initial public offering, as reported in the Issuer's prospectus filed on June 30, 2016.

Flagship IV, Flagship IV-Rx and VentureLabs IV directly hold 3,674,660 shares, 918,664 shares and 213,332 shares of Common Stock, respectively. Flagship IV, as the manager of VentureLabs IV, may be deemed to beneficially own the shares directly held by VentureLabs IV. Flagship IV LLC, as the general partner of Flagship IV and Flagship IV-Rx, may be deemed to beneficially own the shares directly held by Flagship IV, Flagship IV-Rx and VentureLabs IV. Dr. Afeyan and Mr. Kania, as the managers of Flagship IV LLC, may be deemed to beneficially own the shares directly held by Flagship IV, Flagship IV-Rx and VentureLabs IV.

(c) On July 6, 2016, Flagship IV and Flagship IV-Rx purchased 320,000 shares and 80,000 shares, respectively, in connection with the Issuer's initial public offering. The purchase price was \$12.50 per share.

(d) Not applicable.

(e) Not applicable

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

None.

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

Exhibit 1 Joint Filing Agreement

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**SIGNATURES**

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: July 11, 2016

FLAGSHIP VENTURES FUND IV GENERAL  
PARTNER LLC

By: /s/ Noubar B. Afeyan, Ph.D.

Name: Noubar B. Afeyan, Ph.D.

Title: Manager

FLAGSHIP VENTURES FUND IV, L.P.

By: Flagship Ventures Fund IV General Partner LLC

By: /s/ Noubar B. Afeyan, Ph.D.

Name: Noubar B. Afeyan, Ph.D.

Title: Manager

FLAGSHIP VENTURES FUND IV-RX, L.P.

By: Flagship Ventures Fund IV General Partner LLC

By: /s/ Noubar B. Afeyan, Ph.D.

Name: Noubar B. Afeyan, Ph.D.

Title: Manager

FLAGSHIP VENTURELABS IV, LLC

By: Flagship Ventures Fund IV, L.P.

By: Flagship Ventures Fund IV General Partner LLC

By: /s/ Noubar B. Afeyan, Ph.D.

Name: Noubar B. Afeyan, Ph.D.

Title: Manager

/s/ Noubar B. Afeyan, Ph.D.

NOUBAR B. AFEYAN, PH.D.

/s/ Edwin M. Kania, Jr.

EDWIN M. KANIA, JR.

**JOINT FILING AGREEMENT**

The persons below hereby agree that the Schedule 13D to which this agreement is attached as an exhibit, as well as all future amendments to such Schedule 13D, shall be filed jointly on behalf of each of them. This agreement is intended to satisfy the requirements of Rule 13d-1(k)(1)(iii) under the Securities Exchange Act of 1934.

Dated: July 11, 2016

FLAGSHIP VENTURES FUND IV GENERAL  
PARTNER LLC

By: /s/ Noubar B. Afeyan, Ph.D.  
Name: Noubar B. Afeyan, Ph.D.  
Title: Manager

FLAGSHIP VENTURES FUND IV, L.P.

By: Flagship Ventures Fund IV General Partner LLC

By: /s/ Noubar B. Afeyan, Ph.D.  
Name: Noubar B. Afeyan, Ph.D.  
Title: Manager

FLAGSHIP VENTURES FUND IV-RX, L.P.

By: Flagship Ventures Fund IV General Partner LLC

By: /s/ Noubar B. Afeyan, Ph.D.  
Name: Noubar B. Afeyan, Ph.D.  
Title: Manager

FLAGSHIP VENTURELABS IV, LLC

By: Flagship Ventures Fund IV, L.P.

By: Flagship Ventures Fund IV General Partner LLC

By: /s/ Noubar B. Afeyan, Ph.D.  
Name: Noubar B. Afeyan, Ph.D.  
Title: Manager

/s/ Noubar B. Afeyan, Ph.D.  
NOUBAR B. AFEYAN, PH.D.

/s/ Edwin M. Kania, Jr.  
EDWIN M. KANIA, JR.