SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

SCHEDULE 13D

Under the Securities Exchange Act of 1934

(Amendment No. 7)*

TYRA BIOSCIENCES, INC.

(Name of Issuer)

Common Stock, $0.0001 par value per share

(Title of Class of Securities)

(CUSIP Number)

Peter Kolchinsky
RA Capital Management, L.P., 200 Berkeley Street, 18th Floor
Boston, MA, 02116
617.778.2500

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

09/15/2026

(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. ☐

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).

SCHEDULE 13D

CUSIP No.

1	Name of reporting person 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 0.00
	8	Shared Voting Power 14,130,492.00
	9	Sole Dispositive Power 0.00
	10	Shared Dispositive Power 14,130,492.00

11	Aggregate amount beneficially owned by each reporting person 14,130,492.00
12	Check if the aggregate amount in Row (11) excludes certain shares (See Instructions) ☐
13	Percent of class represented by amount in Row (11) 19.9 %
14	Type of Reporting Person (See Instructions) IA, PN

SCHEDULE 13D

CUSIP No.

1	Name of reporting person 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	7	Sole Voting Power

Shares Beneficially Owned by Each Reporting Person With:		0.00
	8	Shared Voting Power 14,130,492.00
	9	Sole Dispositive Power 0.00
	10	Shared Dispositive Power 14,130,492.00

11	Aggregate amount beneficially owned by each reporting person 14,130,492.00
12	Check if the aggregate amount in Row (11) excludes certain shares (See Instructions) ☐
13	Percent of class represented by amount in Row (11) 19.9 %
14	Type of Reporting Person (See Instructions) HC, IN

SCHEDULE 13D

CUSIP No.

1	Name of reporting person 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 0.00
	8	Shared Voting Power 14,130,492.00
	9	Sole Dispositive Power 0.00
	10	Shared Dispositive Power 14,130,492.00

11	Aggregate amount beneficially owned by each reporting person

	14,130,492.00
12	Check if the aggregate amount in Row (11) excludes certain shares (See Instructions) ☐
13	Percent of class represented by amount in Row (11) 19.9 %
14	Type of Reporting Person (See Instructions) HC, IN

SCHEDULE 13D

CUSIP No.

1	Name of reporting person RA Capital Healthcare Fund, 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) WC		
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 0.00	
	8	Shared Voting Power 12,115,875.00	
	9	Sole Dispositive Power 0.00	
	10	Shared Dispositive Power 12,115,875.00	
11	Aggregate amount beneficially owned by each reporting person 12,115,875.00		
12	Check if the aggregate amount in Row (11) excludes certain shares (See Instructions) ☐		
13	Percent of class represented by amount in Row (11) 17.2 %		
14	Type of Reporting Person (See Instructions) PN		

SCHEDULE 13D

Item 1. Security and Issuer

(a) Title of Class of Securities:

Common Stock, $0.0001 par value per share

(b) Name of Issuer:

TYRA BIOSCIENCES, INC.

(c) Address of Issuer's Principal Executive Offices:

2656 State Street, Carlsbad, CALIFORNIA , 92008.

Item 1 Comment: Item 1 of the Statement is amended and supplemented as follows: This Amendment No. 7 (this "Amendment No. 7" or this "Schedule 13D/A") amends and supplements the statement on Schedule 13D originally filed with the Securities and Exchange Commission (the "SEC") on September 27, 2021, and amended on February 6, 2024, October 22, 2024, November 13, 2024, March 31, 2025, June 6, 2025 and March 6, 2026 (as amended, the "Statement") by the Reporting Persons. Unless otherwise defined herein, capitalized terms used in this Amendment No. 7 shall have the meanings ascribed to them in the Statement. Unless amended or supplemented below, the information in the Statement remains unchanged.

Item 2. Identity and Background

(a) This Schedule 13D/A is being filed on behalf of RA Capital Management, L.P. ("RA Capital"), Peter Kolchinsky, Rajeev Shah, and RA Capital Healthcare Fund, L.P. (the "Fund"), who are collectively referred to herein as the "Reporting Persons." The agreement among the Reporting Persons to file this 13D/A jointly in accordance with Rule 13d-1(k) of the Act, which is filed as Exhibit 99.1. The Reporting Persons' ownership of the Issuer's securities includes (i) 10,259,291 shares of common stock held directly by the Fund; (ii) 1,496,613 shares of common stock held by RA Capital Nexus Fund, L.P. (the "Nexus Fund")(iii) 442,721 shares of common stock held by a separately managed account (the "Account"); (iv) Pre-Funded Warrants exercisable for up to 11,616,986 shares of common stock held directly by the Fund; and (v) a total of 73,090 shares underlying vested stock options (right to buy), and 2,193 shares underlying stock options (right to buy) which shall vest within 60 days of this filing, held by Dr. Jake Simson for the benefit of RA Capital. The Pre-Funded Warrants contain a provision (the "Beneficial Ownership Blocker") which precludes exercise of the Pre-Funded Warrants to the extent that, following exercise, the Fund, together with its affiliates and other attribution parties, would own more than 19.99% of the common stock outstanding. The Fund is currently prohibited from exercising the Pre-Funded Warrants to the extent that such exercise would result in the Reporting Persons' beneficial ownership of more than 14,130,492 shares of common stock. 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 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 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 address of the principal business office of each of the Reporting Persons is 200 Berkeley Street, 18th Floor, Boston, MA 02116.

(c) The Fund is a private investment vehicle. 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) 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 has 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 of 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.

Item 3. Source and Amount of Funds or Other Consideration

Item 3 of the Statement is hereby amended and supplemented as follows: On September 15, 2026, the Fund purchased Pre-Funded Warrants exercisable for up to 9,078,529 shares of common stock at a price of $22.029 per

Pre-Funded Warrant, from the underwriters of the Issuer's public offering (the "September 2026 Offering"). The aggregate purchase price for the Pre-Funded Warrants acquired by the Fund in the September 2026 Offering was $199,990,915.34, which was funded by the working capital of the Fund.

Item 5. Interest in Securities of the Issuer

(a) Due to the Beneficial Ownership Blocker listed in the Pre-Funded Warrants, each of RA Capital, Dr. Kolchinsky and Mr. Shah's beneficial ownership percentage is 19.99%. Such percentage is based upon the sum of (i) 59,676,939 shares of common stock outstanding as of July 31, 2026, as reported in the Issuer's Quarterly Report on Form 10-Q filed with the SEC on August 4, 2026 and (ii) 9,079,000 shares of common stock issued in the September 2026 Offering, as reported in the Issuer's Current Report on Form 8-K filed with the SEC on September 15, 2026, adjusted to give effect to stock options and Pre-Funded Warrants, to the extent exercisable within 60 days hereof, as referenced herein. Due to field limitations of the EDGAR filing system, the percentages listed in Row 13 of each of the cover pages for RA Capital, Dr. Kolchinsky and Mr. Shah have been rounded down to 19.9%.

(b) Rows 7 through 10 of each Reporting Person's cover page to this Schedule 13D/A set forth the number of shares of common stock as to which such Reporting Person has the sole or shared power to vote or direct the vote and sole or shared power to dispose or to direct the disposition and are incorporated by reference.

(c) Except as set forth below and elsewhere herein, none of the Reporting Persons has effected any transactions with respect to the securities of the Issuer during the past sixty days: No. Price Per Transaction Purchaser Date Shares Share Vest Stock Option (Right to Buy) RA Capital 07/28/2026 1,097 (1) Vest Stock Option (Right to Buy) RA Capital 08/28/2026 1,097 (1) Vest Stock Option (Right to Buy) RA Capital 09/28/2026 1,096 (1)(2) Vest Stock Option (Right to Buy) RA Capital 10/28/2026 1,097 (1)(2) (1) This option represents a right to purchase a total of 13,160 shares of the Issuer's common stock, which began vesting on June 28, 2026 and vests in 12 equal monthly installments over one year, subject to Dr. Simson's continued service to the Issuer through each vesting date. These options have an exercise price of $32.68 per share. (2) Represents future vesting options within 60 days from the filing date of this Schedule 13D/A.

(d) Except as set forth below, none of the Reporting Persons has effected any transactions with respect to the securities of the Issuer since the most recent amendment to this Schedule 13D/A.

(e) Not applicable.

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

Item 6 of the Statement is hereby amended and supplemented as follows: Pre-Funded Warrants The terms of the Pre-Funded Warrants acquired in the September 2026 Offering are substantially identical to the terms of the Pre-Funded Warrants previously held by the Fund. Each Pre-Funded Warrant has an exercise price of $0.001 per share of common stock, is immediately exercisable and will not expire. Under the terms of the Pre-Funded Warrants, the Issuer may not effect the exercise of any Pre-Funded Warrant, and the Fund will not be entitled to exercise any portion of any Pre-Funded Warrant, which, upon giving effect to such exercise, would cause the Fund (together with its affiliates) to own more than 19.99% of the number of shares of the common stock outstanding immediately after giving effect to such exercise, as such percentage ownership is determined in accordance with the terms of the Pre-Funded Warrants. However, the Fund may increase or decrease such percentage to any other percentage not in excess of 19.99%, provided that any increase in such percentage shall not be effective until 61 days after such notice is delivered to the Issuer. The exercise price and the number of shares of common stock issuable upon exercise of each Pre-Funded Warrant are subject to appropriate adjustment in the event of certain stock dividends and distributions, stock splits, stock combinations, reclassifications or similar events affecting the common stock. In the event of certain fundamental transactions (as described in the Pre-Funded Warrants), the Fund will be entitled to receive, upon exercise of the Pre-Funded Warrants, the kind and amount of securities, cash or property that the Fund would have received had they exercised in full the Pre-Funded Warrants immediately prior to such fundamental transaction without regard to any limitations on exercise contained in the Pre Funded Warrants. References to and the description of the Pre-Funded Warrants set forth above in this Item 6 do not purport to be complete and are qualified in their entirety by reference to the full text of the form of Pre-Funded Warrant, which is filed as Exhibit 99.2 and incorporated by reference herein.

Item 7. Material to be Filed as Exhibits.

Exhibit 99.1 Joint Filing Agreement (incorporated by reference to Exhibit 99.1 to the amendment to the Statement filed with the SEC on June 6, 2025). Exhibit 99.2 Form of Pre-Funded Warrant (2026 Offering) (incorporated by reference to Exhibit 4.1 to the Issuer's Current Report on Form 8-K (File No. 001-40800), filed with the SEC on September 15, 2026).

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.

RA Capital Management, L.P.

Signature: /s/ Peter Kolchinsky
Name/Title: By Peter Kolchinsky, Authorized Signatory
Date: 09/17/2026

Peter Kolchinsky

Signature: /s/ Peter Kolchinsky
Name/Title: Peter Kolchinsky
Date: 09/17/2026

Rajeev Shah

Signature: /s/ Rajeev Shah
Name/Title: Rajeev Shah
Date: 09/17/2026

RA Capital Healthcare Fund, L.P.

Signature: /s/ Peter Kolchinsky
Name/Title: By RA Capital Healthcare Fund GP, LLC, its General Partner, By Peter Kolchinsky, Manager
Date: 09/17/2026