

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**
WASHINGTON, DC 20549

FORM S-8

**REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933**

YIELD10 BIOSCIENCE, INC.

(Exact Name of Registrant as Specified in Its Charter)

Delaware

(State or Other Jurisdiction of Incorporation or Organization)

04-3158289

(I.R.S. Employer Identification No.)

Yield10 Bioscience, Inc.

19 Presidential Way

Woburn, Massachusetts 01801

(Address of Principal Executive Offices) (Zip Code)

Amended and Restated 2018 Stock Option and Incentive Plan

(Full Title of the Plan)

Dr. Oliver P. Peoples

President & Chief Executive Officer

Yield10 Bioscience, Inc.

19 Presidential Way

Woburn, Massachusetts 01801

(Name and Address of Agent for Service)

(617) 583-1700

(Telephone Number, Including Area Code, of Agent For Service)

Copies to:

Megan N. Gates, Esq.

Mintz, Levin, Cohn, Ferris, Glovsky, and Popeo, P.C.

One Financial Center

Boston, Massachusetts 02111

(617) 542-6000

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer

Non-accelerated filer

Accelerated filer

Smaller reporting company

Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act.

PART I

EXPLANATORY NOTE

This Registration Statement on Form S-8 (this “Registration Statement”) registers an additional 247,210 shares of common stock, par value \$0.01 per share (“Common Stock”) of Yield10 Bioscience, Inc. (the “Company” or the “Registrant”), reserved under the Company’s Amended and Restated 2018 Stock Option and Incentive Plan (the “2018 Plan”), as a result of the operation of an automatic annual increase provision therein. This Registration Statement registers additional securities of the same class as other securities for which a registration statement filed on Form S-8 of the Registrant relating to an employee benefit plan is effective (SEC File Nos. 333-226731, 333-231474, 333-235858, 333-238764, 333-254826, 333-256849 and 333-264737).

**INCORPORATION BY REFERENCE OF CONTENTS OF
REGISTRATION STATEMENTS ON FORM S-8**

Pursuant to General Instruction E of Form S-8, the information contained in the Registrant’s registration statements on Form S-8 (SEC File Nos. 333-226731, 333-231474, 333-235858, 333-238764, 333-254826, 333-256849 and 333-264737) is hereby incorporated by reference.

PART II
INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

Item 8. Exhibits.

<u>Exhibit No.</u>	<u>Description of Exhibit</u>
4.1	<u>Amended and Restated Certificate of Incorporation, as amended, of the Registrant (filed as Exhibit 3.1 to the Registrant's Quarterly Report on Form 10-Q (File No. 001-33133) on August 9, 2018 and incorporated herein by reference).</u>
4.2	<u>Certificate of Amendment to the Amended and Restated Certificate of Incorporation of the Registrant (filed as Exhibit 3.1 to the Registrant's Current Report on Form 8-K (File No. 001-33133) on January 15, 2020 and incorporated herein by reference).</u>
4.3	<u>Amended and Restated By-laws of the Registrant (filed as Exhibit 3.1 to the Registrant's Quarterly Report on Form 10-Q (File No. 001-33133) on November 10, 2021 and incorporated herein by reference).</u>
4.4	<u>Specimen Stock Certificate (filed as Exhibit 4.1 to the Registrant's Quarterly Report on Form 10-Q (File No. 001-33133) on November 12, 2020 and incorporated herein by reference).</u>
5.1 *	<u>Opinion of Mintz, Levin, Cohn, Ferris, Glovsky, and Popeo, P.C.</u>
23.1	<u>Consent of Mintz, Levin, Cohn, Ferris, Glovsky, and Popeo, P.C. (included in Exhibit 5.1)</u>
23.2 *	<u>Consent of RSM US LLP, an independent registered public accounting firm</u>
24.1	Power of Attorney (included as part of the signature page of this Registration Statement)
99.1	<u>Yield10 Bioscience, Inc. Amended and Restated 2018 Stock Option and Incentive Plan (filed as Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q (File No. 001-33133) on August 11, 2021 and incorporated herein by reference).</u>
99.2	<u>Amended and Restated 2018 Stock Option and Incentive Plan, Form of Stock Option Agreement (filed as Exhibit 10.2.5 to the Registrant's Annual Report on Form 10-K (File No. 001-33133) on March 28, 2019 and incorporated herein by reference).</u>
99.3	<u>Amended and Restated 2018 Stock Option and Incentive Plan, Form of Restricted Stock Unit Agreement (filed as Exhibit 10.2.6 to the Registrant's Annual Report on Form 10-K (File No. 001-33133) on March 25, 2020 and incorporated herein by reference).</u>
107 *	<u>Filing Fee Table</u>

* Filed herewith.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Woburn, Commonwealth of Massachusetts, on March 23, 2023.

YIELD10 BIOSCIENCE, INC.

By: /s/ Oliver P. Peoples

Oliver P. Peoples

President and Chief Executive Officer

POWER OF ATTORNEY

We, the undersigned directors and officers of Yield10 Bioscience, Inc., hereby severally constitute and appoint Oliver P. Peoples, Charles B. Haaser, and Lynne H. Brum, and each of them singly, our true and lawful attorneys, with full power to them, and to each of them singly, to sign for us and in our names in the capacities indicated below, the registration statement on Form S-8 filed herewith, and any and all pre-effective and post-effective amendments to said registration statement, and any registration statement filed pursuant to Rule 462(b) under the Securities Act of 1933, as amended, in connection with the registration under the Securities Act of 1933, as amended, of equity securities of the Company, and to file or cause to be filed the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as each of us might or could do in person, and hereby ratifying and confirming all that said attorneys, and each of them, or their substitute or substitutes, shall do or cause to be done by virtue of this Power of Attorney.

Pursuant to the requirements of the Securities Act of 1933, this Registration Statement has been signed by the following persons in the capacities and on the dates indicated:

<u>/s/ Oliver P. Peoples</u> Oliver P. Peoples	President, Chief Executive Officer and Director (Principal Executive Officer)	March 23, 2023
<u>/s/ Charles B. Haaser</u> Charles B. Haaser	Vice President, Finance, and Chief Accounting Officer (Principal Financial and Accounting Officer)	March 23, 2023
<u>/s/ Sherri M. Brown</u> Sherri M. Brown	Director	March 23, 2023
<u>/s/ Richard W. Hamilton</u> Richard W. Hamilton	Director	March 23, 2023
<u>/s/ Willie Loh</u> Willie Loh	Director	March 23, 2023
<u>/s/ Anthony J. Sinskey</u> Anthony J. Sinskey	Director	March 23, 2023
<u>/s/ Robert L. Van Nostrand</u> Robert L. Van Nostrand	Chairman	March 23, 2023

Calculation of Filing Fee TablesForm S-8

(Form Type)

Yield10 Bioscience, Inc.

(Exact name of Registrant as Specified in its Charter)

Table 1 — Newly Registered Securities

Security Type	Security Class Title	Fee Calculation Rule	Amount Registered (1)(2)	Proposed Maximum Offering Price Per Unit (3)	Maximum Aggregate Offering Price	Fee Rate	Amount of Registration Fee
Equity	Common stock, par value \$0.01 per share	457(c) and 457(h)	247,210	\$2.62	\$647,690.20	\$0.00011020	\$71.38
Total Offering Amount					\$647,690.20		\$71.38
Total Fees Previously Paid							—
Total Fee Offsets							—
Net Fee Due							\$71.38

- (1) This registration statement relates to an additional 247,210 shares of common stock, \$0.01 par value per share (the “Common Stock”), of Yield10 Bioscience, Inc. (the “Registrant”) reserved for issuance under the Amended and Restated 2018 Stock Option and Incentive Plan (the “2018 Plan”), added pursuant to an “evergreen” provision in the 2018 Plan as of January 1, 2023.
- (2) Pursuant to Rule 416 under the Securities Act of 1933, as amended (the “Securities Act”), this registration statement shall also cover any additional shares of Common Stock which become issuable under the 2018 Plan by reason of any stock dividend, stock split, recapitalization or any other similar transaction effected without the receipt of consideration which results in an increase in the number of outstanding shares of Common Stock.
- (3) The price of \$2.62 per share, which is the average of the high and low sales price for a share of Common Stock as reported on the Nasdaq Capital Market on March 20, 2023, is set forth solely for purposes of calculating the registration fee pursuant to Rule 457(c) and (h) of the Securities Act.



March 23, 2023

Yield10 Bioscience, Inc.
19 Presidential Way
Woburn, Massachusetts 01801

Re: Securities Being Registered under Registration Statement on Form S-8

Ladies and Gentlemen:

We have acted as legal counsel to Yield10 Bioscience, Inc., a Delaware corporation (the “Company”), in connection with the preparation and filing with the Securities and Exchange Commission (the “Commission”) of a Registration Statement on Form S-8 (the “Registration Statement”), pursuant to which the Company is registering the issuance under the Securities Act of 1933, as amended (the “Securities Act”), of 247,210 shares (the “Shares”) of the Company’s common stock, \$0.01 par value per share, that may be issued pursuant to the Company’s Amended and Restated 2018 Stock Option and Incentive Plan (the “Plan”). This opinion is being rendered in connection with the filing of the Registration Statement with the Commission. All capitalized terms used herein and not otherwise defined shall have the respective meanings given to them in the Registration Statement.

In connection with this opinion, we have examined the Company’s Amended and Restated Certificate of Incorporation, as amended, and the Company’s Amended and Restated By-Laws, each as currently in effect; such other records of the corporate proceedings of the Company as we have deemed relevant; and the Registration Statement and the exhibits thereto.

In our examination, we have assumed the genuineness of all signatures, the legal capacity of natural persons, the authenticity of all documents submitted to us as originals, the conformity to original documents of all documents submitted to us as certified or photostatic copies and the authenticity of the originals of such copies. In addition, we have assumed that the Company will receive any required consideration in accordance with the terms of the Plan.

Our opinion is limited to the General Corporation Law of the State of Delaware, and we express no opinion with respect to the laws of any other jurisdiction. No opinion is expressed herein with respect to the qualification of the Shares under the securities or blue sky laws of any state or any foreign jurisdiction.

Please note that we are opining only as to the matters expressly set forth herein, and no opinion should be inferred as to any other matters. This opinion is based upon currently existing statutes, rules, regulations and judicial decisions, and we disclaim any obligation to advise you of any change in any of these sources of law or subsequent legal or factual developments which might affect any matters or opinions set forth herein.

Based upon the foregoing, we are of the opinion that the Shares, when issued and delivered in accordance with the terms of the Plan will be validly issued, fully paid and non-assessable.

We understand that you wish to file this opinion with the Commission as an exhibit to the Registration Statement in accordance with the requirements of Item 601(b)(5) of Regulation S-K promulgated under the Securities Act, and we hereby consent thereto. In giving this consent, we do not admit that we are within the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the Commission promulgated thereunder.

BOSTON LONDON LOS ANGELES NEW YORK SAN DIEGO SAN FRANCISCO WASHINGTON

MINTZ, LEVIN, COHN, FERRIS, GLOVSKY AND POPEO, P.C.



Very truly yours.

/s/ Mintz, Levin, Cohn, Ferris, Glovsky and
Popeco, P.C.

MINTZ, LEVIN, COHN, FERRIS, GLOVSKY AND
POPEO, P.C.

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in this Registration Statement on Form S-8 of Yield10 Bioscience, Inc. of our report dated March 14, 2023, relating to the consolidated financial statements of Yield10 Bioscience, Inc., appearing in the Annual Report on Form 10-K of Yield10 Bioscience, Inc. for the year ended December 31, 2022.

/s/ RSM US LLP
Boston, Massachusetts
March 23, 2023