

**PROSPECTUS SUPPLEMENT**  
**(To Prospectus dated April 2, 2021)**



**Up to \$4,200,000**  
**Common Stock**

We have entered into an Equity Distribution Agreement with Maxim Group LLC, or Maxim, dated January 23, 2023, relating to the offer and sale of our Common Stock, par value \$0.01 per share, offered by this prospectus supplement. In accordance with the terms of the Equity Distribution Agreement, we may offer and sell shares of our common stock having an aggregate offering price of up to \$4,200,000 from time to time through Maxim acting as agent.

Our common stock is traded on the Nasdaq Capital Market under the symbol "YTEN." On January 20, 2023, the last reported sale price of our Common Stock was \$2.78 per share.

Sales of our shares of Common Stock, if any, under this prospectus supplement and the accompanying prospectus will be made in sales deemed to be "at the market" offerings as defined in Rule 415 under the Securities Act of 1933, as amended, or the Securities Act. Maxim is not required to sell any specific amount of securities, but will act as our sales agent using commercially reasonable efforts consistent with its normal trading and sales practices, on mutually agreed terms between Maxim and us. There is no arrangement for funds to be received in any escrow, trust or similar arrangement.

Maxim will be entitled to compensation at a fixed commission rate of up to 2.75% of the gross proceeds of each sale of shares of our Common Stock. In connection with the sale of shares of our Common Stock on our behalf, Maxim will be deemed to be an "underwriter" within the meaning of the Securities Act and the compensation of Maxim will be deemed to be underwriting commissions or discounts. We have also agreed to provide indemnification and contribution to Maxim with respect to certain liabilities, including liabilities under the Securities Act.

As of January 18, 2023, the aggregate market value of our outstanding Common Stock held by non-affiliates was approximately \$12,796,843, based on 4,961,780 shares of outstanding Common Stock, of which 3,961,871 shares were held by non-affiliates, and a per share price of \$3.23 per share, which was the last reported sale price of our Common Stock on the Nasdaq Capital Market on January 17, 2023. Pursuant to General Instruction I.B.6 of Form S-3, in no event will we sell our Common Stock in a public primary offering with a value exceeding more than one-third of our public float in any 12-month period so long as our public float remains below \$75,000,000. During the previous 12 calendar months prior to and including the date of this prospectus supplement, we had not offered any of our securities pursuant to General Instruction I.B.6 of Form S-3.

**Investing in our Common Stock involves a high degree of risk. See "Risk Factors" beginning on page S-8 of this prospectus supplement, page 4 of the accompanying prospectus and under similar headings in the documents incorporated by reference into this prospectus supplement and the accompanying prospectus.**

**Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus supplement or the accompanying prospectus is truthful or complete. Any representation to the contrary is a criminal offense.**

**Maxim Group LLC**

The date of this prospectus supplement is January 23, 2023

## TABLE OF CONTENTS

### Prospectus Supplement

ABOUT THIS PROSPECTUS SUPPLEMENT	<a href="#">S-1</a>
SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS	<a href="#">S-1</a>
PROSPECTUS SUPPLEMENT SUMMARY	<a href="#">S-3</a>
THE OFFERING	<a href="#">S-6</a>
RISK FACTORS	<a href="#">S-8</a>
USE OF PROCEEDS	<a href="#">S-9</a>
DILUTION	<a href="#">S-9</a>
DESCRIPTION OF CAPITAL STOCK	<a href="#">S-11</a>
PLAN OF DISTRIBUTION	<a href="#">S-14</a>
LEGAL MATTERS	<a href="#">S-15</a>
EXPERTS	<a href="#">S-15</a>
WHERE YOU CAN FIND MORE INFORMATION	<a href="#">S-15</a>
INCORPORATION OF CERTAIN INFORMATION BY REFERENCE	<a href="#">S-16</a>

### Prospectus

ABOUT THIS PROSPECTUS	<a href="#">1</a>
SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS	<a href="#">2</a>
ABOUT YIELD10 BIOSCIENCE, INC.	<a href="#">3</a>
CORPORATE INFORMATION	<a href="#">4</a>
RISK FACTORS	<a href="#">4</a>
USE OF PROCEEDS	<a href="#">4</a>
DESCRIPTION OF CAPITAL STOCK	<a href="#">5</a>
DESCRIPTION OF WARRANTS	<a href="#">7</a>
DESCRIPTION OF SUBSCRIPTION RIGHTS	<a href="#">8</a>
DESCRIPTION OF UNITS	<a href="#">9</a>
PLAN OF DISTRIBUTION	<a href="#">10</a>
LEGAL MATTERS	<a href="#">12</a>
EXPERTS	<a href="#">12</a>
WHERE YOU CAN FIND MORE INFORMATION	<a href="#">12</a>
INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE	<a href="#">13</a>

## **ABOUT THIS PROSPECTUS SUPPLEMENT**

This document consists of two parts. The first part is this prospectus supplement, which describes the specific terms of the offering and other matters relating to us. The second part is the accompanying prospectus, which provides more general information about the securities we may offer from time to time, some of which may not apply to this offering of Common Stock. This prospectus supplement and the accompanying prospectus are part of a registration statement that we filed with the Securities and Exchange Commission (the "SEC") on March 29, 2021 using the SEC's shelf registration rules, which registration statement became effective on April 2, 2021. You should read both this prospectus supplement and the accompanying prospectus, together with the documents incorporated by reference and the additional information described under the heading "Where You Can Find More Information" in this prospectus supplement and the accompanying prospectus before making an investment decision.

To the extent there is a conflict between the information contained in this prospectus supplement, on the one hand, and the information contained in the accompanying prospectus, on the other hand, the information contained in this prospectus supplement shall control. If any statement in this prospectus supplement conflicts with any statement in a document that has been incorporated herein by reference, then you should consider only the statement in the more recent document. You should assume that the information contained in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference is accurate only as of their respective dates.

We have not, and the placement agent has not, authorized any person to provide you with any information or to make any representation other than as contained in this prospectus supplement or in the accompanying prospectus and the information incorporated by reference herein and therein. We and the placement agent do not take any responsibility for, and can provide no assurance as to the reliability of, any information that others may provide you. The information appearing or incorporated by reference in this prospectus supplement and the accompanying prospectus is accurate only as of the date of this prospectus supplement or the date of the document in which incorporated information appears unless otherwise noted in such documents. Our business, financial condition, results of operations and prospects may have changed since those dates.

The distribution of this prospectus supplement and the accompanying prospectus and the offering of the Common Stock in certain jurisdictions may be restricted by law. We are not, and the placement agent is not, making an offer of the Common Stock in any jurisdiction where the offer is not permitted. Persons who come into possession of this prospectus supplement and the accompanying prospectus should inform themselves about and observe any such restrictions. This prospectus supplement and the accompanying prospectus do not constitute, and may not be used in connection with, an offer or solicitation by anyone in any jurisdiction in which such offer or solicitation is not authorized or in which the person making such offer or solicitation is not qualified to do so or to any person to whom it is unlawful to make such offer or solicitation.

## **SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS**

This prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein contain forward-looking statements. All statements, other than statements of historical facts contained in this prospectus supplement, the accompanying prospectus and in the documents incorporated by reference herein, including statements regarding our efforts to develop and commercialize our products, anticipated yields and product performance, our short-term and long-term business strategies, market and industry expectations and future results of operations and financial position are forward-looking statements. In many cases, you can identify forward-looking statements by terms such as "may", "will", "should", "expect", "plan", "anticipate", "could", "intend", "target", "project", "contemplate", "believe", "estimate", "potential", "continue" or other similar words.

We based these forward-looking statements largely on our current expectations and projections about future events or trends that we believe may affect our business and financial performance. These forward-looking statements involve known and unknown risks and uncertainties that may cause our actual results, performance or achievements to materially differ from any future results, performance or achievements expressed or implied by these forward-looking statements. We have described in the "Risk Factors" section and elsewhere in this prospectus supplement and in the documents incorporated by reference herein the material risks and uncertainties that we

believe could cause actual results to differ from these forward-looking statements. Because forward-looking statements are inherently subject to risks and uncertainties, some of which we cannot predict or quantify, you should not rely on these forward-looking statements as guarantees of future results, performance or achievements.

The forward-looking statements in this prospectus supplement, the accompanying prospectus and in the documents incorporated by reference herein represent our views as of the date of the document in which the forward-looking statement appears. We undertake no obligation to update publicly, except to the extent required by law, any forward-looking statements for any reason to conform these statements to actual results or to changes in our expectations.

## PROSPECTUS SUPPLEMENT SUMMARY

*This summary highlights some information from this prospectus. It may not contain all the information important to making an investment decision. You should read the following summary together with the more detailed information regarding our Company and the securities being sold in this offering, including "Risk Factors" and other information incorporated by reference herein.*

### **Business Overview**

Yield10 Bioscience, Inc. ("Yield10" or the "Company") is an agricultural bioscience company that is developing the oilseed *Camelina sativa* ("Camelina") as a platform crop for large scale production of low-carbon sustainable seed products to address:

- petroleum replacement markets, in which we are developing Camelina oil for use as a biofuel feedstock and PHA Bioplastics produced in Camelina seed for use as a biodegradable bioplastic; and
- food and nutrition markets, in which we are developing omega-3 (EPA, DHA+EPA) oils produced in Camelina seed for aquaculture, nutraceuticals and protein meal for animal feed markets.

Our commercial plan is based on developing and releasing a series of proprietary elite Camelina seed varieties incorporating genetic traits from our development pipeline which offer improved on-farm performance that we anticipate will lead to increased acreage adoption and seed product revenue. Yield10 is headquartered in Woburn, Massachusetts and has an Oilseed Center of Excellence in Saskatoon, Saskatchewan, Canada.

Camelina an annual oilseed plant in the mustard family, was selected as our platform crop based on its unique attributes, including its excellent agronomic traits such as low water and fertilizer input, drought resistance and its short life cycle, making it suitable as a rotation crop within the U.S. Northwest and regions of Canada, as well as a relay or cover crop with corn and soybean in the U.S. Midwest. Combined, we estimate there is the potential for over 30 million acres of Camelina production in North America. Camelina, an oilseed from the same plant family as canola, already produces a relatively abundant harvest of oil-containing protein rich seeds and is highly amenable to advanced genetic engineering and genome-editing technologies and is an essential component of our Trait Factory trait gene discovery and development platform. Over the last twelve years, Yield10 has been developing improved Camelina seed varieties through identification and deployment of its gene trait discoveries followed by performance evaluation in field tests. Our new seed product traits include the PHA bioplastic trait developed by Yield10 and the omega-3 (EPA, DHA+EPA) oil traits for which we secured exclusive rights to a commercial license option on the technology in 2020.

Our Camelina commercial plan is based on developing and commercializing a series of proprietary elite Camelina seed varieties in an identity preserved capital light value chain using contract farming and seed processing with product offtake agreements. We plan to leverage strategic partnering to address the growing demand for low carbon feedstock oil for biofuels to establish the operating foundation of our business. This will require establishing the value chain from seed operations, contract production with growers and contracted seed processing. To accomplish this, we plan to form strategic partnerships with oilseed processors and biofuel producers to secure offtake agreements. Our first season of contract production is underway using three of our current Camelina lines and we are accelerating the development of improved elite Camelina varieties incorporating herbicide tolerance traits to enable seamless integration into crop rotations and improve on-farm performance. We expect this to lead to increased grower interest and large scale production. Over time we plan to introduce performance traits from our development pipeline to increase the harvest value of the Camelina crop to growers and improve seed product revenues and margins. We made progress building our commercial team during the past year and are now in the early stages of launching our products business, focusing initially on our first elite Camelina plant varieties to supply the low-carbon biofuel feedstock oil and protein meal markets. We anticipate that this initial commercialization will be followed within a few years by the launch of Camelina varieties which produce our two proprietary, higher value new seed products, our PHA bioplastics and the omega-3 (EPA, DHA+EPA) oils where we plan to be directly involved in marketing the end products. We expect the sequential launch of these products will allow us to establish a robust operating foundation for our commercial business based on partnering for the biofuels opportunity and

enable us to grow our product revenues and profit margins through continuous innovation and improvement of our elite Camelina varieties as we introduce performance traits. In the future the advanced varieties developed for biofuels will be combined with our omega-3 and PHA bioplastic product traits to enable the commercial production of those proprietary products.

As a first stage in our initial Camelina commercialization, during the third quarter of 2022 we engaged growers in contracts for the production of Camelina grain and Camelina seed having a total acreage of approximately 1,000 acres. These growers are located in the U.S. and Canada with each grower planting between 30 and 160 acres of our WDH2 (winter, cold tolerant) and WDH3 (winter, early maturing) seed varieties, with harvest expected to occur in summer 2023. We intend to use the seed harvest for toll crushing and further seed production that will provide us with seed inventory for future grower contracts during 2023 and beyond. Also, during 2022, we contracted with other growers to plant our E3902 (spring, high oil yield), WDH2 (winter, increased cold tolerance and WDH3 (winter, early flowering) Camelina plant varieties to produce commercial planting seed. This activity is an essential part of our business model to produce commercial seed inventory for future grower contracts for Camelina grain production for large scale grain processing to supply low-carbon intensity feedstock oil for the biofuel market and high-protein meal for the animal feed market.

We are currently pursuing the development of elite Camelina germplasm exhibiting herbicide tolerance, disease resistance and other traits that will, in the near future, form improved elite Camelina varieties for the biofuel market and will later be combined with the new seed product traits in development to expand our markets. We ultimately expect to have three types of elite Camelina seed varieties in contracted production to address our product markets.

We believe the market opportunity for biofuel feedstocks from our elite Camelina varieties, as well as our other proprietary seed products in development, including performance traits for use in other crops, is significant. We are targeting use for our Camelina seed products in commercial applications such as: low-carbon feedstock oils for renewable diesel and sustainable aviation fuel, PHA bioplastics, and omega-3 oils for aquaculture and nutrition. In July 2022, we signed a nonbinding memorandum of understanding with Mitsubishi Corporation to evaluate the establishment of a partnership to supply, offtake and market Camelina as a low-carbon feedstock oil for biofuels. We believe performance traits from our “Trait Factory” platform and value-added product strategy will provide strong differentiation for Yield10's elite Camelina seed varieties making them preferred by growers to address large product market opportunities as illustrated below. These traits will also be made available to leading seed companies for use in other crops to create licensing revenue.

Platform	Product	Main Markets	Revenue Potential <sup>1</sup>	Status
Elite Camelina	Feedstock oil	<ul style="list-style-type: none"> <li>Renewable diesel</li> <li>Aviation biofuel</li> </ul> <b>\$27 billion</b>	\$0.18 - \$1 billion	<ul style="list-style-type: none"> <li>Early commercial</li> <li>Accelerating elite variety development</li> <li>Focus: US, Canada</li> <li>Biofuel partner outreach</li> </ul>
Elite PHA Camelina	PHA Bioplastics Feedstock oil	<ul style="list-style-type: none"> <li>Single use plastic</li> </ul> <b>\$200 billion</b>	\$3.6 billion	<ul style="list-style-type: none"> <li>Trait optimization</li> <li>Pilot process development</li> <li>Partner outreach</li> </ul>
Elite Omega-3 Camelina	Omega-3 Oil (DHA+EPA)	<ul style="list-style-type: none"> <li>Aquaculture feed</li> <li>Nutrition</li> </ul> <b>\$4-6 billion</b>	\$0.5 billion	<ul style="list-style-type: none"> <li>Pre-commercial development</li> <li>Partner outreach</li> </ul>

1. Internal Company estimates of 2030 product revenue potential

Our Camelina platform and each of our seed product targets are well-aligned with global trends in reducing carbon emissions and improving sustainability, including the need for:

- Producing low-carbon intensity biofuel feedstock oil for renewable diesel and aviation biofuel.
- Increasing the production of cover crops to reduce the climate change impact from agriculture.
- Producing PHA bioplastics to enable single use food service items and packaging with zero waste.

- Increasing global food security by:
  - producing land-based omega-3 (EPA, DHA+EPA) fatty acid oils for use in aquaculture and nutraceuticals;
  - increasing high quality protein production from Camelina seed; and
  - developing performance traits to increase yield and/or seed oil per acre for major food crops.

### **Corporate Information**

We were incorporated in Massachusetts in 1992 under the name Metabolix, Inc. In September 1998, we reincorporated in Delaware. We changed our name to Yield10 Bioscience, Inc. in January 2017 to reflect our change in mission around innovations in agricultural biotechnology focused on developing disruptive technologies for step-change improvements in crop yield and niche crop products. Our corporate headquarters are located at 19 Presidential Way, Woburn, MA 01801, and our telephone number is +1 (617) 583-1700. Our website address is [www.yield10bio.com](http://www.yield10bio.com). The information contained on our website or that can be accessed through our website is not part of this prospectus and investors should not rely on any such information in deciding whether to purchase our securities.

## THE OFFERING

<b>Issuer</b>	Yield10 Bioscience, Inc.
<b>Common Stock offered</b>	Shares of our Common Stock having an aggregate offering price of up to \$4,200,000.
<b>Common Stock to be outstanding after this offering</b>	Up to 6,444,079 shares of Common Stock, assuming the sale of \$4,200,000 of shares of our Common Stock at a price of \$2.78 per share, which was the closing price of our Common Stock on the Nasdaq Capital Market on January 20, 2023. The actual number of shares of Common Stock to be issued will vary depending on the sales price in this offering.
<b>Plan of Distribution</b>	“At the market offering” that may be made from time to time through our sales agent, Maxim Group LLC. See “Plan of Distribution” on page S-14 of this prospectus supplement.
<b>Use of Proceeds</b>	We intend to use the net proceeds from this offering for general corporate purposes, including working capital. See "Use of Proceeds" on page S-9 of this prospectus supplement for additional information.
<b>Risk Factors</b>	Investing in our securities involves a high degree of risk. See “Risk Factors” beginning on page S-8 of this prospectus supplement and the other information included in, or incorporated by reference into, this prospectus supplement for a discussion of certain factors you should carefully consider before deciding to invest in our securities.
<b>Nasdaq Capital Market symbol</b>	“YTEN”

The number of shares of Common Stock that will be outstanding after this offering is based on 4,933,288 shares outstanding as of September 30, 2022, and excludes:

- 953,787 shares of Common Stock issuable upon exercise of options to purchase our Common Stock outstanding as of September 30, 2022 at a weighted average exercise price of \$14.45 per share;
- 27,123 shares of Common Stock issuable upon vesting of restricted stock units as of September 30, 2022;
- 25,961 shares of Common Stock reserved as of September 30, 2022 for future issuance under our 2018 Stock Option and Incentive Plan;
- 14,270 shares of common stock issuable upon exercise of warrants outstanding as of September 30, 2022 and issued pursuant to the Securities Purchase Agreement we entered into with certain investors on July 3, 2017 (which warrants became exercisable on January 7, 2018 at an exercise price of \$201.60 per share and expire on January 7, 2024);
- 750 shares of common stock issuable upon exercise of immediately vested warrants outstanding as of September 30, 2022 and issued to an investor relations consultant on September 12, 2017 at an exercise price of \$116.00 per share and which expire on September 11, 2024;



- 160,975 shares of common stock issuable upon exercise of Series A Warrants issued in a public offering on December 21, 2017 and outstanding as of September 30, 2022, at an exercise price of \$90.00 per share and which expire on December 21, 2022; and
- 1,114,278 shares of common stock issuable upon exercise of Series B Warrants issued in a public offering in November 2019 and outstanding as of September 30, 2022, at an exercise price of \$8.00 per share and which expire on May 19, 2027.

## RISK FACTORS

*Our business is subject to numerous risks. In addition to risks and uncertainties discussed under the section captioned “Risk Factors” contained in our most recent Annual Report on Form 10-K, our Quarterly Reports on Form 10-Q and in our subsequent filings with the SEC incorporated by reference in this prospectus, together with the other information included in this prospectus and documents incorporated by reference in this prospectus, and in any free writing prospectus that we have authorized for use in connection with this offering, you should read in their entirety and carefully consider the risks described below before making an investment decision with respect to this offering. Any of the following risks could have a material adverse effect on our business, financial condition, results of operations or cash flow. This could cause the trading price of our common stock to decline, which could cause you to lose all or part of your investment.*

### **Risks Related to this Offering**

***Since we have broad discretion in how we use the proceeds from this offering, we may use the proceeds in ways with which you disagree.***

We have not allocated specific amounts of the net proceeds from this offering for any specific purpose. Accordingly, our management will have some flexibility in applying the net proceeds of this offering. You will be relying on the judgment of our management with regard to the use of these net proceeds, and you will not have the opportunity, as part of your investment decision, to assess whether the proceeds are being used appropriately. It is possible that the net proceeds will be invested in a way that does not yield a favorable, or any, return for us. The failure of our management to use such funds effectively could have a material adverse effect on our business, financial condition, operating results and cash flow.

***You will experience immediate dilution in the book value per share of the common stock you purchase.***

The offering price per share in this offering may exceed the net tangible book value per share of our common stock outstanding prior to this offering. Assuming that an aggregate of 1,510,791 shares of our common stock are sold at a price of \$2.78 per share, the last reported sale price of our common stock on the Nasdaq Capital Market on January 20, 2023, for aggregate gross proceeds of \$4.2 million, and after deducting commissions and estimated offering expenses payable by us, you will experience immediate dilution of approximately \$1.05 per share, representing the difference between our as adjusted net tangible book value per share as of September 30, 2022 after giving effect to this offering and the assumed offering price. The exercise of outstanding stock options and the vesting of outstanding restricted stock units will result in further dilution of your investment. See “Dilution” on page S-9 for a more detailed discussion of the dilution you will incur in connection with this offering.

***You may experience future dilution as a result of future equity offerings.***

In order to raise additional capital, we may at any time, including during the pendency of this offering, offer additional shares of our common stock or other securities convertible into or exchangeable for our common stock at prices that may not be the same as the price per share in this offering. We may sell shares or other securities in any other offering at a price per share that is less than the price per share paid by investors in this offering, and investors purchasing shares or other securities in the future could have rights superior to existing stockholders. The price per share at which we sell additional shares of our common stock, or securities convertible or exchangeable into common stock, in future transactions may be higher or lower than the price per share paid by investors in this offering.

***Sales of a significant number of shares of our common stock in the public markets, or the perception that such sales could occur, could depress the market price of our common stock.***

Sales of a substantial number of shares of our common stock in the public markets could depress the market price of our common stock and impair our ability to raise capital through the sale of additional equity securities. We cannot predict the effect that future sales of our common stock would have on the market price of our common stock.

***The common stock offered hereby will be sold in “at the market” offerings, and investors who buy shares at different times will likely pay different prices.***

Investors who purchase shares in this offering at different times will likely pay different prices, and so may experience different outcomes in their investment results. We will have discretion, subject to market demand, to vary the timing, prices, and numbers of shares sold, and there is no minimum or maximum sales price. Investors may experience a decline in the value of their shares as a result of share sales made at prices lower than the prices they paid.

***The actual number of shares we will issue under the Equity Distribution Agreement, at any one time or in total, is uncertain.***

Subject to certain limitations in the Equity Distribution Agreement and compliance with applicable law, we have the discretion to deliver a sales notice to Maxim at any time throughout the term of the Equity Distribution Agreement. The number of shares that are sold by Maxim after delivering a sales notice will fluctuate based on the market price of the common shares during the sales period and limits we set with Maxim. Because the price per share of each share sold will fluctuate based on the market price of our common stock during the sales period, it is not possible at this stage to predict the number of shares that will be ultimately issued.

***If securities or industry analysts do not publish research or publish inaccurate or unfavorable research about our business, our stock price and trading volume could decline.***

The trading market for our common stock depends in part on the research and reports that securities or industry analysts publish about us or our business. If one or more of the analysts who covers us downgrades our stock or publishes inaccurate or unfavorable research about our business, our stock price may decline. If one or more of these analysts ceases coverage of our company or fails to publish reports on us regularly, demand for our stock could decrease, which might cause our stock price and trading volume to decline.

#### **USE OF PROCEEDS**

We may offer and sell shares of our common stock having aggregate sales proceeds of up to \$4,200,000 from time to time. The amount of proceeds we receive, if any, will depend on the actual number of shares of our common stock sold and the market price at which such shares are sold. There can be no assurance that we will be able to sell any shares or fully utilize the Equity Distribution Agreement with Maxim as a source of financing. Because there is no minimum offering amount required as a condition to close this offering, the net proceeds to us, if any, are not determinable at this time.

We currently intend to use the net proceeds from this offering, if any, for general corporate purposes, including working capital.

#### **DILUTION**

As of September 30, 2022, our net tangible book value was approximately \$7.2 million, or \$1.46 per share of our common stock. Net tangible book value per share represents the amount of our total tangible assets less our total liabilities, divided by the total number of shares of our common stock outstanding as of September 30, 2022.

After giving effect to the sale of 1,510,791 shares of our common stock in this offering (based on an assumed offering price of \$2.78 per share, which was the closing price of our common stock on Nasdaq Capital Market on January 20, 2023), after deducting estimated offering fees and expenses payable by us, our net tangible book value as of September 30, 2022 would have been approximately \$1.73 per share of common stock. This represents an immediate increase in net tangible book value of \$0.27 per share to our existing stockholders and an immediate dilution in net tangible book value of \$1.05 per share to investors participating in this offering. The following table illustrates this dilution per share of common stock to investors participating in this offering:

Assumed public offering price per share		\$	2.78
Net tangible book value (deficit) per share as of September 30, 2022	\$	1.46	
Increase in net tangible book value per share attributable to this offering		0.27	
Pro forma net tangible book value per share after this offering			1.73
Dilution per share to new investors in the offering	\$		1.05

The number of shares of common stock in the table above is based 4,933,288 shares of our common stock outstanding as of September 30, 2022, and excludes:

- 953,787 shares of common stock issuable upon exercise of options to purchase our common stock outstanding as of September 30, 2022 at a weighted average exercise price of \$14.45 per share;
- 27,123 shares of common stock issuable upon vesting of restricted stock units as of September 30, 2022;
- 25,961 shares of common stock reserved as of September 30, 2022 for future issuance under our 2018 Stock Option and Incentive Plan.
- 14,270 shares of common stock issuable upon exercise of warrants outstanding as of September 30, 2022 and issued pursuant to the Securities Purchase Agreement we entered into with certain investors on July 3, 2017 (which warrants became exercisable on January 7, 2018 at an exercise price of \$201.60 per share and expire on January 7, 2024);
- 750 shares of common stock issuable upon exercise of immediately vested warrants outstanding as of September 30, 2022 and issued to an investor relations consultant on September 12, 2017 at an exercise price of \$116.00 per share and which expire on September 11, 2024;
- 160,975 shares of common stock issuable upon exercise of Series A Warrants issued in a public offering on December 21, 2017 and outstanding as of September 30, 2022, at an exercise price of \$90.00 per share and which expire on December 21, 2022; and
- 1,114,278 shares of common stock issuable upon exercise of Series B Warrants issued in a public offering in November 2019 and outstanding as of September 30, 2022, at an exercise price of \$8.00 per share and which expire on May 19, 2027.

## DESCRIPTION OF CAPITAL STOCK

The following description of our common stock and preferred stock, together with the additional information included in any applicable prospectus supplements, summarizes the material terms and provisions of these types of securities but is not complete. For the complete terms of our common stock and preferred stock, please refer to our Amended and Restated Certificate of Incorporation, as amended to date (our “certificate of incorporation”), and our Amended and Restated By-laws (our “by-laws”), each of which is incorporated by reference into the registration statement of which this prospectus is a part and, with respect to any new shares of preferred stock, the certificate of designation which will be filed with the SEC for each new series of preferred stock we may designate, if any.

### General

The following summary of our capital stock is based on certain provisions of our amended and restated certificate of incorporation and bylaws and on the applicable provisions of the Delaware General Corporation Law, or DGCL. This summary does not purport to be complete and is qualified in its entirety by reference to the applicable provisions our amended and restated certificate of incorporation and bylaws and the DGCL. For information on how to obtain copies of such documents, please refer to the heading "Where You Can Find More Information" in this prospectus.

Our authorized capital stock consists of 65,000,000 shares, with a par value of \$0.01 per share, of which:

- 60,000,000 shares are designated as Common Stock; and
- 5,000,000 shares are designated as undesignated preferred stock.

### Common Stock

The holders of our Common Stock are entitled to one vote per share on all matters submitted to a vote of our stockholders and do not have cumulative voting rights. Subject to preferences that may be applicable to any preferred stock outstanding at the time, the holders of outstanding shares of Common Stock are entitled to receive ratably any dividends declared by our board of directors out of assets legally available. Upon our liquidation, dissolution or winding up, holders of our Common Stock are entitled to share ratably in all assets remaining after payment of liabilities and the liquidation preference of any then outstanding shares of preferred stock. Holders of Common Stock have no preemptive or conversion rights or other subscription rights. There are no redemption or sinking fund provisions applicable to our Common Stock.

### Preferred Stock

Our amended and restated certificate of incorporation, as amended, provides for a class of its authorized stock known as preferred stock, consisting of 5,000,000 shares, \$0.01 par value per share, issuable from time to time in one or more series. Our board of directors may designate the rights, preferences, privileges and restrictions of the preferred stock, including dividend rights, conversion rights, voting rights, terms of redemption, liquidation preference, sinking fund terms and the number of shares constituting any series or the designation of any series. As of September 30, 2022, there were no shares of Preferred Stock issued or outstanding.

### Warrants

As of September 30, 2022, we had warrants outstanding to purchase 1,290,273 shares of our Common Stock.

### Anti-Takeover Provisions

Certain provisions of the DGCL and our amended and restated certificate of incorporation and bylaws may have the effect of delaying, deferring or discouraging another party from acquiring control of our company. These provisions, which are summarized below, may discourage certain types of coercive takeover practices and

inadequate takeover bids and encourage anyone seeking to acquire control of our company to first negotiate with our board of directors. These provisions might also have the effect of preventing changes in our management and could make it more difficult to accomplish transactions that stockholders might otherwise deem to be in their best interests. However, we believe that the advantages gained by protecting our ability to negotiate with any unsolicited and potentially unfriendly acquirer outweigh the disadvantages of discouraging such proposals, because, among other reasons, the negotiation of such proposals could result in improving their terms.

#### **Amended and Restated Certificate of Incorporation and Bylaw Provisions**

Our amended and restated certificate of incorporation, as amended, and amended and restated by-laws include a number of provisions that may have the effect of delaying, deferring or discouraging another party from acquiring control of our company or preventing changes in our management, including the following:

- *Issuance of Undesignated Preferred Stock.* Our board of directors has the authority, without further action by the stockholders, to issue up to 5,000,000 shares of undesignated preferred stock with rights, preferences and privileges designated from time to time by our board of directors without further action by stockholders. These rights, preferences and privileges could include dividend rights, conversion rights, voting rights, terms of redemption, liquidation preferences and sinking fund terms, any or all of which may be greater than the rights of common stock.
- *Size of the Board of Directors and Filling Vacancies.* The number of directors constituting our board of directors may be set only by resolution adopted by a majority vote of our entire board of directors. Any vacancy on our board of directors, however occurring, including a vacancy resulting from an increase in the size of the board of directors, may only be filled by the affirmative vote of a majority of our directors then in office, even if less than a quorum.
- *Classified Board.* Our board of directors is divided into three classes of directors, with staggered three-year terms. Only one class of directors will be elected at each annual meeting of our stockholders, with the other classes continuing for the remainder of their respective three-year terms.
- *No Cumulative Voting.* Our amended and restated certificate of incorporation, as amended, and amended and restated by-laws do not permit cumulative voting in the election of directors. Cumulative voting allows a stockholder to vote a portion, or all of its shares for one or more candidates. The absence of cumulative voting makes it more difficult for a minority stockholder to gain a seat.
- *Removal of Directors.* Directors can only be removed by our stockholders for cause and removal of a director will require a 75% stockholder vote.
- *No Written Consent of Stockholders.* All stockholder actions are required to be taken by a vote of the stockholders at an annual or special meeting. Stockholders may not take action by written consent in lieu of a meeting. The inability of stockholders to take action by written consent means that a stockholder would need to wait until the next annual or special meeting to bring business before the stockholders for a vote.
- *Special Meetings of Stockholders.* Special meetings of our stockholders may be called only by our board of directors acting pursuant to a resolution approved by the affirmative vote of a majority of the directors then in office. Only those matters set forth in the notice of the special meeting may be considered or acted upon at a special meeting of our stockholders.
- *Advance Notice Requirements for Stockholder Proposals and Director Nominations.* Our amended and restated by-laws provide advance notice procedures for stockholders seeking to bring business before our annual meeting of stockholders or to nominate candidates for election as directors at our annual meeting of stockholders. These procedures provide that notice must be given in writing not later than the close of business on the 90th day nor earlier than the close of business on the 120th day prior to the first anniversary of the preceding year's annual meeting. These procedures may have the effect of precluding the conduct of certain business at a meeting if the proper procedures are not followed or may discourage or deter a

potential acquirer from conducting a solicitation of proxies to elect its own slate of directors or otherwise attempt to obtain control of us.

- Amendment to *Amended and Restated Certificate of Incorporation and By-laws*. Any amendment, repeal or modification of certain provisions of our amended and restated certificate of incorporation or amended and restated by-laws requires a 75% stockholder vote. Provisions requiring such supermajority vote include, among other things, any amendment, repeal or modification of the provisions relating to the classification of our board of directors, the requirement that stockholder actions be effected at a duly called annual or special meeting of our stockholders and the designated parties entitled to call a special meeting of our stockholders.

### **Section 203 of the DGCL**

We are subject to Section 203 of the DGCL. In general, Section 203 of the DGCL prohibits a publicly held Delaware corporation from engaging in a "business combination" with an "interested stockholder" for a three-year period following the time that this stockholder becomes an interested stockholder, unless it satisfies one of the following conditions:

- the transaction is approved by the board of directors prior to the time that the interested stockholder became an interested stockholder;
- upon consummation of the transaction which resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced; or
- In general, Section 203 defines "business combination" to include the following:
  - at or subsequent to such time that the stockholder became an interested stockholder, the business combination was approved by the board of directors and authorized at an annual or special meeting of stockholders by at least two-thirds of the outstanding voting stock which is not owned by the interested stockholder.
  - any merger or consolidation involving the corporation and the interested stockholder;
  - any sale, lease, exchange, mortgage, pledge, transfer or other disposition of the assets of the corporation with an aggregate market value of 10% or more of either the aggregate market value of all assets of the corporation on a consolidated basis or the aggregate market value of all of the outstanding stock of the corporation involving the interested stockholder;
  - subject to certain exceptions, any transaction that results in the issuance or transfer by the corporation of any stock of the corporation to the interested stockholder;
  - any transaction involving the corporation that has the effect of increasing the proportionate share of the stock or any class or series of the corporation beneficially owned by the interested stockholder; or
  - the receipt by the interested stockholder of the benefit of any loans, advances, guarantees, pledges or other financial benefits by or through the corporation.

In general, Section 203 defines an "interested stockholder" as an entity or person who, together with the stockholder's affiliates and associates (as defined in Section 203), beneficially owns, or within three years prior to the time of determination of interested stockholder status did own, 15% or more of the outstanding voting stock of the corporation.

### **Treatment of Options Upon Change of Control**

In general, under the terms of our Stock Option and Incentive Plans and our executive employment agreements, in the event of certain change in control transactions, if the successor corporation does not assume our

outstanding options or issue replacement awards, or if an option holder's employment is involuntarily terminated in connection with such change in control, the vesting of the options outstanding under such plans will accelerate.

#### **Transfer Agent and Registrar**

The transfer agent and registrar for our Common Stock is American Stock Transfer & Trust Company, LLC. The transfer agent's telephone number is (718) 921-8300.

#### **Stock Exchange Listing**

Our Common Stock is listed on the Nasdaq Capital Market under the symbol YTEN.

#### **PLAN OF DISTRIBUTION**

Pursuant to the Equity Distribution Agreement with Maxim, Maxim has agreed to act as exclusive sales agent in connection with this offering of our Common Stock pursuant to this prospectus supplement and the accompanying prospectus. Maxim is not purchasing or selling any of the shares of our Common Stock offered by this prospectus supplement, nor is it required to arrange the purchase or sale of any specific number or dollar amount of shares of our Common Stock but have agreed to use their reasonable best efforts to arrange for the sale of all of the shares of our Common Stock offered hereby.

Upon delivery of a transaction notice and subject to the terms and conditions of the Equity Distribution Agreement, Maxim may sell shares of our Common Stock by any method permitted by law deemed to be an "at-the-market" equity offering as defined in Rule 415 promulgated under the Securities Act, including sales made directly on or through the Nasdaq Capital Market, the existing trading market for our Common Stock, sales made to or through a market maker other than on an exchange or otherwise, in negotiated transactions at market prices prevailing at the time of sale or at prices related to such prevailing market prices, and/or any other method permitted by law, including in privately negotiated transactions.

We will pay Maxim in cash, upon each sale of shares of our Common Stock pursuant to the Equity Distribution Agreement, a commission equal to 2.75% of the gross proceeds from each sale of shares of our Common Stock. Because there is no minimum offering amount required as a condition to this offering, the actual total public offering amount, commissions and proceeds to us, if any, are not determinable at this time. In addition, we agreed to reimburse Maxim upon request for its costs and out-of-pocket expenses incurred in connection with its services under this offering, including the fees and out-of-pocket expenses of its legal counsel, up to an aggregate of \$40,000. In addition, we agreed to pay Maxim \$2,500 for its legal fees on each quarter for which a bringdown is required. We shall bear and be responsible for all expenses, which are customarily borne by issuers for transactions of the type set forth herein. Notwithstanding the foregoing, in the event that the proposed offering is terminated, postponed or not consummated for any reason, we shall reimburse the actual, accountable costs and expenses incurred by Maxim in connection with its engagement hereunder, including legal fees and out-of-pocket expenses.

Settlement for sales of shares of our Common Stock will occur on the second business day following the date on which any sales are made, or on some other date that is agreed upon by Maxim and us in connection with a particular transaction, in return for payment of the net proceeds to us. There is no arrangement for funds to be received in an escrow, trust or similar arrangement. Sales of shares of our Common Stock as contemplated in this prospectus supplement will be settled through the facilities of The Depository Trust Company or by such other means as we and Maxim may agree upon.

We have agreed to provide indemnification and contribution to Maxim and specified persons against certain civil liabilities, including liabilities under the Securities Act, and the Securities Exchange Act of 1934, as amended, or the Exchange Act, and to contribute to payments that Maxim may be required to make in respect of such liabilities.

Maxim may be deemed to be an underwriter within the meaning of Section 2(a)(11) of the Securities Act, and any commissions received by them and any profit realized on the resale of the shares sold by them while acting as principal might be deemed to be underwriting discounts or commissions under the Securities Act. As an



underwriter, Maxim would be required to comply with the requirements of the Securities Act and the Exchange Act, including, without limitation, Rule 415(a)(4) under the Securities Act and Rule 10b-5 and Regulation M under the Exchange Act. These rules and regulations may limit the timing of purchases and sales of shares by the agent acting as principal. Under these rules and regulations, Maxim:

- may not engage in any stabilization activity in connection with our securities; and
- may not bid for or purchase any of our securities or attempt to induce any person to purchase any of our securities, other than as permitted under the Exchange Act, until it has completed its participation in the distribution.

The offering of shares of our common stock pursuant to the Equity Distribution Agreement will terminate upon the earlier of (i) January 23, 2024, (ii) the sale of all Common Stock provided for in this prospectus supplement, and (iii) the termination of the Equity Distribution Agreement by mutual written agreement of us and Maxim.

Maxim and its affiliates may in the future provide various investment banking, commercial banking and other financial services for us and our affiliates, for which services they may in the future receive customary fees. To the extent required by Regulation M, Maxim will not engage in any market making activities involving our shares of our common stock while the offering is ongoing under this prospectus.

This prospectus supplement and the accompanying prospectus in electronic format may be made available on a website maintained by Maxim and Maxim may distribute this prospectus supplement and the accompanying prospectus electronically.

The foregoing does not purport to be a complete statement of the terms and conditions of the Equity Distribution Agreement. A copy of the Equity Distribution Agreement is included as an exhibit to our Current Report on Form 8-K that will be filed with the SEC and incorporated by reference into the registration statement of which this prospectus supplement and the accompanying base prospectus form a part. See “Incorporation of Documents by Reference” and “Where You Can Find More Information.”

#### **LEGAL MATTERS**

Certain legal matters relating to the issuance of the securities offered by this prospectus supplement will be passed upon for us by Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., Boston, Massachusetts. Pryor Cashman LLP, New York, New York is representing Maxim in this offering.

#### **EXPERTS**

The consolidated financial statements of Yield10 Bioscience, Inc. as of December 31, 2021 and 2020 and for each of the years in the two-year period ended December 31, 2021, incorporated in this prospectus supplement by reference from the Yield10 Bioscience, Inc. Annual Report on Form 10-K for the year ended December 31, 2021 have been audited by RSM US LLP, an independent registered public accounting firm, as stated in their report thereon (which report expresses an unqualified opinion and includes an explanatory paragraph relating to Yield10 Bioscience, Inc.'s ability to continue as a going concern), incorporated herein by reference, and have been incorporated in this prospectus supplement in reliance upon such reports and upon the authority of such firm as experts in accounting and auditing.

#### **WHERE YOU CAN FIND ADDITIONAL INFORMATION**

We file annual, quarterly and other periodic reports, proxy statements and other information with the SEC. You can read our SEC filings over the Internet at the SEC's website at [www.sec.gov](http://www.sec.gov).

Our Internet address is [www.yield10bio.com](http://www.yield10bio.com). There we make available free of charge, on or through the investor relations section of our website, annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to those reports filed pursuant to Section 13(a) or 15(d) of the Exchange Act

as soon as reasonably practicable after we electronically file such material with the SEC. The information found on our website is not part of this prospectus supplement or the accompanying prospectus.

#### INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

We are "incorporating by reference" specific documents that we file with the SEC, which means that we can disclose important information to you by referring you to those documents that are considered part of this prospectus supplement and the accompanying prospectus. Information that we file subsequently with the SEC will automatically update and supersede this information. We incorporate by reference the documents listed below, and any documents that we file with the SEC under Section 13(a), 13(c), 14 or 15(d) of the Exchange Act, after the date of this prospectus supplement until the termination of the offering of all of the securities registered pursuant to the registration statement of which the accompanying prospectus is a part (excluding any portions of such documents that have been "furnished" but not "filed" for purposes of the Exchange Act):

1. our [Annual Report on Form 10-K](#) for the fiscal year ended December 31, 2021;
2. our Quarterly Reports on Form 10-Q for the quarters ended [March 31, 2022](#), [June 30, 2022](#) and [September 30, 2022](#) filed with the SEC on May 11, 2022, August 10, 2022 and November 14, 2022, respectively;
3. our Current Reports on Form 8-K filed with the SEC on [May 26, 2022](#) and [October 5, 2022](#);
4. portions of our Proxy Statement on Schedule 14A, filed with the SEC on [March 29, 2022](#), that are incorporated by reference into Part III of our [Annual Report on Form 10-K](#) for the for the fiscal year ended December 31, 2021; and
5. the description of our common stock contained in Item 1 of our Registration Statement on [Form 8-A](#) filed with the SEC on November 6, 2006, including any amendments or reports filed for purpose of updating the description.

You may request, and we will provide you with, a copy of these filings, at no cost, by calling us at (617) 583-1700 or by writing to us at the following address:

Yield10 Bioscience, Inc.  
19 Presidential Way  
Woburn, MA 01801  
Attn: Lynne Brum

Any statement contained herein or in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for purposes of this prospectus supplement and the accompanying prospectus to the extent that a statement contained herein or therein, in any other subsequently filed document that also is or is deemed to be incorporated by reference herein and in any accompanying prospectus supplement, modifies or supersedes such statement. Any statement so modified or superseded shall not be deemed, except as so modified and superseded, to constitute a part of this prospectus supplement.

Any statement made in this prospectus supplement and the accompanying prospectus concerning the contents of any contract, agreement or other document is only a summary of the actual contract, agreement or other document. If we have filed or incorporated by reference any contract, agreement or other document as an exhibit to the registration statement, you should read the exhibit for a more complete understanding of the document or matter involved. Each statement regarding a contract, agreement or other document is qualified by reference to the actual document.

## PROSPECTUS



**YIELD10 BIOSCIENCE, INC.  
\$100,000,000  
Common Stock  
Preferred Stock  
Warrants  
Subscription Rights  
Units**

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This prospectus relates to common stock, preferred stock, warrants and subscription rights that we may sell from time to time in one or more offerings up to a total public offering price of \$100,000,000 on terms to be determined at the time of sale, which securities may be sold either individually or in units. We will provide specific terms of these securities in supplements to this prospectus. You should read this prospectus and any supplement carefully before you invest. This prospectus may not be used to offer and sell securities unless accompanied by a prospectus supplement for those securities.

Our common stock is traded on The Nasdaq Capital Market under the symbol “YTEN.” On March 26, 2021, the last reported sale price of our common stock was \$12.49 per share.

These securities may be sold directly by us, through dealers or agents designated from time to time, to or through underwriters or through a combination of these methods. See “Plan of Distribution” in this prospectus. We may also describe the plan of distribution for any particular offering of these securities in any applicable prospectus supplement. If any agents, underwriters or dealers are involved in the sale of any securities in respect of which this prospectus is being delivered, we will disclose their names and the nature of our arrangements with them in a prospectus supplement. The net proceeds we expect to receive from any such sale will also be included in a prospectus supplement.

**Investing in our securities involves a high degree of risk. See “Risk Factors” on page 5 of this prospectus. We may include additional risk factors in an applicable prospectus supplement under the heading “Risk Factors.” You should review that section of the prospectus supplement for a discussion of matters that investors in our securities should consider.**

**Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus or any accompanying prospectus supplement. Any representation to the contrary is a criminal offense.**

Our principal executive office is at 19 Presidential Way, Woburn, Massachusetts 01801, and our telephone number is (617) 583-1700. The date of this prospectus is April 2, 2021.

### TABLE OF CONTENTS

ABOUT THIS PROSPECTUS	<a href="#">1</a>
SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS	<a href="#">2</a>
ABOUT YIELD10 BIOSCIENCE, INC.	<a href="#">3</a>

CORPORATE INFORMATION	<a href="#">4</a>
RISK FACTORS	<a href="#">4</a>
USE OF PROCEEDS	<a href="#">5</a>
DESCRIPTION OF CAPITAL STOCK	<a href="#">5</a>
DESCRIPTION OF WARRANTS	<a href="#">7</a>
DESCRIPTION OF SUBSCRIPTION RIGHTS	<a href="#">9</a>
DESCRIPTION OF UNITS	<a href="#">9</a>
PLAN OF DISTRIBUTION	<a href="#">11</a>
LEGAL MATTERS	<a href="#">12</a>
EXPERTS	<a href="#">13</a>
WHERE YOU CAN FIND MORE INFORMATION	<a href="#">13</a>
INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE	<a href="#">13</a>

**YOU SHOULD RELY ONLY ON THE INFORMATION CONTAINED IN THIS PROSPECTUS, ANY PROSPECTUS SUPPLEMENT OR ANY DOCUMENT TO WHICH WE HAVE REFERRED YOU. WE HAVE NOT AUTHORIZED ANYONE ELSE TO PROVIDE YOU WITH INFORMATION THAT IS DIFFERENT. THIS PROSPECTUS AND ANY PROSPECTUS SUPPLEMENT MAY BE USED ONLY WHERE IT IS LEGAL TO SELL THESE SECURITIES. THE INFORMATION IN THIS PROSPECTUS OR ANY PROSPECTUS SUPPLEMENT IS CURRENT ONLY AS OF THE DATE ON THE FRONT OF THESE DOCUMENTS.**



## **ABOUT THIS PROSPECTUS**

This prospectus is part of a registration statement that we filed with the Securities and Exchange Commission, or the SEC, using a “shelf” registration process. Under this shelf process, we may sell any combination of the securities described in this prospectus in one or more offerings up to a total public offering price of \$100,000,000.

This prospectus provides you with a general description of the securities we may offer. Each time we sell securities, we will provide a prospectus supplement that will contain specific information about the securities being offered and the terms of that offering. The prospectus supplement may also add to, update or change information contained in this prospectus. You should read both this prospectus and any prospectus supplement together with the additional information described under the heading “Where You Can Find More Information” carefully before making an investment decision.

Unless the context otherwise requires, in this prospectus, “Yield10,” “the Company,” “we,” “us,” “our” and similar names refer to Yield10 Bioscience, Inc. and its subsidiaries.

## SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and any accompanying prospectus supplement (including any document incorporated by reference herein or therein) contain statements with respect to the Company which constitute “forward-looking statements” within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, and are intended to be covered by the “safe harbor” created by those sections. Forward-looking statements, which are based on certain assumptions and reflect our plans, estimates and beliefs, can generally be identified by the use of forward-looking terms such as “believes,” “expects,” “may,” “will,” “should,” “could,” “seek,” “intends,” “plans,” “estimates,” “anticipates” or other comparable terms. These forward-looking statements include, but are not limited to, statements concerning potential future collaborations and objectives for research and development, product development, and commercialization of current and future products. Our actual results could differ materially from those discussed in the forward-looking statements. Factors that could cause or contribute to these differences include those discussed in “Risk Factors” in any prospectus supplement and in the documents incorporated by reference herein or therein.

We caution readers not to place undue reliance upon any such forward-looking statements, which speak only as of the date they are made. We disclaim any obligation, except as specifically required by law and the rules of the SEC, to publicly update or revise any such statements to reflect any change in company expectations or in events, conditions or circumstances on which any such statements may be based, or that may affect the likelihood that actual results will differ from those set forth in the forward-looking statements.

**You should read this prospectus and any accompanying prospectus supplement and the documents that we reference herein and therein and have filed as exhibits to the registration statement, of which this prospectus is part, completely and with the understanding that our actual future results may be materially different from what we expect. You should assume that the information appearing in this prospectus and any accompanying prospectus supplement is accurate as of the date on the front cover of this prospectus or such prospectus supplement only. Our business, financial condition, results of operations and prospects may change. We may not update these forward-looking statements, even though our situation may change in the future, unless we have obligations under the Federal securities laws to update and disclose material developments related to previously disclosed information. We qualify all of the information presented in this prospectus and any accompanying prospectus supplement, and particularly our forward-looking statements, by these cautionary statements.**

## ABOUT YIELD10 BIOSCIENCE, INC.

### Overview

Yield10 Bioscience, Inc. is an agricultural bioscience company that is using its differentiated trait gene discovery platform, the "Trait Factory", to develop improved Camelina varieties to produce proprietary products, and to produce other high value traits for the agriculture and food industries. Yield10 is headquartered in Woburn, Massachusetts and has an Oilseed Center of Excellence in Saskatoon, Saskatchewan, Canada. Our goals are to efficiently develop and commercialize a high value crop products business by developing superior varieties of Camelina for the production of feedstock oils, nutritional oils, and PHA bioplastics, and to license our yield traits to major seed companies for commercialization in major row crops, including corn, soybean and canola.

*Camelina sativa* (Camelina) is an annual oilseed plant in the mustard family that is native to Europe, and an essential component of our Trait Factory. It has several excellent agronomic traits, including low water and fertilizer input, drought resistance, and a short life cycle, making it suitable as a rotation crop in the U.S. Northwest, and as a relay or cover crop with corn and soybean in the U.S. Midwest. In addition, it produces a relatively abundant harvest of oil-containing protein rich seeds. For approximately ten years, Yield10 has been conducting research in Camelina, identifying and deploying its gene trait discoveries, evaluating the performance of these novel traits in field tests, developing PHA bioplastics in seed, and securing exclusive rights to omega-3 oils technology.

We are beginning to prepare for the commercial launch of our products business based on current Camelina varieties to supply oil and protein meal markets. We anticipate that this will be followed by the launch of two proprietary higher value products, omega-3 (DHA+EPA) oils, which we are developing pursuant to an agreement for technology in development with Rothamsted Research ("Rothamsted"), and PHA bioplastics. We expect the sequential launch of these products to allow us to establish the operating foundation of the commercial products business and to grow revenues and margins based on sales of omega-3 oil products thereby generating sufficient cash flow to fund the commercialization of PHA bioplastics.

We are pursuing the development of elite Camelina germplasm exhibiting herbicide tolerance, disease resistance and other traits that will form a core Camelina germplasm foundation for deploying our product traits to reduce grower costs and increase value. Based on our research and development activities in Camelina, Yield10 has a pipeline of more than 10 novel yield traits currently in research and development. We have agreements in place for a number of our current yield trait gene candidates, including with the Bayer Crop Science division of Bayer AG ("Bayer"), GDM Seeds ("GDM"), Forage Genetics International, LLC, a division of Land O'Lakes, Inc. ("Forage Genetics") and JR Simplot Company ("Simplot"). These companies are currently progressing the development of Yield10 traits in soybean, forage sorghum, and potato. We expect to generate several proof points for our traits in various crops over the next two years and plan to find partners to license our traits for canola, corn and other crops as we generate additional data.

We believe the market opportunity for our Camelina varieties, proprietary products in development, and performance traits is significant. We are targeting uses for our Camelina products in applications such as: oils for animal and human nutrition; feedstock oils for renewable diesel, omega-3 oils for aquaculture, and PHA bioplastics in a range of applications. Leading seed companies are the potential clients for our performance trait innovations in major crops. We believe our value-added product strategy will provide strong differentiation for Yield10's Camelina crop varieties making them preferred by growers to address large product market opportunities as illustrated below:

Each of our product targets is well-aligned with trends in food security, social responsibility, and sustainability, including the need for:

- Low-carbon index feedstocks for renewable diesel biofuel;



- New sources of oil and protein meal for animal feed;
- Nutritional oils for human consumption;
- Land-based omega-3 fatty acid oils to replace diminishing world supplies of fish oil for aquaculture;
- Biobased, biodegradable bioplastics for feed, water treatment and to reduce plastic waste;
- Increasing the organic carbon content of soil in farming; and
- Performance traits to increase yield per acre of major agricultural crops.

## **CORPORATE INFORMATION**

We were incorporated in Massachusetts in June 1992 under the name of Metabolix, Inc. In September 1998, we reincorporated in Delaware. We changed our name to Yield10 Bioscience, Inc. in January 2017 to reflect our change in mission around innovations in agricultural biotechnology focused on developing disruptive technologies for step-change improvements in crop yield and niche crop products. Our corporate headquarters are located at 19 Presidential Way, Woburn, MA 01801, and our telephone number is +1 (617) 583-1700. Our website address is [www.yield10bio.com](http://www.yield10bio.com). The information on our website is not incorporated by reference into this prospectus or any prospectus supplement and should not be considered to be part of this prospectus or any prospectus supplement. Our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as well as reports relating to our securities filed by others pursuant to Section 16 of such act, are available through the investor relations page of our Internet website free of charge as soon as reasonably practicable after we electronically file such material with, or furnish it to, the Securities and Exchange Commission (the "SEC"). The SEC maintains an Internet website that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC. The address of that website is <http://www.sec.gov>.

## **RISK FACTORS**

Investing in our securities involves risk. The prospectus supplement applicable to each type or series of securities we offer will contain a discussion of the risks applicable to an investment in Yield10 and to the particular types of securities that we are offering under that prospectus supplement. Prior to making a decision about investing in our securities, you should carefully consider the specific factors discussed under the heading "Risk Factors" in the applicable prospectus supplement, together with all of the other information contained or incorporated by reference in the prospectus supplement or appearing or incorporated by reference in this prospectus. You should also consider the risks, uncertainties and assumptions discussed under the heading "Risk Factors" included in our most recent annual report on Form 10-K, as revised or supplemented by our most recent quarterly report on Form 10-Q, each of which are on file with the SEC and are incorporated herein by reference, and which may be amended, supplemented or superseded from time to time by other reports we file with the SEC in the future.

## **USE OF PROCEEDS**

We currently intend to use the estimated net proceeds from the sale of these securities for working capital and other general corporate purposes, and possibly acquisitions of other companies, products or technologies. Working capital and other general corporate purposes may include research and development expenditures, capital expenditures, operating and administrative expenditures, and any other purpose that we may specify in any prospectus supplement. While we have no current plans for any specific acquisitions at this time, we believe opportunities may exist from time to time to expand our current business through strategic alliances or acquisitions with other companies, products or technologies. We have not yet determined the amount of net proceeds to be used

specifically for any of the foregoing purposes. Accordingly, our management will have significant discretion and flexibility in applying the net proceeds from the sale of these securities. Pending any use, as described above, we intend to invest the net proceeds in high-quality, short-term, interest-bearing securities. Our plans to use the estimated net proceeds from the sale of these securities may change, and if they do, we will update this information in a prospectus supplement.

## DESCRIPTION OF CAPITAL STOCK

The following description of our common stock and preferred stock, together with the additional information included in any applicable prospectus supplements, summarizes the material terms and provisions of these types of securities but is not complete. For the complete terms of our common stock and preferred stock, please refer to our Amended and Restated Certificate of Incorporation, as amended to date (our “certificate of incorporation”), and our Amended and Restated By-laws (our “by-laws”), each of which is incorporated by reference into the registration statement of which this prospectus is a part and, with respect to any new shares of preferred stock, the certificate of designation which will be filed with the SEC for each new series of preferred stock we may designate, if any.

### General

We will describe in a prospectus supplement the specific terms of any common stock or preferred stock we may offer pursuant to this prospectus. If indicated in a prospectus supplement, the terms of such common stock or preferred stock may differ from the terms described below.

We have 65,000,000 shares of capital stock authorized under our certificate of incorporation, consisting of 60,000,000 shares of common stock, par value \$0.01 per share and 5,000,000 shares of preferred stock, par value \$0.01 per share. The authorized shares of common stock and undesignated preferred stock are available for issuance without further action by our stockholders, unless such action is required by applicable law or the rules of any stock exchange or automated quotation system on which our securities may be listed or traded. If the approval of our stockholders is not so required, our board of directors may determine not to seek stockholder approval.

### Common Stock

As of March 12, 2021, there were 4,865,335 shares of our common stock outstanding held by 38 stockholders of record.

Holders of our common stock are entitled to one vote for each share of common stock held of record for the election of directors and on all matters submitted to a vote of stockholders. Holders of our common stock are entitled to receive dividends ratably, if any, as may be declared by our board of directors out of legally available funds, subject to any preferential dividend rights of any preferred stock then outstanding. Upon our dissolution, liquidation or winding up, holders of our common stock are entitled to share ratably in our net assets legally available after the payment of all our debts and other liabilities, subject to the preferential rights of any preferred stock then outstanding. Holders of our common stock have no preemptive, subscription, redemption or conversion rights. The rights, preferences and privileges of holders of common stock are subject to, and may be adversely affected by, the rights of the holders of shares of any series of preferred stock that we may designate and issue in the future. Except as described below in “Provisions of our Certificate of Incorporation and By-Laws and Delaware Anti-Takeover Law,” a majority vote of common stockholders is generally required to take action under our certificate of incorporation and by-laws.

### Preferred Stock

Our board of directors is authorized, without action by the stockholders, to designate and issue up to an aggregate of 5,000,000 shares of preferred stock in one or more series. The board of directors can fix the rights, preferences and privileges of the shares of each series and any of its qualifications, limitations or restrictions. Our

board of directors may authorize the issuance of preferred stock with voting or conversion rights that could adversely affect the voting power or other rights of the holders of common stock. The issuance of preferred stock, while providing flexibility in connection with possible future financings and acquisitions and other corporate purposes could, under certain circumstances, have the effect of delaying, deferring or preventing a change in control of our company and might harm the market price of our common stock. There are no restrictions on our ability to repurchase or reclaim our preferred shares while there is any arrearage in the payment of dividends on our preferred stock.

Our board of directors will make any determination to issue such shares based on its judgment as to our company's best interests and the best interests of our stockholders.

#### **Provisions of our Certificate of Incorporation and By-Laws and Delaware Anti-Takeover Law**

Our certificate of incorporation and by-laws includes a number of provisions that may have the effect of encouraging persons considering unsolicited tender offers or other unilateral takeover proposals to negotiate with our board of directors rather than pursue non-negotiated takeover attempts. These provisions include the items described below.

*Board Composition and Filling Vacancies.* In accordance with our certificate of incorporation, our board is divided into three classes serving staggered three-year terms, with one class being elected each year. Our certificate of incorporation also provides that directors may be removed only for cause and then only by the affirmative vote of the holders of 75% or more of the shares then entitled to vote at an election of directors. Furthermore, any vacancy on our board of directors, however occurring, including a vacancy resulting from an increase in the size of our board, may only be filled by the affirmative vote of a majority of our directors then in office even if less than a quorum.

*No Written Consent of Stockholders.* Our certificate of incorporation provides that all stockholder actions are required to be taken by a vote of the stockholders at an annual or special meeting, and that stockholders may not take any action by written consent in lieu of a meeting.

*Meetings of Stockholders.* Our by-laws provide that only a majority of the members of our board of directors then in office may call special meetings of stockholders and only those matters set forth in the notice of the special meeting may be considered or acted upon at a special meeting of stockholders. Our by-laws limit the business that may be conducted at an annual meeting of stockholders to those matters properly brought before the meeting.

*Advance Notice Requirements.* Our by-laws establish advance notice procedures with regard to stockholder proposals relating to the nomination of candidates for election as directors or new business to be brought before meetings of our stockholders. These procedures provide that notice of stockholder proposals must be timely given in writing to our corporate secretary prior to the meeting at which the action is to be taken. Generally, to be timely, notice must be received at our principal executive offices not less than 90 days nor more than 120 days prior to the first anniversary date of the annual meeting for the preceding year. The notice must contain certain information specified in the by-laws.

*Amendment to By-Laws and Certificate of Incorporation.* As required by the Delaware General Corporation Law, any amendment of our certificate of incorporation must first be approved by a majority of our board of directors and, if required by law or our certificate of incorporation, thereafter be approved by a majority of the outstanding shares entitled to vote on the amendment, and a majority of the outstanding shares of each class entitled to vote thereon as a class, except that the amendment of the provisions relating to stockholder action, directors, limitation of liability and the amendment of our by-laws and certificate of incorporation must be approved by not less than 75% of the outstanding shares entitled to vote on the amendment, and not less than 75% of the outstanding shares of each class entitled to vote thereon as a class. Our by-laws may be amended by the affirmative vote of a majority of the directors then in office, subject to any limitations set forth in the by-laws; and may also be

amended by the affirmative vote of at least 75% of the outstanding shares entitled to vote on the amendment, or, if the board of directors recommends that the stockholders approve the amendment, by the affirmative vote of the majority of the outstanding shares entitled to vote on the amendment, in each case voting together as a single class.

*Blank Check Preferred Stock.* Our certificate of incorporation provides for 5,000,000 authorized shares of preferred stock. The existence of authorized but unissued shares of preferred stock may enable our board of directors to render more difficult or to discourage an attempt to obtain control of us by means of a merger, tender offer, proxy contest or otherwise. For example, if in the due exercise of its fiduciary obligations, our board of directors were to determine that a takeover proposal is not in the best interests of us or our stockholders, our board of directors could cause shares of preferred stock to be issued without stockholder approval in one or more private offerings or other transactions that might dilute the voting or other rights of the proposed acquirer or insurgent stockholder or stockholder group. In this regard, our certificate of incorporation grants our board of directors broad power to establish the rights and preferences of authorized and unissued shares of preferred stock. The issuance of shares of preferred stock could decrease the amount of earnings and assets available for distribution to holders of shares of common stock. The issuance may also adversely affect the rights and powers, including voting rights, of these holders and may have the effect of delaying, deterring or preventing a change in control of us.

## DESCRIPTION OF WARRANTS

We may issue warrants for the purchase of preferred stock or common stock. Warrants may be issued independently or together with preferred stock or common stock and may be attached to or separate from any offered securities. Each series of warrants will be issued under a separate warrant agreement to be entered into between us and a warrant agent. The warrant agent will act solely as our agent in connection with the warrants and will not assume any obligation or relationship of agency or trust for or with any registered holders of warrants or beneficial owners of warrants. This summary of some provisions of the warrants is not complete. You should refer to the warrant agreement, including the forms of warrant certificate representing the warrants, relating to the specific warrants being offered for the complete terms of the warrant agreement and the warrants. That warrant agreement, together with the terms of the warrant certificate and warrants, will be filed with the SEC in connection with the offering of the specific warrants.

The particular terms of any issue of warrants will be described in the prospectus supplement relating to the issue. Those terms may include:

- the title of such warrants;
- the aggregate number of such warrants;
- the price or prices at which such warrants will be issued;
- the terms of the securities purchasable upon exercise of such warrants and the procedures and conditions relating to the exercise of such warrants;
- the price at which the securities purchasable upon exercise of such warrants may be purchased;
- the date on which the right to exercise such warrants will commence and the date on which such right shall expire;
- any provisions for adjustment of the number or amount of securities receivable upon exercise of the warrants or the exercise price of the warrants;
- if applicable, the minimum or maximum amount of such warrants that may be exercised at any one time;

- if applicable, the designation and terms of the securities with which such warrants are issued and the number of such warrants issued with each such security;
- if applicable, the date on and after which such warrants and the related securities will be separately transferable;
- information with respect to book-entry procedures, if any; and
- any other terms of such warrants, including terms, procedures and limitations relating to the exchange or exercise of such warrants.

The prospectus supplement relating to any warrants to purchase equity securities may also include, if applicable, a discussion of certain U.S. federal income tax considerations.

Warrants for the purchase of preferred stock and common stock will be offered and exercisable for U.S. dollars only. Securities warrants will be issued in registered form only.

Each warrant will entitle its holder to purchase the number of shares of preferred stock or common stock at the exercise price set forth in, or calculable as set forth in, the applicable prospectus supplement.

After the close of business on the expiration date, unexercised warrants will become void. We will specify the place or places where, and the manner in which, warrants may be exercised in the applicable prospectus supplement.

Upon receipt of payment and the warrant certificate properly completed and duly executed at the corporate trust office of the warrant agent or any other office indicated in the applicable prospectus supplement, we will, as soon as practicable, forward the purchased securities. If less than all of the warrants represented by the warrant certificate are exercised, a new warrant certificate will be issued for the remaining warrants.

Prior to the exercise of any warrants to purchase preferred stock or common stock, holders of the warrants will not have any of the rights of holders of preferred stock or common stock purchasable upon exercise, including the right to vote or to receive any payments of dividends on the preferred stock or common stock purchasable upon exercise.

#### **DESCRIPTION OF SUBSCRIPTION RIGHTS**

The following is a general description of the terms of the subscription rights we may issue from time to time. Particular terms of any subscription rights we offer will be described in the prospectus supplement or free writing prospectus relating to such subscription rights, and may differ from the terms described herein.

We may issue subscription rights to purchase our securities. These subscription rights may be issued independently or together with any other security offered hereby and may or may not be transferable by the stockholder receiving the subscription rights in such offering. In connection with any offering of subscription rights, we may enter into a standby arrangement with one or more underwriters or other purchasers pursuant to which the underwriters or other purchasers may be required to purchase any securities remaining unsubscribed for after such offering.

The applicable prospectus supplement will describe the specific terms of any offering of subscription rights for which this prospectus is being delivered, including the following:

- whether common stock, preferred stock, or warrants for those securities will be offered under the stockholder subscription rights;
- the price, if any, for the subscription rights;

- the exercise price payable for each security upon the exercise of the subscription rights;
- the number of subscription rights issued to each stockholder;
- the number and terms of the securities which may be purchased per each subscription right;
- the extent to which the subscription rights are transferable;
- any other terms of the subscription rights, including the terms, procedures and limitations relating to the exchange and exercise of the subscription rights;
- the date on which the right to exercise the subscription rights shall commence, and the date on which the subscription rights shall expire;
- the extent to which the subscription rights may include an over-subscription privilege with respect to unsubscribed securities;
- if appropriate, a discussion of material U.S. federal income tax considerations; and
- if applicable, the material terms of any standby underwriting or purchase arrangement entered into by us in connection with the offering of subscription rights.

The description in the applicable prospectus supplement of any subscription rights we offer will not necessarily be complete and will be qualified in its entirety by reference to the applicable subscription rights certificate or subscription rights agreement, which will be filed with the SEC if we offer subscription rights.

### **DESCRIPTION OF UNITS**

The following description, together with the additional information that we include in any applicable prospectus supplements, summarizes the material terms and provisions of the units that we may offer under this prospectus. While the terms we have summarized below will apply generally to any units that we may offer under this prospectus, we will describe the particular terms of any series of units in more detail in the applicable prospectus supplement. The terms of any units offered under a prospectus supplement may differ from the terms described below.

We will incorporate by reference from reports that we file with the SEC, the form of unit agreement that describes the terms of the series of units we are offering, and any supplemental agreements, before the issuance of the related series of units. The following summaries of material terms and provisions of the units are subject to, and qualified in their entirety by reference to, all the provisions of the unit agreement and any supplemental agreements applicable to a particular series of units. We urge you to read the applicable prospectus supplements related to the particular series of units that we may offer under this prospectus, as well as any related free writing prospectuses and the complete unit agreement and any supplemental agreements that contain the terms of the units.

#### ***General***

We may issue units consisting of common stock, preferred stock, warrants, rights or purchase contracts for the purchase of common stock or preferred stock in one or more series, in any combination. Each unit will be issued so that the holder of the unit is also the holder of each security included in the unit. Thus, the holder of a unit will have the rights and obligations of a holder of each security included in the unit. The unit agreement under which a unit is issued may provide that the securities included in the unit may not be held or transferred separately, at any time or at any time before a specified date.

We will describe in the applicable prospectus supplement the terms of the series of units being offered, including:

- the designation and terms of the units and of the securities comprising the units, including whether and under what circumstances those securities may be held or transferred separately;
- any provisions of the governing unit agreement that differ from those described below; and
- any provisions for the issuance, payment, settlement, transfer or exchange of the units or of the securities comprising the units.

The provisions described in this section, as well as those set forth in any prospectus supplement or as described under “Description of Common Stock,” “Description of Preferred Stock,” “Description of Warrants,” “Description of Rights” and “Description of Purchase Contracts” will apply to each unit, as applicable, and to any common stock, preferred stock, warrant, right or purchase contract included in each unit, as applicable.

#### ***Unit Agent***

The name and address of the unit agent for any units we offer will be set forth in the applicable prospectus supplement.

#### ***Issuance in Series***

We may issue units in such amounts and in such numerous distinct series as we determine.

#### ***Enforceability of Rights by Holders of Units***

Each unit agent will act solely as our agent under the applicable unit agreement and will not assume any obligation or relationship of agency or trust with any holder of any unit. A single bank or trust company may act as unit agent for more than one series of units. A unit agent will have no duty or responsibility in case of any default by us under the applicable unit agreement or unit, including any duty or responsibility to initiate any proceedings at law or otherwise, or to make any demand upon us. Any holder of a unit may, without the consent of the related unit agent or the holder of any other unit, enforce by appropriate legal action its rights as holder under any security included in the unit.

### **PLAN OF DISTRIBUTION**

We may sell the securities being offered pursuant to this prospectus directly to purchasers, to or through underwriters, through dealers or agents, or through a combination of such methods. The prospectus supplement with respect to the securities being offered will set forth the terms of the offering of those securities, including the names of the underwriters, dealers or agents, if any, the purchase price, the net proceeds to us, any underwriting discounts and other items constituting underwriters’ compensation, the public offering price, any discounts or concessions allowed or reallocated or paid to dealers and any securities exchanges on which such securities may be listed.

If underwriters are used in an offering, we will execute an underwriting agreement with such underwriters and will specify the name of each underwriter and the terms of the transaction (including any underwriting discounts and other terms constituting compensation of the underwriters and any dealers) in a prospectus supplement. The securities may be offered to the public either through underwriting syndicates represented by managing underwriters or directly by one or more investment banking firms or others, as designated. If an underwriting syndicate is used, the managing underwriter(s) will be specified on the cover of the prospectus supplement. If underwriters are used in the sale, the offered securities will be acquired by the underwriters for their own accounts and may be resold from time to time in one or more transactions, including negotiated transactions, at a fixed public offering price or at

varying prices determined at the time of sale. Any public offering price and any discounts or concessions allowed or reallocated or paid to dealers may be changed from time to time. Unless otherwise set forth in the prospectus supplement, the obligations of the underwriters to purchase the offered securities will be subject to conditions precedent and the underwriters will be obligated to purchase all of the offered securities if any are purchased.

We may grant to the underwriters options to purchase additional securities to cover over-allotments, if any, at the public offering price, with additional underwriting commissions or discounts, as may be set forth in a related prospectus supplement. The terms of any over-allotment option will be set forth in the prospectus supplement for those securities.

If any underwriters are involved in the offer and sale, they will be permitted to engage in transactions that maintain or otherwise affect the price of the securities. These transactions may include over-allotment transactions, purchases to cover short positions created by the underwriter in connection with the offering and the imposition of penalty bids. If an underwriter creates a short position in the securities in connection with the offering by selling more securities than set forth on the cover page of the applicable prospectus supplement, the underwriter may reduce that short position by purchasing the securities in the open market. In general, purchases of a security to reduce a short position could cause the price of the security to be higher than it might be in the absence of such purchases. As noted above, underwriters may also choose to impose penalty bids on other underwriters and/or selling group members. This means that if underwriters purchase securities on the open market to reduce their short position or to stabilize the price of the securities, they may reclaim the amount of the selling concession from those underwriters and/or selling group members who sold such securities as part of the offering.

Neither we nor any underwriter make any representation or prediction as to the direction or magnitude of any effect that the transactions described above may have on the price of such securities. In addition, neither we nor any underwriter make any representation that such underwriter will engage in such transactions or that such transactions, once commenced, will not be discontinued without notice.

If dealers are used in an offering, we will sell the securities to the dealers as principals. The dealers then may resell the securities to the public at varying prices, which they determine at the time of resale. The names of the dealers and the terms of the transaction will be specified in a prospectus supplement.

The securities may be sold directly by us or through agents we designate from time to time at a fixed price or prices, which may be changed, or at varying prices determined at the time of sale, such as in an at-the-market offering or arrangement. If agents are used in an offering, the names of the agents and the terms of the agency will be specified in a prospectus supplement. Unless otherwise indicated in a prospectus supplement, the agents will act on a best-efforts basis for the period of their appointment.

Dealers and agents named in a prospectus supplement may be deemed to be underwriters (within the meaning of the Securities Act of 1933, as amended, also referred to in this prospectus as the "Securities Act") of the securities described therein. In addition, we may sell the securities directly to institutional investors or others who may be deemed to be underwriters within the meaning of the Securities Act with respect to any resales thereof.

Underwriters, dealers and agents may be entitled to indemnification by us against specific civil liabilities, including liabilities under the Securities Act, or to contribution with respect to payments which the underwriters or agents may be required to make in respect thereof, under underwriting or other agreements. The terms of any indemnification provisions will be set forth in a prospectus supplement. Certain underwriters, dealers or agents and their associates may engage in transactions with and perform services for us in the ordinary course of business.

If so indicated in a prospectus supplement, we will authorize underwriters or other persons acting as our agents to solicit offers by institutional investors to purchase securities pursuant to contracts providing for payment and delivery on a future date. We may enter into contracts with commercial and savings banks, insurance companies, pension funds, investment companies, educational and charitable institutions and other institutional



investors. The obligations of any institutional investor will be subject to the condition that its purchase of the offered securities will not be illegal at the time of delivery. The underwriters and other agents will not be responsible for the validity or performance of such contracts.

Direct sales to investors or our stockholders may be accomplished through subscription offerings or through subscription rights distributed to stockholders. In connection with subscription offerings or the distribution of subscription rights to stockholders, if all of the underlying securities are not subscribed for, we may sell any unsubscribed securities to third parties directly or through underwriters or agents. In addition, whether or not all of the underlying securities are subscribed for, we may concurrently offer additional securities to third parties directly or through underwriters or agents. If securities are to be sold through subscription rights, the subscription rights will be distributed as a dividend to the stockholders for which they will pay no separate consideration.

Any common stock sold pursuant to a prospectus supplement will be eligible for quotation and trading on Nasdaq, subject to official notice of issuance. Any underwriters to whom securities are sold by us for public offering and sale may make a market in the securities, but such underwriters will not be obligated to do so and may discontinue any market making at any time without notice.

In order to comply with the securities laws of some states, if applicable, the securities offered hereby will be sold in those jurisdictions only through registered or licensed brokers or dealers. In addition, in some states securities may not be sold unless they have been registered or qualified for sale in the applicable state or an exemption from the registration or qualification requirement is available and complied with.

### **LEGAL MATTERS**

The validity of the securities offered hereby will be passed upon for us by Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., Boston, Massachusetts. If the securities are being distributed in an underwritten offering, certain legal matters will be passed upon for the underwriters by counsel identified in the applicable prospectus supplement.

### **EXPERTS**

The consolidated financial statements of Yield10 Bioscience, Inc. as of December 31, 2020 and 2019, and for each of the years in the two-year period ended December 31, 2020 incorporated in this Prospectus by reference to the Yield10 Bioscience, Inc.'s annual report on Form 10-K filed on March 16, 2021 have been audited by RSM US LLP, an independent registered public accounting firm, as stated in their report incorporated herein by reference, and have been incorporated in this Registration Statement in reliance upon such report and upon the authority of such firm as experts in accounting and auditing.

### **WHERE YOU CAN FIND MORE INFORMATION**

We are a public company and file annual, quarterly and current reports, proxy statements and other information with the Securities and Exchange Commission. The SEC maintains an Internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC. Our SEC filings are also available to the public on the SEC's website at <http://www.sec.gov>, or on our website at <http://www.yield10bio.com/> under the "Investors" link. Information contained on our website is not part of this prospectus.

This prospectus is only part of a Registration Statement on Form S-3 that we have filed with the SEC under the Securities Act, and therefore omits certain information contained in the Registration Statement. We have also filed exhibits with the Registration Statement that are excluded from this prospectus, and you should refer to the applicable exhibit for a complete description of any statement referring to any contract or other document. You may:

- inspect a copy of this prospectus, including the exhibits and schedules, without charge at the public reference room;
- obtain a copy of this prospectus from the SEC upon payment of the fees prescribed by the SEC; or
- obtain a copy of this prospectus from the SEC website.

#### **INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE**

The SEC allows us to “incorporate by reference” information from other documents that we file with them, which means that we can disclose important information in this prospectus by referring to those documents. The information incorporated by reference is considered to be part of this prospectus, and information that we file later with the SEC will automatically update and supersede the information in this prospectus. We incorporate by reference the documents listed below and any future filings made with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended. The documents we are incorporating by reference as of their respective dates of filing are:

- Our [Annual Report on Form 10-K for the fiscal year ended December 31, 2020](#), filed with the SEC on March 16, 2021; and
- Definitive Proxy Statement on Schedule 14A for the annual meeting of our stockholders to be held on May 24, 2021, filed with the SEC on [March 29, 2021](#);
- Current Reports on Form 8-K filed on [January 19, 2021](#) and [February 2, 2021](#); and
- The description of our common stock contained in Item 1 of our [Registration Statement on Form 8-A filed with the SEC on November 6, 2006](#), including any amendments or reports filed for the purpose of updating the description.

All documents and reports filed by us with the SEC pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act (other than Current Reports on Form 8-K containing only information furnished under Item 2.02 or Item 7.01 of Form 8-K, unless otherwise indicated therein) after the date of this prospectus and prior to the termination of the offering made hereby shall be deemed to be incorporated by reference into this prospectus and to be a part hereof from the date of filing of such documents. Any statement contained in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained herein or in any other subsequently filed document which also is or is deemed to be incorporated by reference herein or in any prospectus supplement modifies or supersedes such statement. Any statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this prospectus.

We will provide, without charge to each person, including any beneficial owner, to whom this prospectus is delivered, upon written or oral request of such person, a copy of any or all of the documents incorporated herein by reference other than exhibits, unless such exhibits are specifically incorporated by reference into such documents or this document. Requests for such documents should be addressed in writing or by telephone to:

Investor Relations  
Yield10 Bioscience, Inc.  
19 Presidential Way  
Woburn, Massachusetts 01801  
(617) 583-1700

You should rely only on the information contained in this prospectus, any prospectus supplement or any document to which we have referred you. We have not authorized anyone else to provide you with information that

is different. This prospectus and any prospectus supplement may be used only where it is legal to sell these securities. The information in this prospectus or any prospectus supplement is current only as of the date on the front of these documents.



**Up to \$4,200,000  
Common Stock**

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**PROSPECTUS SUPPLEMENT**

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**Maxim Group LLC**

**January 23, 2023**