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CUSIP No. 98585K862

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

SCHEDULE 13D

Under the Securities Exchange Act of 1934  
(Amendment No. 4)\*

Yield10 Bioscience, Inc.

(Name of Issuer)

Common Stock par value \$0.01 per share  
(Title of Class of Securities)

98585K862

(CUSIP Number)

Jack W. Schuler  
100 N. Field Drive, Suite 360  
Lake Forest, Illinois 60045  
(224) 880-1210

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

November 14, 2019

(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 §240.13d-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).

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1. NAMES OF REPORTING PERSONS I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY)

Jack W. Schuler

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2. CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP

(see instructions)

(a)

(b)

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3. SEC USE ONLY

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4. SOURCE OF FUNDS (see instructions)

OO

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5. CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEMS 2(d) or 2(e)

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6. CITIZENSHIP OR PLACE OF ORGANIZATION

United States

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7. SOLE VOTING POWER

0

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8. SHARED VOTING POWER

1,329,904(1)

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9. SOLE DISPOSITIVE POWER

0

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10. SHARED DISPOSITIVE POWER

1,329,904(1)

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11. AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

1,329,904(1)

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12. CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES

(see instructions)

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13. PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11)

77.39%(2)

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14. TYPE OF REPORTING PERSON (see instructions)

IN

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**(1) These numbers reflect the 1-for-40 reverse stock split of the Issuer's Common Stock, effective January 15, 2020, and include the 840,428 shares of Common Stock underlying warrants exercisable at any time by the Jack W. Schuler Living Trust, the holder thereof.**

**(2) Based on information provided in a Current Report filed by the Issuer in a Form 8-K on January 15, 2020.**

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CUSIP No. 98585K862

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1. NAMES OF REPORTING PERSONS I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY)

Renate Schuler

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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)

OO

---

5. CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEMS 2(d) or 2(e)

---

6. CITIZENSHIP OR PLACE OF ORGANIZATION

United States

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	7. SOLE VOTING POWER
	21(1)
NUMBER OF SHARES	8. SHARED VOTING POWER
BENEFICIALLY	24,148(1)
OWNED BY EACH REPORTING	9. SOLE DISPOSITIVE POWER
PERSON WITH	21(1)
	10. SHARED DISPOSITIVE POWER
	24,148(1)

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11. AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

24,169(1)

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12. CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES  
(see instructions)

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13. PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11)

1.41% (2)

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14. TYPE OF REPORTING PERSON (see instructions)

IN

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**(1) These numbers reflect the 1-for-40 reverse stock split of the Issuer's Common Stock, effective January 15, 2020.**

**(2) Based on information provided in a Current Report filed by the Issuer in a Form 8-K on January 15, 2020.**

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CUSIP No. 98585K862

1. NAMES OF REPORTING PERSONS I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY)

Schuler Family Foundation  
EIN – 36-4154510

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)

PF

5. CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEMS 2(d) or 2(e)

6. CITIZENSHIP OR PLACE OF ORGANIZATION

United States

7. SOLE VOTING POWER

24,148(1)

NUMBER OF  
SHARES

8. SHARED VOTING POWER

0

BENEFICIALLY  
OWNED BY EACH  
REPORTING  
PERSON WITH

9. SOLE DISPOSITIVE POWER

24,148(1)

10. SHARED DISPOSITIVE POWER

11. AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

24,148(1)

12. CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES

(see instructions)

13. PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11)

1.41% (2)

14. TYPE OF REPORTING PERSON (see instructions)

CO

(1) These numbers reflect the 1-for-40 reverse stock split of the Issuer's Common Stock, effective January 15, 2020.

(2) Based on information provided in a Current Report filed by the Issuer in a Form 8-K on January 15, 2020.

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1. NAMES OF REPORTING PERSONS I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY)

Jack W. Schuler Living Trust

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2. CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP

(see instructions)

(a)

(b)

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3. SEC USE ONLY

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4. SOURCE OF FUNDS (see instructions)

PF

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5. CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEMS 2(d) or 2(e)

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6. CITIZENSHIP OR PLACE OF ORGANIZATION

United States

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7. SOLE VOTING POWER

1,305,757(1)

NUMBER OF  
SHARES

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8. SHARED VOTING POWER

0

BENEFICIALLY  
OWNED BY EACH  
REPORTING  
PERSON WITH

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9. SOLE DISPOSITIVE POWER

1,305,757(1)

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10. SHARED DISPOSITIVE POWER

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11. AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

1,305,757(1)

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12. CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES

(see instructions)

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13. PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11)

75.99% (1)

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14. TYPE OF REPORTING PERSON (see instructions)

OO

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**(1) These numbers reflect the 1-for-40 reverse stock split of the Issuer's Common Stock, effective January 15, 2020, and include the 840,428 shares of Common Stock underlying warrants exercisable at any time by the Jack W. Schuler Living Trust, the holder thereof.**

**(2) Based on information provided in a Current Report filed by the Issuer in a Form 8-K on January 15, 2020.**

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## **Explanatory Note**

This Amendment No. 4 (this “Amendment No. 4”) amends and supplements the Schedule 13D originally filed with the Securities and Exchange Commission (the “SEC”) on August 29, 2014, by the reporting persons identified therein, as amended by Amendment No. 1 filed with the SEC on June 23, 2015, as further amended by Amendment No. 2 filed with the SEC on August 2, 2017, and as further amended by Amendment No. 3 filed with the SEC on June 26, 2019 by the Reporting Persons identified therein (as cumulatively amended, the “Schedule 13D”), with respect to shares of common stock, par value \$0.01 per share of Yield10 Bioscience, Inc. (formerly Metabolix, Inc.), a Delaware corporation (the “Issuer”) beneficially owned by the Reporting Persons. Except as amended or supplemented in this Amendment No. 4, all other information in the Schedule 13D is as set forth previously. Capitalized terms used in this Amendment No. 4 but not defined herein shall have the meanings previously ascribed thereto in the Schedule 13D.

### **Item 1. Security and Issuer.**

This statement on Schedule 13D relates to the common stock, \$0.01 par value per share, of Yield10 Bioscience, Inc., a Delaware corporation (“Common Stock”). The principal executive office of the Issuer is 19 Presidential Way, Woburn, MA 01801.

### **Item 4. Purpose of Transaction.**

#### **November 2019 Private Placement**

On November 14, 2019, the Issuer entered into a Securities Purchase Agreement (the “Purchase Agreement”) with certain investors named therein (the “Investors”), including certain of the Reporting Persons. Pursuant to the terms of the Purchase Agreement, the Company sold to the Investors an aggregate of 5,750 unregistered units (each, a “Unit”), with each Unit consisting of one share of Series B Convertible Preferred Stock, par value \$0.01 per share (“Series B Preferred Stock”), Series A Warrants to purchase 5,000 shares of Common Stock, exercisable at a price of \$0.20 (the “Series A Warrants”), and Series B Warrants to purchase 5,000 shares of Common Stock, exercisable at a price of \$0.20 (the “Series B Warrants” and together with the Series A Warrants, the “Warrants”), at a price of \$1,000 per unit in a private placement (the “Private Placement”), for gross proceeds of approximately \$5.4 million before transaction costs. The conversion and exercise price of the Series B Preferred Stock and Warrants, respectively, are subject to adjustment pursuant to the Purchase Agreement.

Under the terms of the Purchase Agreement, the Jack W. Schuler Living Trust acquired 3,155 Units in exchange for the payment of a purchase price of \$3,155,000.00.

The Issuer filed a Certificate of Amendment to its Amended and Restated Certificate of Incorporation (the “Amendment”) on January 15, 2020 to effect a 1-for-40 reverse stock split of the Issuer’s Common Stock. Pursuant to the Purchase Agreement, the filing of the Amendment triggered the automatic conversion of the Series B Convertible Preferred Stock owned by the Jack W. Schuler Living Trust. 374,375 shares of the Issuer’s Common Stock (the “Conversion Shares”) were issued to the Jack W. Schuler Living Trust on January 15, 2020 under such conversion. The Conversion Shares and the Common Stock into which the Warrants are exercisable (collectively, the “Underlying Shares”) are unregistered as of the date of this filing, but pursuant to the Purchase Agreement the Investors hold the right to request that the Issuer include the Underlying Shares in a shelf registration statement to be filed by the Issuer.

The foregoing descriptions of the Purchase Agreement, the Private Placement, and the Amendment do not purport to be complete and are qualified in their entirety by reference to the full text of the agreements and Current Reports of the Issuer on Form 8-K described in Item 7 hereto, all of which are incorporated by reference herein.

### **Additional Disclosure**

Jack W. Schuler and the Jack W. Schuler Living Trust intend to hold the Conversion Shares, the Series A Warrants, and the Series B Warrants (collectively, the “Securities”) for investment purposes in the ordinary course of their business of investing in securities for their own account. Jack W. Schuler and the Jack W. Schuler Living Trust reserve the right to formulate plans and/or make proposals, and take such actions with respect to their investment in the Issuer, including, subject to applicable law, (i) to hold their Securities as a passive investor or as an active investor, (ii) to acquire beneficial ownership of additional Securities in the open market, in privately negotiated transactions or otherwise, (iii) to dispose of all or part of their holdings of Securities, (iv) to take other actions which could involve one or more of the types of transactions or have one or more of the results described in Item 4 of Schedule 13D, or (v) to change their intention with respect to any or all of the matters referred to in Item 4 of Schedule 13D.

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

**(a)**

The 1,329,926 shares of Common Stock for which this schedule is filed consist of (i) 21 shares owned by Renate Schuler, representing less than 0.1% of the shares of the Common Stock of the Issuer outstanding, (ii) 1,305,757 shares owned by the Jack W. Schuler Living Trust (including 840,428 shares of Common Stock underlying warrants), representing approximately 75.99% of the shares of the Common Stock of the Issuer outstanding, and (iii) 24,148 shares owned by the Schuler Family Foundation, representing approximately 1.41% of the shares of the Common Stock of the Issuer outstanding.

Mr. Schuler disclaims beneficial ownership in (i) the 21 shares owned by his wife, Renate Schuler and (ii) the 24,148 shares owned by the Schuler Family Foundation, a tax-exempt private operating foundation of which Mr. Schuler and Ms. Schuler are two of the three directors. Ms. Schuler disclaims beneficial ownership in the 24,148 shares owned by the Schuler Family Foundation.

**(b)**

Jack W. Schuler:

- (i) Sole power to vote or to direct the vote: 0
- (ii) Shared power to vote or direct the vote: 1,329,904
- (iii) Sole power to dispose or to direct the disposition of: 0
- (iv) Shared power to dispose of to direct the disposition of: 1,329,904

Renate Schuler:

- (i) Sole power to vote or to direct the vote: 21
- (ii) Shared power to vote or direct the vote: 24,148
- (iii) Sole power to dispose or to direct the disposition of: 21
- (iv) Shared power to dispose of to direct the disposition of: 24,148

The Schuler Family Foundation:

- (i) Sole power to vote or to direct the vote: 24,148
- (ii) Shared power to vote or direct the vote: 0
- (iii) Sole power to dispose or to direct the disposition of: 24,148
- (iv) Shared power to dispose of to direct the disposition of: 0

Jack W. Schuler Living Trust:

- (i) Sole power to vote or to direct the vote: 1,305,757
  - (ii) Shared power to vote or direct the vote: 0
  - (iii) Sole power to dispose or to direct the disposition of: 1,305,757
  - (iv) Shared power to dispose of to direct the disposition of: 0
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CUSIP No. 98585K862

(c)

Except as set forth in this Amendment No. 4, the Reporting Persons have not effected any transaction in the shares of Common Stock in the last 60 days.

(d)

Except as set forth in this Amendment No. 2, to the knowledge of the Reporting Persons, no person had the right to receive or the power to direct the receipt of dividends from, or the proceeds from the sale of, securities covered by this Schedule 13D.

(e) Not Applicable.

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

Except as otherwise set forth in this Schedule 13D and the exhibits hereto, there are no contracts, arrangements, understandings or relationships between the persons named in Item 2 and any other person with respect to any securities of the Issuer.

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

<b>Exhibit</b>	<b>Title</b>
1	Amended and Restated Joint Filing Agreement, dated as of August 1, 2017, by and among Jack W. Schuler, Renate Schuler, the Schuler Family Foundation and Jack W. Schuler Living Trust (incorporated by reference to the Amendment No. 2 to Schedule 13D filed by the Reporting Persons on August 2, 2017).
2	Certification of Designation of Preferences, Rights, and Limitations of Series B Convertible Preferred Stock (incorporated by reference to Exhibit 3.2 to the Current Report on Form 8-K filed by the Issuer with the Commission on November 20, 2019).
3	Form of Series A Common Stock Purchase Warrant (incorporated by reference to Exhibit 4.1 to the Current Report on Form 8-K filed by the Issuer with the Commission on November 20, 2019).
4	Form of Series B Common Stock Purchase Warrant (incorporated by reference to Exhibit 4.1 to the Current Report on Form 8-K filed by the Issuer with the Commission on November 20, 2019).
5	Form of Securities Purchase Agreement, dated as of November 14, 2019, by and among Yield10 Bioscience, Inc. and the Investors (incorporated by reference to the Exhibit 10.1 to the Current Report on Form 8-K filed by the Issuer with the Commission on November 20, 2019).
6	Certificate of Amendment to Effect Reverse Stock Split (incorporated by reference to the Exhibit 3.1 to the Current Report on Form 8-K filed by the Issuer with the Commission on January 15, 2020).

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**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 4, 2020

/s/ Jack W. Schuler  
Jack W. Schuler

Dated: February 4, 2020

/s/ Renate Schuler  
Renate Schuler

**SCHULER FAMILY FOUNDATION**

Dated: February 4, 2020

/s/ Jack W. Schuler  
Name: Jack W. Schuler  
Title: Director

**JACK W. SCHULER LIVING TRUST**

Dated: February 4, 2020

/s/ Jack W. Schuler  
Name: Jack W. Schuler  
Title: Trustee

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