

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

SCHEDULE 14A

Proxy Statement Pursuant to Section 14(a) of the Securities Exchange Act of 1934
(Amendment No.)

Filed by the Registrant X
Filed by a Party other than the Registrant

Check the appropriate box:

- Preliminary Proxy Statement
- Confidential, for Use of the Commission Only (as permitted by Rule 14a-6(e)(2))
- X Definitive Proxy Statement
- Definitive Additional Materials
- Soliciting Material Under Rule 14a-12

Yield10 Bioscience, Inc.

(Name of Registrant as Specified In Its Charter)

(Name of Person(s) Filing Proxy Statement, if other than the Registrant)

Payment of Filing Fee (Check the appropriate box):

- X No fee required.
 - Fee computed on table below per Exchange Act Rules 14a-6(i)(1) and 0-11.
 - 1) Title of each class of securities to which transaction applies:
 - 2) Aggregate number of securities to which transaction applies:
 - 3) Per unit price or other underlying value of transaction computed pursuant to Exchange Act Rule 0-11 (set forth the amount on which the filing fee is calculated and state how it was determined):
 - 4) Proposed maximum aggregate value of transaction:
 - 5) Total fee paid:
 - Fee paid previously with preliminary materials.
 - Check box if any part of the fee is offset as provided by Exchange Act Rule 0-11(a)(2) and identify the filing for which the offsetting fee was paid previously. Identify the previous filing by registration statement number, or the Form or Schedule and the date of its filing:
 - 1) Amount previously paid:
 - 2) Form, Schedule or Registration Statement No:
 - 3) Filing party:
 - 4) Date Filed:
-



December 4, 2019

Dear Stockholder:

You are cordially invited to attend a special meeting (the "Special Meeting") of stockholders of Yield10 Bioscience, Inc. (the "Company"), to be held at 9:00 a.m. Eastern Time on January 9, 2020, at the offices of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., One Financial Center, Boston, Massachusetts 02111. Directions to the location of the Special Meeting can be found at <http://ir.yield10bio.com/investor-relations>.

Details regarding the Special Meeting, the business to be conducted at the Special Meeting, and information about the Company that you should consider when you vote your shares are described in this proxy statement. You may obtain additional information about the Company from documents we file with the Securities and Exchange Commission.

At the Special Meeting, we will ask stockholders to approve:

1. A proposed amendment to the Yield10 Bioscience, Inc. Amended and Restated Certificate of Incorporation, as amended, to effect a reverse stock split of our issued and outstanding shares of common stock, at a ratio of between 1-for-20 and 1-for-50 ("Proposal 1"); and
2. The potential issuance of more than 2,500,948 shares of common stock upon the conversion of shares of our Series B Convertible Preferred Stock and the exercise of warrants to purchase our common stock, all of which were issued pursuant to the Company's private placement that closed on November 19, 2019, as required by and in accordance with Nasdaq Marketplace Rule 5635(d) ("Proposal 2").

The Board of Directors recommends that you vote "FOR" each of these proposals.

We hope you will be able to attend the Special Meeting. Whether or not you plan to attend the Special Meeting, we urge you to complete, sign, date and mail promptly the enclosed proxy which is being solicited on behalf of the Board of Directors so that your shares will be represented at the Special Meeting. A return envelope, which requires no postage if mailed in the United States, is enclosed for that purpose. You need to vote in accordance with the instructions listed on the proxy card. If shares are held in a bank or brokerage account, you may be eligible to vote electronically or by telephone. Please refer to the enclosed voting instruction form for instructions. If you attend the Special Meeting, you may vote in person even if you have previously returned your proxy card. Your prompt cooperation will be greatly appreciated.

Sincerely,

/s/ Oliver P. Peoples

Oliver P. Peoples

President and Chief Executive Officer

YIELD10 BIOSCIENCE, INC.

**19 Presidential Way
Woburn, Massachusetts 01801
(617) 583-1700**

NOTICE OF SPECIAL MEETING OF STOCKHOLDERS

TIME: 9:00 a.m. Eastern Time

DATE: January 9, 2020

PLACE: Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., One Financial Center, Boston, Massachusetts 02111

PURPOSE: To approve:

1. A proposed amendment to the Yield10 Bioscience, Inc. Amended and Restated Certificate of Incorporation, as amended, to effect a reverse stock split of our issued and outstanding shares of common stock, at a ratio of between 1-for-20 and 1-for-50 ("Proposal 1"); and
2. The potential issuance of more than 2,500,948 shares of common stock upon the conversion of shares of our Series B Convertible Preferred Stock and the exercise of warrants to purchase our common stock, all of which were issued pursuant to the Company's private placement that closed on November 19, 2019, as required by and in accordance with Nasdaq Marketplace Rule 5635(d) ("Proposal 2").

WHO MAY VOTE:

Only stockholders of record at the close of business on November 15, 2019, are entitled to notice of and to vote at the Special Meeting and at any adjournment or postponement thereof.

All stockholders are cordially invited to attend the Special Meeting in person. **However, to assure your representation at the Special Meeting, we urge you, whether or not you plan to attend the Special Meeting, to complete, sign, date and mail promptly the enclosed proxy card, which is being solicited on behalf of the Board of Directors so that your shares will be represented at the Special Meeting.** A return envelope which requires no postage if mailed in the United States is enclosed for that purpose. You need to vote in accordance with the instructions listed on the proxy card. If shares are held in a bank or brokerage account, you may be eligible to vote electronically or by telephone. Please refer to the enclosed voting instruction form for instructions. If you attend the Special Meeting, you may vote in person even if you have previously returned your proxy card.

BY ORDER OF THE BOARD OF DIRECTORS

/s/ Lynne H. Brum

Lynne H. Brum

Secretary

WHETHER OR NOT YOU EXPECT TO ATTEND THE SPECIAL MEETING, PLEASE COMPLETE, SIGN, DATE AND MAIL PROMPTLY THE ENCLOSED PROXY CARD WHICH IS BEING SOLICITED ON BEHALF OF THE BOARD OF DIRECTORS SO THAT YOUR SHARES WILL BE REPRESENTED AT THE SPECIAL MEETING. A RETURN ENVELOPE, WHICH REQUIRES NO POSTAGE IF MAILED IN THE UNITED STATES, IS ENCLOSED FOR THAT PURPOSE. YOU NEED TO VOTE IN ACCORDANCE WITH THE INSTRUCTIONS LISTED ON THE PROXY CARD. IF SHARES ARE HELD IN A BANK OR BROKERAGE ACCOUNT, YOU MAY

BE ELIGIBLE TO VOTE ELECTRONICALLY OR BY TELEPHONE. PLEASE REFER TO THE ENCLOSED VOTING INSTRUCTION FORM FOR INSTRUCTIONS.

IN ACCORDANCE WITH OUR SECURITY PROCEDURES, ALL PERSONS ATTENDING THE SPECIAL MEETING MAY BE REQUIRED TO PRESENT PICTURE IDENTIFICATION.

**YIELD10 BIOSCIENCE, INC.
19 Presidential Way
Woburn, Massachusetts 01801**

**PROXY STATEMENT FOR THE YIELD10 BIOSCIENCE, INC.
SPECIAL MEETING OF STOCKHOLDERS TO BE HELD ON JANUARY 9, 2020**

This proxy statement, along with the accompanying Notice of the Special Meeting of Stockholders, contains information about the Special Meeting of Stockholders of Yield10 Bioscience, Inc., including any adjournments or postponements thereof (the “Special Meeting”). We are holding the Special Meeting at 9:00 a.m. Eastern Time, on January 9, 2020, at the offices of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., One Financial Center, Boston, Massachusetts 02111.

In this proxy statement, we refer to Yield10 Bioscience, Inc. as “**Yield10**,” “**Yield10 Bioscience**,” “**the Company**,” “**we**” and “**us**.”

This proxy statement relates to the solicitation of proxies by our Board of Directors for use at the Special Meeting.

On or about December 12, 2019, we intend to begin sending this proxy statement, the attached Notice of Special Meeting of Stockholders and the enclosed proxy card to all stockholders entitled to vote at the Special Meeting.

YIELD10 BIOSCIENCE, INC.

**19 Presidential Way
Woburn, Massachusetts 01801**

PROXY STATEMENT

For a Special Meeting of Stockholders

To Be Held on January 9, 2020

Proxies in the form enclosed with this proxy statement are solicited by the Board of Directors of Yield10 Bioscience, Inc., a Delaware corporation (“Yield10” or the “Company”), for use at the Special Meeting of Stockholders of Yield10 to be held on January 9, 2020, at 9:00 a.m., Eastern Time, or at any adjournments or postponements thereof (the “Special Meeting”) at the offices of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., One Financial Center, Boston, MA 02111. Directions to the location of the Special Meeting are available at <http://ir.yield10bio.com/investor-relations>.

The purpose of the Special Meeting is to ask stockholders to approve:

1. A proposed amendment to the Yield10 Bioscience, Inc. Amended and Restated Certificate of Incorporation, as amended (the “Certificate of Incorporation”) to effect a reverse stock split of our issued and outstanding shares of common stock, at a ratio of between 1-for-20 and 1-for-50 (“Proposal 1”); and
2. The potential issuance of more than 2,500,948 shares of our common stock upon the conversion of shares of our Series B Convertible Preferred Stock (the “Series B Preferred Stock”) and the exercise of warrants to purchase our common stock, all of which were issued pursuant to or in connection with the Company’s private placement that closed on November 19, 2019, as required by and in accordance with Nasdaq Marketplace Rule 5635(d) (“Proposal 2”).

Only stockholders of record at the close of business on November 15, 2019 (the “Record Date”) will be entitled to receive notice of and to vote at the Special Meeting. As of the Record Date, 12,567,582 shares of common stock were issued, outstanding and entitled to vote.

VOTING AND OTHER INFORMATION

The holders of common stock are entitled to one vote per share on any proposal to be presented at the Special Meeting. Stockholders may vote in person or by proxy. Stockholders may vote by proxy by completing, signing, dating and returning the accompanying proxy card in the prepaid postage envelope enclosed for that purpose in accordance with the instructions listed on the proxy card. Execution of a proxy will not in any way affect a stockholder’s right to attend the Special Meeting and vote in person.

Any proxy given pursuant to this solicitation may be revoked by the person giving it any time before the taking of the vote at the Special Meeting. Proxies may be revoked by (1) filing with the Secretary of Yield10, before the taking of the vote at the Special Meeting, a written notice of revocation bearing a later date than the proxy, (2) duly executing a later-dated proxy relating to the same shares and delivering it to the Secretary of Yield10, in accordance with the instructions listed on the proxy card, before the taking of the vote at the Special Meeting, (3) if shares are held in a bank or brokerage account and if eligible, by transmitting a subsequent vote over the Internet or by telephone, or (4) attending the Special Meeting and voting in person (although attendance at the Special Meeting will not in and of itself constitute a revocation of a proxy). Any written notice of revocation or subsequent proxy should be sent to Yield10 Bioscience, Inc., 19 Presidential Way, Woburn, MA 01801, Attention: Secretary, so as to be delivered before the taking of the vote at the Special Meeting.

If your shares are registered in your name with our transfer agent, American Stock Transfer, or if you have stock certificates, they will not be counted if you do not vote as described above. If your shares are held by a broker on your behalf (that is, in “street name”), you may be required to present an account statement or letter from your bank or brokerage firm showing that you are the beneficial owner of the shares as of the Record Date in order to be admitted to the Special Meeting. To be able to vote your shares held in street name at the Special Meeting, you will need to obtain a proxy from the holder of record.

The persons named as attorneys-in-fact in the proxies, Oliver P. Peoples and Charles B. Haaser, were selected by the Board of Directors and are officers of the Company. All properly executed proxies returned in time to be counted at the Special Meeting will be voted by such persons at the Special Meeting as stated below. When a choice has been specified on the proxy with respect to a matter, the shares represented by the proxy will be voted in accordance with the specifications. If a proxy is submitted without giving voting instructions, such shares will be voted in accordance with the Board of Directors’ recommendation as noted below.

The Board of Directors recommends that you vote “FOR” each of Proposal 1 and Proposal 2.

The representation in person or by proxy of at least a majority of the outstanding shares of common stock entitled to vote at the Special Meeting is necessary to constitute a quorum for the transaction of business. Abstentions are counted as present or represented for purposes of determining the presence or absence of a quorum for the Special Meeting, and will count as “against” votes with respect to Proposal No. 1. They will have no effect with respect to Proposal No. 2.

If your shares are held in street name, and you do not instruct the broker as to how to vote your shares on Proposal 2, the broker will not have discretion to vote for or against such proposal. This would be a broker “non-vote”, although such broker non-vote will have no effect on the results of the vote. **Please vote your proxy so your vote can be counted.** Brokers will have discretion to vote for or against Proposal 1. However, if a broker chooses not to exercise that discretion, such shares will be considered broker non-votes and will count as votes against the proposal.

Why is the Company seeking approval for these proposals?

Proposal 1. Reverse Stock Split. On June 25, 2019, we received a notification letter from the Listing Qualifications Department of The Nasdaq Stock Market (“Nasdaq”) informing us that for the prior 30 consecutive business days, the bid price of our securities had closed below \$1.00 per share as required by Nasdaq Listing Rule 5550(a)(2). This notice has no immediate effect on our Nasdaq listing, and we have 180 calendar days, or until December 23, 2019, to regain compliance. As of December 3, 2019, we had not regained compliance since the closing bid price of our securities was not at least \$1.00 per share for a minimum of ten consecutive business days. To cure the deficiency, we intend to conduct the reverse stock split of our common stock for which we are seeking stockholder approval in this proxy statement. On December 3, 2019, the closing price of our common stock as reported on Nasdaq was \$0.15 per share.

The Board of Directors has approved the reverse stock split as a potential means of increasing the share price of our common stock, and may choose to implement it if other options are unavailable, undesirable or insufficient. Our Board of Directors believes that maintaining our listing on Nasdaq may provide a broader market for our common stock and facilitate the use of our common stock in financing and other transactions. We expect the reverse stock split, if effected, to facilitate the continuation of such listing. We cannot assure you, however, that the reverse stock split, if effected, will result in an increase in the per share price of our common stock, or if it does, how long the increase would be sustained, if at all. Although the reverse stock split is designed to raise the stock price, there is no guarantee that the share price will rise proportionately to the reverse stock split, so the end result could be a loss of value.

In addition, on November 19, 2019, we completed a registered public offering (the “Public Offering”) and a concurrent private placement (the “Private Placement”) and together with the Public Offering, the “Offering”), pursuant to which the Company issued and sold warrants to purchase shares of our common stock and shares of Series B convertible preferred stock, par value \$0.01 per share (“Series B Preferred Stock”), which is convertible into shares of common stock, in addition to other securities. We currently have 60,000,000 authorized shares of common stock, which is not sufficient to allow the full conversion into common stock of the warrants and shares of Series B Preferred Stock issued in the Offering. Accordingly, the approval of the reverse stock split, which will result in a lower number of issued

and outstanding shares as compared to the number of our authorized shares, is required to allow for the conversion of the Series B Preferred Stock and the exercise of the warrants issued in the Offering.

If our stockholders approve Proposal 1, the Board of Directors in its sole discretion will determine whether to effect the reverse stock split, no later than six months after the date of the Special Meeting. For more information, see “Proposal 1” contained elsewhere in this proxy statement.

Proposal 2. Private Placement Proposal. Our common stock is listed on Nasdaq, and as such we are subject to the Nasdaq listing rules. Nasdaq Marketplace Rule 5635(d) requires us to obtain stockholder approval in connection with a transaction other than a public offering involving the sale, issuance or potential issuance by us of additional shares of common stock (or securities convertible into or exchangeable for common stock) equal to 20% or more of the common stock outstanding before the issuance, for a price that is less than the lower of (i) the closing price (as reflected on Nasdaq.com) immediately preceding the signing of the binding agreement for the transaction; or (ii) the average closing price of the common stock (as reflected on Nasdaq.com) for the five trading days immediately preceding the signing of the binding agreement for the transaction.

On November 19, 2019, we issued and sold shares of our Series B Preferred Stock, which is convertible into shares of common stock, and warrants to purchase shares of common stock to our largest shareholder, Jack W. Schuler, and related entities, each of which is an accredited investor, in a private placement (the “Private Placement”). If Proposal 2 is not approved, we will not be able to issue the full amount of shares of common stock upon conversion of the Series B Preferred Stock and exercise of the warrants sold pursuant to the Private Placement. The investors who participated in the Private Placement will be unable to convert their Series B Preferred Stock or exercise their warrants for a number of shares in excess of an aggregate of 19.99% of the shares of our common stock issued and outstanding before the Private Placement. If we are unable to fulfill our obligations to the investors under the Private Placement, it is likely that these investors and other potential investors would be unwilling to participate in any non-public capital raising efforts involving our securities in the future, which would have an unfavorable impact on our capital raising efforts. In addition, if the shares of Series B Preferred Stock remain outstanding on March 31, 2020, we will be obligated to start paying a dividend on such shares in the form of additional shares of Series B Preferred Stock. For more information, see “Proposal 2” contained later in this proxy statement.

What are the costs of soliciting these proxies?

We will pay all of the costs of soliciting these proxies. In addition, our directors and employees may solicit proxies in person or by telephone or email. We will pay these employees and directors no additional compensation for these services. We will ask banks, brokers and other institutions, nominees and fiduciaries to forward these proxy materials to their principals and to obtain authority to execute proxies. We will then reimburse them for their expenses. We have engaged The Proxy Advisory Group, LLC to assist in the solicitation of proxies and provide related advice and informational support, for a services fee and the reimbursement of customary disbursements, which are not expected to exceed \$25,000 in total.

Vote Required

Proposal 1: Reverse Stock Split. The affirmative vote of the holders of a majority of the shares of our common stock having voting power outstanding on the Record Date is required to approve the amendment to our Certificate of Incorporation to effect a reverse stock split of our common stock. Abstentions will be treated as votes against this proposal. Brokerage firms will have authority to vote customers’ unvoted shares held by the firms in street name on this proposal. However, if that authority is not exercised, any resulting broker non-votes will have the same effect as a vote against this proposal.

Proposal 2. Private Placement Proposal. Pursuant to Nasdaq Marketplace Rule 5635(e), the Private Placement Proposal must be approved by a majority of the votes cast affirmatively or negatively on such proposal. Therefore, the affirmative vote of the holders of a majority of the shares of our common stock represented in person or by proxy and entitled to vote on such proposal that cast a vote for, or against such proposal is required for the approval of this proposal. Abstentions will have no effect on the results of this vote. Brokerage firms do not have authority to

vote customers' unvoted shares held by the firms in street name on this proposal. Such broker non-votes will have no effect on the results of the vote.

SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The following table sets forth certain information with respect to the beneficial ownership of our common stock as of November 15, 2019 for (a) our named executive officers, (b) our directors, (c) our executive officers and directors as a group, and (d) each stockholder known to us to beneficially own more than five percent of our common stock. Beneficial ownership is determined in accordance with the rules of the SEC and includes voting or investment power with respect to the securities. We deem shares that may be acquired by an individual or group within 60 days following November 15, 2019, pursuant to the exercise of options or warrants to be outstanding for the purpose of computing the percentage ownership of such individual or group, but not for the purpose of computing the percentage ownership of any other person shown in the table. Except as otherwise indicated, we believe that the stockholders named in the table have sole voting and investment power with respect to all shares shown to be beneficially owned by them based on information provided to us by these stockholders. Percentage ownership is based on a total of 12,567,582 shares of our common stock issued and outstanding on November 15, 2019. Unless otherwise noted below, the address of each person listed on the table is c/o Yield10 Bioscience, Inc., 19 Presidential Way, Woburn, MA 01801.

Category	Beneficial Owner	Shares of common stock (1)	Options Exercisable Within 60 Days (2)	Warrants Exercisable Within 60 Days (2)	Total Shares Beneficially Owned	Percentage of Outstanding Shares (3)
5% Stockholders	Jack W. Schuler (4) 100 N. Field Drive Suite 360 Lake Forest, IL 60045	3,804,885	—	2,067,136	5,872,021	40.1 %
Directors and Named Executive Officers	Lynne H. Brum (5)	31,520	96,583	—	128,103	1.0 %
	Oliver P. Peoples (6)	91,752	326,875	—	418,627	3.2 %
	Kristi Snell (7)	28,022	181,834	—	209,856	1.6 %
	Richard Hamilton	3,041	26,431	—	29,472	0.2 %
	Peter Kellogg	5,302	37,333	—	42,635	0.3 %
	Joseph Shaulson (8)	35,295	169,030	—	204,325	1.6 %
	Anthony J. Sinskey (9)	12,372	47,218	—	59,590	0.5 %
	Robert L Van Nostrand	11,293	67,492	—	78,785	0.6 %
All directors and executive officers as a group (9 persons)(10)		243,590	1,050,048	—	1,293,638	9.5 %

- (1) Beneficial ownership, as such term is used herein, is determined in accordance with Rule 13d-3(d)(1) promulgated under the Securities Exchange Act of 1934, as amended, and includes voting and/or investment power with respect to shares of our common stock. Unless otherwise indicated, the named person possesses sole voting and investment power with respect to the shares.
- (2) Consists of shares of common stock subject to stock options and warrants held by the person that are currently vested or will vest within 60 days after November 15, 2019.
- (3) Percentages of ownership are based upon 12,567,582 shares of common stock issued and outstanding as of November 15, 2019. Shares of common stock that may be acquired pursuant to options and warrants that are vested and exercisable within 60 days after November 15, 2019, are deemed outstanding for computing the percentage ownership of the person holding such options, but are not deemed outstanding for the percentage ownership of any other person.
- (4) The reported securities consist of 2,838,128 shares of common stock and 2,067,136 shares of common stock underlying the warrants owned by the JWS Living Trust, 965,914 shares of common stock owned by the Schuler Family Foundation, and 843 shares of common stock owned by the Renate Schuler Trust. Mr. Schuler has sole voting and investment power over the shares issued to the JWS Living Trust, the Schuler Family Foundation and Renate Schuler Trust. Beneficial ownership information for Mr. Schuler has been derived from his historical SEC filings.
- (5) Includes 23,991 shares held for Ms. Brum in the Company's 401(k) plan.
- (6) Includes 24,124 shares held for Dr. Peoples in the Company's 401(k) plan.
- (7) Includes 23,433 shares held for Dr. Snell in the Company's 401(k) plan.
- (8) Includes 1,470 shares held for Mr. Shaulson in the Company's 401(k) plan.
- (9) Includes 822 shares owned by Dr. Sinskey's spouse and 166 shares owned by a trust over which Dr. Sinskey may be deemed to share voting and investment power. Dr. Sinskey disclaims beneficial ownership of such shares.
- (10) Includes a total of 95,735 shares held for current executive officers and Mr. Shaulson, our former President and Chief Executive Officer, in the Company's 401(k) plan.

PROPOSAL 1
REVERSE STOCK SPLIT
(Notice Item 1)

General

At the Special Meeting of stockholders, holders of our common stock are being asked to approve the amendment to our Amended and Restated Certificate of Incorporation, as amended (the “Certificate of Incorporation”) to effect a reverse stock split of the issued and outstanding shares of common stock (such split to combine a number of outstanding shares of our common stock between twenty (20) and fifty (50), such number consisting of only whole shares, into one (1) share of common stock). The full text of the proposed amendment to our Certificate of Incorporation is attached to this proxy statement as Appendix B.

If approved by the stockholders, the reverse stock split would become effective at a time, and at a ratio, to be designated by the Board of Directors. The Board of Directors may effect only one reverse stock split as a result of this authorization. The Board of Directors’ decision as to when to effect the reverse stock split will be based on a number of factors, including market conditions, existing and expected trading prices for our common stock, the continued listing requirements of The Nasdaq Capital Market (“Nasdaq”) and the terms of the Series B Preferred Stock, and in particular the increasing dividend the Company would have to pay on the Series B Preferred Stock if the Company does not implement a reverse stock split. Even if the stockholders approve the reverse stock split, we reserve the right not to effect the reverse stock split if the Board of Directors does not deem it to be in the best interests of us and our stockholders to effect the reverse stock split. The reverse stock split, if authorized pursuant to this resolution and if deemed by the Board of Directors to be in the best interests of us and our stockholders, will be effected at a time that is not later than six months after the date of the Special Meeting.

The actions taken in connection with the reverse stock split will reduce the number of outstanding shares of our common stock, but the number of total authorized shares under the Company’s Certificate of Incorporation will remain at 60,000,000 authorized shares. As of November 25, 2019, 31,272,582 shares of our common stock were issued and outstanding. Assuming a 1-for-20 reverse stock split is effected, there will be approximately 9,735,038 shares outstanding or reserved for future issuance, 1,437,500 of which will be reserved for conversion of the Series B Preferred Stock and 5,750,000 of which will be reserved for exercise of the warrants issued in the Offering. Assuming a 1-for-50 reverse stock split is effected, there will be approximately 3,894,015 shares outstanding or reserved for future issuance, 575,000 of which will be reserved for conversion of the Series B Preferred Stock and 2,300,000 of which will be reserved for exercise of the warrants issued in the Offering.

Purpose

The Board of Directors has approved the proposal authorizing the reverse stock split for the following reasons:

- the Board of Directors believes that effecting the reverse stock split may be an effective means of regaining compliance with the bid price requirement for the continued listing of our common stock on Nasdaq;
- the Board of Directors believes that it is in the best interests of the Company to allow for the conversion of the Series B Preferred Stock and the exercise of the warrants issued in the Offering, and to thereby avoid the requirement to pay a dividend on the Series B Preferred Stock if those shares remain outstanding as of March 31, 2020;
- the Board of Directors believes that it is in the best interest of the Company to have a number of shares available for issuance in future financings and for other purposes, although the Company does not currently have any plans or proposals relating to any future issuances; and

- the Board of Directors believes that a higher stock price may help generate investor interest in us, including interest among institutional investors.

If the reverse stock split successfully increases the per share price of our common stock and facilitates the continued listing of our common stock on Nasdaq, as to which no assurance can be given, the Board of Directors believes this increase may facilitate future financings, enhance our ability to transact with our securities and increase the interest of third parties with whom we may be negotiating for purposes of evaluating potential strategic alternatives.

Nasdaq Requirements for Continued Listing

Our common stock is listed on Nasdaq under the symbol “YTEN.” One of the requirements for continued listing on Nasdaq is maintenance of a minimum closing bid price of \$1.00 per share. On December 3, 2019, the closing market price per share of our common stock was \$0.15, as reported by Nasdaq.

On June 25, 2019, we received a notification letter from Nasdaq informing us that for the last 30 consecutive business days, the bid price of our securities had closed below \$1.00 per share as required by Nasdaq Listing Rule 5550(a)(2). This notice has no immediate effect on our Nasdaq listing and we have 180 calendar days, or until December 23, 2019, to regain compliance with this requirement, which deadline may be extended for another 180 calendar day period if approved by Nasdaq. As of December 3, 2019, we had not regained compliance with this listing requirement, since the closing bid price of our securities had not been at least \$1.00 per share for a minimum of ten consecutive business days. To cure the deficiency, we intend to conduct the reverse stock split of our common stock for which we are seeking stockholder approval in this proxy statement.

Even after we implement the reverse stock split for which we are seeking approval, we cannot assure you that our share price will comply with the requirements for continued listing of our common stock on Nasdaq in the future or that we will comply with the other continued listing requirements. If our common stock is delisted from Nasdaq, our common stock would likely trade in the over-the-counter market.

If our shares were to trade on the over-the-counter market, selling our common stock could be more difficult because smaller quantities of shares would likely be bought and sold, and transactions could be delayed. In addition, in the event our common stock is delisted, broker-dealers have certain regulatory burdens imposed upon them, which may discourage broker-dealers from effecting transactions in our common stock, further limiting the liquidity of our common stock. These factors could result in lower prices and larger spreads in the bid and ask prices for our common stock.

Such delisting from Nasdaq and continued or further declines in our share price could also greatly impair our ability to raise additional necessary capital through equity or debt financing, and could significantly increase the ownership dilution to stockholders caused by our issuing equity in financing or other transactions.

In light of the factors mentioned above, our Board of Directors approved the reverse stock split as a potential means of increasing the share price of our common stock above \$1.00 per share and of maintaining the share price of our common stock above \$1.00 per share in compliance with Nasdaq requirements.

Registered Public Offering and Concurrent Private Placement

On November 19, 2019, we completed a registered public offering (the “Public Offering”) pursuant to which we sold (a) 12,480,000 Class A Units, with each Class A Unit consisting of one share of our common stock, a warrant to purchase one share of common stock, which expires two and one half years after the date of issuance (a “Series A Warrant”), and a warrant to purchase one share of common stock, which expires seven and one half years after the date of issuance (a “Series B Warrant”); and (ii) 2,504 Class B Units, with each Class B Unit consisting of one share of the Company’s Series A convertible preferred stock, par value \$0.01 per share, Series A Warrants to purchase 5,000 shares of common stock, and Series B warrants to purchase 5,000 shares of common stock. In addition, we issued 3,750,000 shares of common stock, 3,750,000 Series A Warrants and 3,750,000 Series B Warrants to the underwriter pursuant to the over-allotment option granted to the underwriter which was exercised in full. We offered the Class A Units and Class B Units pursuant to a registration statement on Form S-1 (File No. 333-233683), as amended. Concurrently with the Public Offering, we also sold 5,750 shares of Series B convertible preferred stock, par value \$0.01 per share (“Series

B Preferred Stock”), Series A Warrants to purchase 28,750,000 shares of common stock, and Series B Warrants to purchase 28,750,000 shares of common stock to certain investors (the “Investors”) pursuant to an unregistered private placement (the “Private Placement” and together with the Public Offering, the “Offering”).

As of November 25, 2019, 31,272,582 shares of our common stock were issued and outstanding and approximately an additional 9,514,071 shares were reserved for issuance upon the exercise of outstanding warrants and options granted under our various stock-based plans. We do not currently have a sufficient number of authorized shares of common stock to allow for (i) the conversion of the Series B Preferred Stock into common stock or (ii) the full exercise of the warrants issued in the Offering. The approval of the reverse stock split is required in order to allow the exercise of the warrants issued in the Offering and the conversion of the Series B Preferred Stock. The investors in the Offering may lose the value of their warrants, and we would lose the cash proceeds from the exercise of the warrants, if this Proposal 1 is not approved. Further, if we cannot make sufficient shares of common stock available for the full conversion of the Series B Preferred Stock prior to March 31, 2020, shares of the Series B Preferred Stock will be entitled to receive cumulative quarterly dividends payable in additional shares of Series B Preferred Stock, at the initial quarterly rate of 2% of the stated value of those shares, subject to a quarterly increase of 2%.

Assuming a 1-for-20 reverse stock split is effected, there will be approximately 9,735,038 shares outstanding or reserved for future issuance, 1,437,500 of which will be reserved for conversion of the Series B Preferred Stock and 5,750,000 of which will be reserved for exercise of the warrants issued in the Offering. Assuming a 1-for-50 reverse stock split is effected, there will be approximately 3,894,015 shares outstanding or reserved for future issuance, 575,000 of which will be reserved for conversion of the Series B Preferred Stock and 2,300,000 of which will be reserved for exercise of the warrants issued in the Offering. The issuance of shares of common stock upon conversion of the Series B Preferred Stock and exercise of the warrants will have a dilutive effect on our stockholders.

Potential Increased Investor Interest

In approving the proposal authorizing the reverse stock split, the Board of Directors considered that our common stock may not appeal to brokerage firms that are reluctant to recommend lower priced securities to their clients. Investors may also be dissuaded from purchasing lower priced stocks because the brokerage commissions, as a percentage of the total transaction, tend to be higher for such stocks. Moreover, the analysts at many brokerage firms do not monitor the trading activity or otherwise provide coverage of lower priced stocks.

There are risks associated with the reverse stock split, including that the reverse stock split may not result in a sustained increase in the per share price of our common stock.

We cannot predict whether the reverse stock split will increase the market price for our common stock on a sustained basis. The history of similar stock split combinations for companies in like circumstances is varied. There is no assurance that:

- the market price per share of our common stock after the reverse stock split will rise in proportion to the reduction in the number of shares of our common stock outstanding before the reverse stock split;
- the reverse stock split will result in a per share price that will attract brokers and investors who do not trade in lower priced stocks;
- our ability to conduct future financings will be enhanced; and
- the market price per share will either exceed or remain in excess of the \$1.00 minimum bid price as required by Nasdaq, or that we will otherwise meet the requirements of Nasdaq for continued listing inclusion for trading on Nasdaq.

The market price of our common stock will also be based on our performance and other factors, some of which are unrelated to the number of shares outstanding. If the reverse stock split is effected and the market price of our common stock declines, the percentage decline as an absolute number and as a percentage of our overall market capitalization may be greater than would occur in the absence of a reverse stock split. Furthermore, the liquidity of our

common stock could be adversely affected by the reduced number of shares that would be outstanding after the reverse stock split.

Principal Effects of the Reverse Stock Split

If the stockholders approve the proposal to authorize the Board of Directors to implement the reverse stock split and the Board of Directors implements the reverse stock split, we will amend our Certificate of Incorporation by adding the following after the end of the first paragraph of Article IV:

["Upon effectiveness of this Certificate of Amendment (the "Effective Time"), the shares of Common Stock issued and outstanding immediately prior to the Effective Time and the shares of Common Stock issued and held in the treasury of the Corporation immediately prior to the Effective Time are reclassified into a smaller number of shares such that each [] shares of issued Common Stock immediately prior to the Effective Time is reclassified into one (1) share of Common Stock. Notwithstanding the immediately preceding sentence, no fractional shares shall be issued as a result of the reverse stock split. Instead, any stockholder who would otherwise be entitled to a fractional share of our Common Stock as a result of the reclassification shall be entitled to receive a cash payment equal to the product of such resulting fractional interest in one share of our Common Stock multiplied by the closing trading price of our Common Stock on the trading day immediately preceding the effective date of the reverse stock split. Notwithstanding the foregoing, the Corporation shall not be obliged to issue certificates evidencing the shares of Common Stock outstanding as a result of the reverse stock split or cash in lieu of fractional shares, if any, unless and until the certificates evidencing the shares held by a holder prior to the reverse stock split are either delivered to the Corporation or its transfer agent, or the holder notifies the Corporation or its transfer agent that such certificates have been lost, stolen or destroyed and executes an agreement satisfactory to the Corporation to indemnify the Corporation from any loss incurred by it in connection with such certificates.

Each stock certificate that, immediately prior to the Effective Time, represented shares of Common Stock that were issued and outstanding immediately prior to the Effective Time shall, from and after the Effective Time, automatically and without the necessity of presenting the same for exchange, represent the number of whole shares of Common Stock after the Effective Time into which the shares of Common Stock formerly represented by such certificate shall have been reclassified (as well as the right to receive a cash payment in lieu of a fractional share of Common Stock), provided, however, that each person of record holding a certificate that represented shares of Common Stock that were issued and outstanding immediately prior to the Effective Time shall receive, upon surrender of such certificate, a new certificate evidencing and representing the number of whole shares of Common Stock after the Effective Time into which the shares of Common Stock formerly represented by such certificate shall have been reclassified (including the right to receive a cash payment in lieu of a fractional share of Common Stock)."]

The reverse stock split will be effected simultaneously for all issued and outstanding shares of common stock, and the exchange ratio will be the same for all issued and outstanding shares of common stock. The reverse stock split will affect all of our stockholders uniformly and will not affect any stockholder's percentage ownership interests in the Company, except to the extent that cash payments are made in lieu of fractional shares. Common stock issued pursuant to the reverse stock split will remain fully paid and nonassessable. The reverse stock split will not affect the Company continuing to be subject to the periodic reporting requirements of the Exchange Act. Following the reverse stock split, our common stock will continue to be listed on Nasdaq, under the symbol "YTEN," although it would receive a new CUSIP number.

By approving this amendment, stockholders will approve the combination of any whole number of shares of common stock between and including twenty (20) and fifty (50) into one (1) share. The certificate of amendment to be filed with the Secretary of State of the State of Delaware will include only that number determined by the Board of Directors to be in the best interests of the Company and its stockholders. The Board of Directors will not implement any amendment providing for a different split ratio.

Procedure for Effecting Reverse Stock Split and Exchange of Stock Certificates

If the certificate of amendment is approved by our stockholders, and if at such time the Board of Directors still believes that a reverse stock split is in the best interests of the Company and its stockholders, the Board of Directors

will determine the ratio of the reverse stock split to be implemented. We will file the certificate of amendment with the Secretary of State of the State of Delaware at such time as the Board of Directors has determined the appropriate effective time for the reverse stock split. The Board of Directors may delay effecting the reverse stock split, if at all, until a time that is not later than six months from the date of the Special Meeting, without re-soliciting stockholder approval. The reverse stock split will become effective on the date of filing of the certificate of amendment with the Secretary of State of the State of Delaware. Beginning on the effective date of the split, each certificate representing pre-split shares will be deemed for all corporate purposes to evidence ownership of post-split shares.

Book-Entry Shares

If the reverse stock split is effected, stockholders who hold uncertificated shares (i.e., shares held in book-entry form and not represented by a physical stock certificate), either as direct or beneficial owners, will have their holdings electronically adjusted automatically by our transfer agent (and, for beneficial owners, by their brokers or banks that hold in "street name" for their benefit, as the case may be) to give effect to the reverse stock split. Stockholders who hold uncertificated shares as direct owners will be sent a statement of holding from our transfer agent that indicates the number of post-reverse stock split shares of our common stock owned in book-entry form.

Certificated Shares

As soon as practicable after the effective date of the split, our stockholders will be notified that the reverse stock split has been effected. We expect that our transfer agent will act as exchange agent for purposes of implementing the exchange of stock certificates. Holders of pre-split shares will be asked to surrender to the exchange agent certificates representing pre-split shares in exchange for certificates representing post-split shares in accordance with the procedures to be set forth in a letter of transmittal to be sent by us or our exchange agent. No new certificates will be issued to a stockholder until such stockholder has surrendered such stockholder's outstanding certificate(s) together with the properly completed and executed letter of transmittal to the exchange agent. Any pre-split shares submitted for transfer, whether pursuant to a sale or other disposition, or otherwise, will automatically be exchanged for post-split shares. STOCKHOLDERS SHOULD NOT DESTROY ANY STOCK CERTIFICATE(S) AND SHOULD NOT SUBMIT ANY CERTIFICATE(S) UNTIL REQUESTED TO DO SO.

Fractional Shares

No fractional shares will be issued in connection with the reverse stock split. Stockholders of record on the effective date of the split who otherwise would be entitled to receive fractional shares because they hold a number of pre-split shares not evenly divisible by the number of pre-split shares for which each post-split share is to be exchanged, will in lieu of a fractional share, be entitled upon surrender to the exchange agent of certificates representing such pre-split shares, if any, to receive payment in cash in lieu of any such resulting fractional shares of common stock as the post-reverse split amounts of common stock will be rounded down to the nearest full share. Such cash payment in lieu of a fractional share of common stock will be calculated by multiplying such fractional interest in one share of common stock by the closing trading price of our common stock on the trading day immediately preceding the effective date of the reverse stock split, and rounded to the nearest cent. No fractional shares will be issued in connection with the reverse stock split.

Accounting Matters

The reverse stock split will not affect the common stock capital account on our balance sheet. However, because the par value of our common stock will remain unchanged on the effective date of the split, the components that make up the common stock capital account will change by offsetting amounts. The stated capital component will be reduced, and the additional paid-in capital component will be increased with the amount by which the stated capital is reduced. The per share net loss and net book value of our common stock will be increased because there will be fewer weighted average shares of common stock outstanding. Prior periods' common stock and additional paid-in capital balances and net loss per share amounts will be restated to reflect the reverse stock split.

Effect on Par Value

The proposed amendment to our Certificate of Incorporation will not affect the par value of our common stock, which will remain at \$0.01 per share.

No "Going Private Transaction"

Notwithstanding the anticipated decrease in the number of outstanding shares following the proposed reverse stock split, if effected, our Board of Directors does not intend for this transaction to be the first step in a "going private transaction" within the meaning of Rule 13e-3 under the Exchange Act.

Potential Anti-Takeover Effect

Although the increased proportion of unissued authorized shares to issued shares could, under certain circumstances, have an anti-takeover effect (for example, by permitting issuances that would dilute the stock ownership of a person seeking to effect a change in the composition of the Board of Directors or contemplating a tender offer or other transaction for the combination of the Company with another company), the reverse stock split proposal is not being proposed in response to any effort of which we are aware to accumulate shares of our common stock or obtain control of the Company, nor is it part of a plan by management to recommend a series of similar amendments to the Board of Directors and stockholders. Other than the reverse stock split proposal, the Board of Directors does not currently contemplate recommending the adoption of any other actions that could be construed to affect the ability of third parties to take over or change control of the Company.

No Dissenters' Rights

Under the Delaware General Corporation Law, our stockholders are not entitled to dissenters' rights with respect to the reverse stock split, and we will not independently provide stockholders with any such right.

Material United States Federal Income Tax Consequences of the Reverse Stock Split

The following is not intended as tax or legal advice. Each holder should seek advice based on his, her or its particular circumstances from an independent tax advisor.

The following discussion describes the anticipated material United States federal income tax consequences to "U.S. holders" (as defined below) of our capital stock relating to the reverse stock split. This discussion is based upon the Internal Revenue Code of 1986, as amended (the "Code"), Treasury Regulations promulgated thereunder, judicial authorities, published positions of the Internal Revenue Service ("IRS"), and other applicable authorities, all as currently in effect and all of which are subject to change or differing interpretations (possibly with retroactive effect). We have not obtained a ruling from the IRS or an opinion of legal or tax counsel with respect to the tax consequences of the reverse stock split and there can be no assurance the IRS will not challenge the statements set forth below, or that a court would not sustain any such challenge. The following discussion is for information purposes only and is not intended as tax or legal advice.

For purposes of this discussion, the term "U.S. holder" means a beneficial owner of our capital stock that is for United States federal income tax purposes:

- (i) an individual citizen or resident of the United States;
- (ii) a corporation (or other entity treated as a corporation for U.S. federal income tax purposes) organized under the laws of the United States, any state or the District of Columbia;
- (iii) an estate with income subject to United States federal income tax regardless of its source; or
- (iv) a trust that (a) is subject to primary supervision by a United States court and for which United States persons control all substantial decisions or (b) has a valid election in effect under applicable Treasury Regulations to be treated as a United States person.

This discussion assumes that a U.S. holder holds our capital stock as a capital asset within the meaning of Code Section 1221. This discussion does not address all of the tax consequences that may be relevant to a particular stockholder or to stockholders that are subject to special treatment under United States federal income tax laws including, but not limited to, financial institutions, tax-exempt organizations, insurance companies, regulated investment companies, persons that are broker-dealers, traders in securities who elect the mark-to-market method of accounting for their securities, or stockholders holding their shares of our capital stock as part of a “straddle,” “hedge,” “conversion transaction” or other integrated transaction. In addition, this discussion does not address other United States federal taxes (such as gift or estate taxes or alternative minimum taxes), the tax consequences of the reverse stock split under state, local or foreign tax laws or certain tax reporting requirements that may be applicable with respect to the reverse stock split.

If a partnership (or other entity treated as a partnership for United States federal income tax purposes) is a stockholder, the tax treatment of a partner in the partnership or any equity owner of such other entity will generally depend upon the status of the person and the activities of the partnership or other entity treated as a partnership for United States federal income tax purposes.

Tax Consequences of the Reverse Stock Split Generally

We believe that the reverse stock split should qualify as a “recapitalization” under Section 368(a)(1)(E) of the Code. Accordingly:

- A U.S. holder will not recognize any gain or loss as a result of the reverse stock split, except to the extent that cash is received in lieu of a fractional share.
- A U.S. holder’s aggregate tax basis in his, her or its post-reverse stock split shares will be equal to the aggregate tax basis in the pre-reverse stock split shares exchanged therefor, except to the extent that cash is received in lieu of a fractional share.
- A U.S. holder’s holding period for the post-reverse stock split shares will include the period during which such stockholder held the pre-reverse stock split shares surrendered in the reverse stock split.

Treasury Regulations promulgated under the Code provide detailed rules for allocating the tax basis and holding period of the shares of our common stock surrendered to the shares of our common stock received pursuant to the reverse stock split. Holders of shares of our common stock who acquired their shares on different dates and at different prices should consult their tax advisors regarding the allocation of the tax basis and holding period of such shares among their post-reverse stock split shares.

THE PRECEDING DISCUSSION IS INTENDED ONLY AS A SUMMARY OF CERTAIN FEDERAL INCOME TAX CONSEQUENCES OF THE REVERSE STOCK SPLIT AND DOES NOT PURPORT TO BE A COMPLETE ANALYSIS OR DISCUSSION OF ALL POTENTIAL TAX EFFECTS RELEVANT THERETO. YOU SHOULD CONSULT YOUR OWN TAX ADVISORS AS TO THE PARTICULAR FEDERAL, STATE, LOCAL, FOREIGN AND OTHER TAX CONSEQUENCES OF THE REVERSE STOCK SPLIT IN LIGHT OF YOUR SPECIFIC CIRCUMSTANCES.

Interests of Directors and Executive Officers

Our directors and executive officers have no substantial interests, directly or indirectly, in the matters set forth in this proposal except to the extent of their ownership of shares of our common stock.

Reservation of Right to Abandon Reverse Stock Split

We reserve the right to not file the Certificate of Amendment and to abandon any reverse stock split without further action by our stockholders at any time before the effectiveness of the filing with the Secretary of the State of Delaware of the Certificate of Amendment, even if the authority to effect these amendments is approved by our stockholders at the Special Meeting. By voting in favor of a reverse stock split, you are expressly also authorizing the Board of Directors to delay, not proceed with, and abandon, this proposed amendment if it should so decide, in its sole discretion, that such action is in the best interests of our stockholders.

Vote Required and Board of Directors' Recommendation

The affirmative vote of the holders of a majority of the shares of our common stock, having voting power outstanding on the Record Date, is required to approve the amendment to our Certificate of Incorporation to effect a reverse stock split of our common stock.

THE BOARD OF DIRECTORS RECOMMENDS A VOTE TO AUTHORIZE THE BOARD OF DIRECTORS IN ITS DISCRETION TO AMEND THE AMENDED AND RESTATED CERTIFICATE OF INCORPORATION, AS AMENDED, TO EFFECT A REVERSE STOCK SPLIT OF THE ISSUED AND OUTSTANDING SHARES OF OUR COMMON STOCK (SUCH SPLIT TO COMBINE A NUMBER OF OUTSTANDING SHARES OF OUR COMMON STOCK BETWEEN TWENTY (20) AND FIFTY (50), SUCH NUMBER CONSISTING OF ONLY WHOLE SHARES, INTO ONE (1) SHARE OF OUR COMMON STOCK), AND PROXIES SOLICITED BY THE BOARD OF DIRECTORS WILL BE VOTED IN FAVOR OF THE AMENDMENT UNLESS A STOCKHOLDER INDICATES OTHERWISE ON THE PROXY.

PROPOSAL 2

PRIVATE PLACEMENT PROPOSAL

(Notice Item 2)

Overview

On November 19, 2019, concurrently with the registered public offering described in Proposal 1 (the “Public Offering”), we issued and sold an aggregate of 5,750 shares of Series B convertible preferred stock (the “Series B Preferred Stock”), warrants to purchase 28,750,000 shares of common stock, which expire two and one half years after the date of issuance, and warrants to purchase 28,750,000 shares of common stock, which expire seven and one half years after the date of issuance (together, the “Private Placement Warrants”) for aggregate gross proceeds of \$5,750,000 to our largest shareholder, Jack W. Schuler, and related entities, each of which is an accredited investor (the “Investors”) in a private placement (the “Private Placement”) pursuant to a securities purchase agreement (the “Securities Purchase Agreement”). The Private Placement Warrants have an exercise price equal to \$0.20 per share of common stock. Our Board determined that the Private Placement was advisable and in our best interest and in the best interest of our stockholders, in order for us to have available capital for general corporate purposes.

If this Proposal 2 is approved, on the date of the filing by us, and the acceptance by the State of Delaware, of the amendment to our Amended and Restated Certificate of Incorporation (the “Charter Amendment”) contemplated by Proposal 1 relating to the reverse stock split, such that there are sufficient authorized but unissued shares of common stock to allow all of the warrants issued in the Private Placement and the Public Offering to be exercised in full and all of the Series B Preferred Stock to be converted, each share of Series B Preferred Stock shall automatically convert into a number of shares of common stock equal to \$1,000 (the “Stated Value”) divided by a conversion price of \$0.20 (the “Conversion Price”). The Conversion Price will be adjusted in the reverse stock split according to the reverse stock split ratio.

Nasdaq Marketplace Rule 5635(d) requires stockholder approval of a transaction other than a public offering involving the sale, issuance or potential issuance by a company of common stock (or securities convertible into or exercisable for common stock) at a price less than the lower of (i) the closing price (as reflected on Nasdaq.com) immediately preceding the signing of the binding agreement for the transaction; or (ii) the average closing price of the common stock (as reflected on Nasdaq.com) for the five trading days immediately preceding the signing of the binding agreement for the transaction, which alone or together with sales by officers, directors or principal shareholders of the issuer equals 20% or more of the common stock of the company or 20% or more of the voting power outstanding before the transaction.

The Nasdaq rules prevent us from issuing, upon conversion of the Series B Preferred Stock and upon exercise of the Private Placement Warrants, a number of shares of common stock that would exceed 2,500,948 (19.9% of the number of shares of common stock outstanding on the trading day immediately preceding the date of the Purchase Agreement), unless we obtain the stockholder approval required by Nasdaq. If all of the Series B Preferred Stock are converted and all of the Private Placement Warrants are exercised, an aggregate of 86,250,000 shares of common stock, subject to adjustment for the reverse stock split, would be issued upon such conversion and exercise.

Because the number of shares of common stock issuable upon conversion of the Series B Preferred Stock and upon exercise of the Private Placement Warrants will exceed 2,500,948, we are seeking stockholder approval for the issuance of shares of common stock in excess of 19.9% of the number of shares of common stock outstanding immediately prior to the execution of the Purchase Agreement (the “Excess Shares”).

Description of the Series B Preferred Stock

A summary of the Certificate of Designation of the Series B Preferred Stock (the “Series B Certificate of Designation”) and the preferences, rights and limitations of the Series B Preferred Stock is as follows:

Dividends. If the Series B Preferred Stock is not converted to common stock prior to March 31, 2020, shares of the Series B Preferred Stock will be entitled to receive cumulative quarterly dividends payable in additional shares

of Series B Preferred Stock, at the initial quarterly rate of 2% of the Stated Value, subject to a quarterly increase of 2%, and additional dividends as declared by our Board of Directors.

Voting Rights. With certain exceptions, as described in the Series B Certificate of Designation, the Series B Preferred Stock has no voting rights. However, as long as any shares of Series B Preferred Stock remain outstanding, the Series B Certificate of Designation provides that we shall not, without the affirmative vote of holders of a majority of the then-outstanding Series B Preferred Stock, (a) alter or change adversely the powers, preferences or rights given to the Series B Preferred Stock or alter or amend the Series B Certificate of Designation, (b) increase the number of authorized shares of Series B Preferred Stock or (c) effect a stock split or reverse stock split of the Series B Preferred Stock or any like event. The holders of the Series B Preferred Stock will also have the right to approve specified corporate transactions, including the issuance of any securities that would be senior to the Series B Preferred Stock, material changes in our business, material acquisitions of assets, appointments of new executive officers, liquidations, repurchase of shares, and other matters as set forth in the Series B Certificate of Designation.

Rank. Each share of Series B Preferred Stock shall rank equally in all respects. With respect to distributions upon Liquidation (as defined below), the Series B Preferred Stock ranks senior to the common stock and to each other class of our capital stock existing now or hereafter created that are not specifically designated as ranking senior to the preferred stock.

Liquidation Preference. In the event of any liquidation, dissolution, or winding up of the Company, whether voluntary or involuntary, or in the event of the Company's insolvency (a "Liquidation"), the holders of any outstanding shares of Series B Preferred Stock shall be entitled to have set apart for them, or to be paid, out of the assets of the Company available for distribution to stockholders (whether such assets are capital, surplus or earnings), after provision for payment of all debts and liabilities of the Company in accordance with the Delaware General Corporation Law, before any distribution or payment is made with respect to any class or series of securities that would be classified as junior to the Series B Preferred Stock and subject to the liquidation rights and preferences of any class or series of securities that would be classified as senior to or on par with the Series B Preferred Stock, an amount equal to the greater of (i) the Stated Value of Series B Preferred Stock (which amount shall be subject to an equitable adjustment in the event of any stock dividend, stock split, combination, reorganization, recapitalization, reclassification, or other similar event involving a change in the capital structure of the Series B Preferred Stock) plus the amount of all accrued and unpaid regular dividends thereon, whether or not declared, up to and including the date full payment shall be tendered to the holders of the Series B Preferred Stock with respect to such Liquidation (the "Liquidation Value") and (ii) such amount as would have been payable on the number of shares of common stock into which the shares of Series B Preferred Stock held by each holder thereof could have been converted immediately prior to such Liquidation (the "Pre-Liquidation Value"). In the event of any consolidation or merger of the Company with or into another entity or the sale of all or substantially all of the Company's assets, the holders of Series B Preferred Stock shall be entitled to have set apart for them, or to be paid, subject to the order of preference set forth above in connection with a Liquidation, an amount equal to the greater of (i) 200% of the Liquidation Value and (ii) the Pre-Liquidation Value.

Conversion. If this proposal is approved, on the Authorized Share Increase Date, each share of Series B Preferred Stock shall automatically convert into that number of shares of common stock determined by dividing the Stated Value of such share of Series B Preferred Stock by the Conversion Price. The Conversion Price will be adjusted in the reverse stock split according to the reverse stock split ratio.

Forced Conversion. Subject to certain conditions, at any time following the issuance of the Series B Preferred Stock, we will have the right to cause each holder of the Series B Preferred Stock to convert all or part of such holder's Series B Preferred Stock in the event that (i) the volume weighted average price of our common stock for 30 consecutive trading days (the "Measurement Period") exceeds 300% of the Conversion Price (subject to adjustment for forward and reverse stock splits, recapitalizations, stock dividends and similar transactions), (ii) the daily trading volume on each Trading Day during such Measurement Period exceeds \$175,000 per trading day and (iii) the holder is not in possession of any information that constitutes or might constitute, material non-public information which was provided by us. Our right to cause each holder of the Series B Preferred Stock to convert all or part of such holder's Series B Preferred Stock shall be exercised ratably among the holders of the then outstanding preferred stock.

Voting Agreement

We have entered into a voting agreement with our largest shareholder, Jack W. Schuler, and entities related to him, pursuant to which Mr. Schuler and those entities have agreed to vote their shares of common stock which they held prior to the issuance of shares in the Private Placement in favor of the Charter Amendment.

Registration Rights

The holders of the Series B Preferred Stock have the ability to demand that we register the shares of common stock underlying the Series B Preferred Stock and Private Placement Warrants no later than 15 business days after the Authorized Share Increase Date.

Why We Need Stockholder Approval

Our common stock is listed on Nasdaq, and as such we are subject to Nasdaq's rules. Nasdaq Marketplace Rule 5635(d) requires stockholder approval of a transaction other than a public offering involving the sale, issuance or potential issuance by a company of common stock (or securities convertible into or exercisable for common stock) at a price less than the lower of (i) the closing price (as reflected on Nasdaq.com) immediately preceding the signing of the binding agreement for the transaction; or (ii) the average closing price of the common stock (as reflected on Nasdaq.com) for the five trading days immediately preceding the signing of the binding agreement for the transaction, which alone or together with sales by officers, directors or principal shareholders of the issuer equals 20% or more of the common stock of the company or 20% or more of the voting power outstanding before the transaction.

Impact on Current Stockholders if the Private Placement Proposal is Approved

If our stockholders approve this Proposal 2 and the Charter Amendment, the Series B Preferred Stock will automatically convert to common stock and we will be able to issue the Excess Shares in accordance with the Nasdaq rules, the Series B Certificate of Designation, and the Private Placement Warrants. This will result in an increase in the number of shares of common stock outstanding. The issuance of common stock upon conversion of the Series B Preferred Stock and upon exercise of the Private Placement Warrants, if they are exercised, will have a dilutive effect on our stockholders other than the Investors in that the percentage ownership of the Company held by such current stockholders would decline as a result of the issuance of the Excess Shares. This means that our stockholders other than the Investors would have less ability to influence significant corporate decisions requiring stockholder approval, and that the influence of the Investors over determinations submitted to our stockholders for approval, including, but not limited to, the election of directors and the approval of corporate transactions, will increase in comparison to our other stockholders.

Issuance of the Excess Shares could also have a dilutive effect on book value per share and any future earnings per share. Dilution of equity interests could also cause prevailing market prices for our common stock to decline.

Effect on Current Stockholders if the Private Placement Proposal is Not Approved

If stockholders do not approve this proposal, we will not be able to issue the Excess Shares upon conversion of the Series B Preferred Stock and upon exercise of the Private Placement Warrants and the Investors will be prohibited from converting their Series B Preferred Stock or exercising their Private Placement Warrants in excess of an aggregate of 2,500,948 shares of common stock. If we are unable to fulfill our obligations to the Investors under the Securities Purchase Agreement, the Series B Certificate of Designation or the Private Placement Warrants, it is likely that the Investors and other potential investors would be unwilling to participate in any non-public capital raising efforts in the future, which would have an unfavorable impact on our capital raising efforts. Further, if the Series B Preferred Stock is not converted to common stock prior to March 31, 2020, shares of the Series B Preferred Stock will be entitled to receive cumulative quarterly dividends payable in additional shares of Series B Preferred Stock, at the initial quarterly rate of 2% of the Stated Value, subject to a quarterly increase of 2%, and additional dividends as declared by our Board of Directors.

Further Information

The terms of the Securities Purchase Agreement, the Series B Certificate of Designation and the Private Placement Warrants are briefly summarized above. For further information, please refer to the Securities Purchase Agreement, Series B Certificate of Designation and Form of Warrant included as Exhibits 10.1, 3.2 and 4.1, respectively, to the Company's Current Report on Form 8-K filed with the Securities and Exchange Commission on November 20, 2019.

Vote Required and Board of Directors' Recommendation

Pursuant to Nasdaq Marketplace Rule 5635(e), the Private Placement Proposal must be approved by a majority of the votes cast affirmatively or negatively on such proposal. Therefore, the affirmative vote of the holders of a majority of the shares of our common stock represented in person or by proxy and entitled to vote on such proposal that cast a vote for, or against such proposal is required for the approval of the Private Placement Proposal.

THE BOARD OF DIRECTORS RECOMMENDS A VOTE FOR THE PRIVATE PLACEMENT PROPOSAL, AND PROXIES SOLICITED BY THE BOARD OF DIRECTORS WILL BE VOTED IN FAVOR OF THE PROPOSAL UNLESS A STOCKHOLDER INDICATES OTHERWISE ON THE PROXY.

STOCKHOLDER PROPOSALS

Any stockholder proposals submitted pursuant to Exchange Act Rule 14a-8 for inclusion in the Company's proxy statement and form of proxy for its 2020 annual meeting must be received by Yield10 on or before December 12, 2019 in order to be considered for inclusion in its proxy statement and form of proxy. Such proposals must also comply with the requirements as to form and substance established by the SEC if such proposals are to be included in the proxy statement and form of proxy. Any such proposal should be mailed to our principal executive offices: Yield10 Bioscience, Inc., 19 Presidential Way, Woburn, MA 01801, Attention: Secretary.

Stockholder proposals to be presented at the Company's 2020 annual meeting, other than stockholder proposals submitted pursuant to Exchange Act Rule 14a-8 for inclusion in the Company's proxy statement and form of proxy for its 2020 annual meeting, must be received in writing at our principal executive office not earlier than January 23, 2020, nor later than February 22, 2020, unless our 2020 annual meeting of stockholders is scheduled to take place before April 22, 2020 or after July 21, 2020. Our By-Laws state that the stockholder must provide timely written notice of such nomination or proposal as well as be present at such meeting, either in person or by a representative. A stockholders' notice shall be timely received by Yield10 at its principal executive office not less than ninety (90) days nor more than one hundred twenty (120) days prior to the anniversary date of the immediately preceding annual meeting (the "Anniversary Date"); provided, however, that in the event the annual meeting is scheduled to be held on a date more than thirty (30) days before the Anniversary Date or more than sixty (60) days after the Anniversary Date, a stockholder's notice shall be timely if received by Yield10 at its principal executive office not later than the close of business on the later of (a) the ninetieth (90th) day prior to the scheduled date of such annual meeting or (b) the tenth (10th) day following the day on which public announcement of the date of such annual meeting is first made by Yield10. Any such proposal should be mailed to: Yield10 Bioscience, Inc., 19 Presidential Way, Woburn, MA 01801, Attention: Secretary.

**Woburn, Massachusetts
December 4, 2019**

APPENDIX A
FORM OF PROXY CARD

Proxy Card:

SPECIAL MEETING OF STOCKHOLDERS OF

YIELD10 BIOSCIENCE, INC.

January 9, 2020

Important Notice Regarding Internet Availability of Proxy Materials for the Special Meeting: The proxy statement is available at <http://ir.yield10bio.com/investor-relations>.

Please sign, date and mail your proxy card in the envelope provided as soon as possible.

Please detach along perforated line and mail in the envelope provided.

THE BOARD OF DIRECTORS RECOMMENDS A VOTE FOR PROPOSAL 1 AND PROPOSAL 2. PLEASE SIGN, DATE AND RETURN PROMPTLY IN THE ENCLOSED ENVELOPE. PLEASE MARK YOUR VOTE IN BLUE OR BLACK INK AS SHOWN HERE

1. Proposal to amend the Company's Amended and Restated Certificate of This Proxy, when executed, will be voted in the manner directed herein. If you do Incorporation, as amended, to effect a reverse stock split of our issued and not specify below how you want your shares to be voted, this Proxy will be voted outstanding shares of common stock, at a ratio of between 1-for-20 and 1-for-50. FOR the Proposal.

FOR AGAINST ABSTAIN

VOTE BY MAIL

2. Proposal to approve the potential issuance of more than 2,500,948 shares of our Mark, sign, and date your proxy card. Return it in the prepaid postage envelope we common stock upon the conversion of shares of our Series B Convertible Preferred have provided, or return it to Vote Processing, c/o Broadridge, 51 Mercedes Way, Stock and the exercise of warrants to purchase our common stock, all of which were Edgewood, NY 11717. issued pursuant to the private placement that closed on November 19, 2019.

FOR AGAINST ABSTAIN

To change the address on your account, please check the box at right and indicate your new address in the address space above. Please note that changes to the registered name(s) on the account may not be submitted via this method.

Signature of Stockholder

Date:

Signature of Stockholder

Date:

Note: Please sign exactly as your name appear on this Proxy. When shares are hold jointly, each holder should sign. When signer is a partnership, please sign in partnership name by authorized person.

APPENDIX B

FORM OF CERTIFICATE OF AMENDMENT TO EFFECT REVERSE STOCK SPLIT

FORM OF CERTIFICATE OF AMENDMENT TO EFFECT REVERSE STOCK SPLIT

Pursuant to Section 242 of the General Corporation Law of the State of Delaware, Yield10 Bioscience, Inc., a corporation organized and existing under the laws of the State of Delaware (the "Corporation"), does hereby certify as follows:

1. The name of the Corporation is Yield10 Bioscience, Inc.

2. The Board of Directors of the Corporation has duly adopted a resolution pursuant to Section 242 of the General Corporation Law of the State of Delaware setting forth a proposed amendment to the Amended and Restated Certificate of Incorporation of the Corporation and declaring said amendment to be advisable. The requisite stockholders of the Corporation have duly approved said proposed amendment in accordance with Section 242 of the General Corporation Law of the State of Delaware. The amendment amends the Amended and Restated Certificate of Incorporation of the Corporation as follows:

3. The Corporation's Amended and Restated Certificate of Incorporation, as amended, is hereby further amended by adding the following after the end of the first paragraph of Article IV:

["Upon effectiveness of this Certificate of Amendment (the "Effective Time"), the shares of Common Stock issued and outstanding immediately prior to the Effective Time and the shares of Common Stock issued and held in the treasury of the Corporation immediately prior to the Effective Time are reclassified into a smaller number of shares such that each [] shares of issued Common Stock immediately prior to the Effective Time is reclassified into one (1) share of Common Stock. Notwithstanding the immediately preceding sentence, no fractional shares shall be issued as a result of the reverse stock split. Instead, any stockholder who would otherwise be entitled to a fractional share of our Common Stock as a result of the reclassification shall be entitled to receive a cash payment equal to the product of such resulting fractional interest in one share of our Common Stock multiplied by the closing trading price of our Common Stock on the trading day immediately preceding the effective date of the reverse stock split. Notwithstanding the foregoing, the Corporation shall not be obliged to issue certificates evidencing the shares of Common Stock outstanding as a result of the reverse stock split or cash in lieu of fractional shares, if any, unless and until the certificates evidencing the shares held by a holder prior to the reverse stock split are either delivered to the Corporation or its transfer agent, or the holder notifies the Corporation or its transfer agent that such certificates have been lost, stolen or destroyed and executes an agreement satisfactory to the Corporation to indemnify the Corporation from any loss incurred by it in connection with such certificates.

Each stock certificate that, immediately prior to the Effective Time, represented shares of Common Stock that were issued and outstanding immediately prior to the Effective Time shall, from and after the Effective Time, automatically and without the necessity of presenting the same for exchange, represent the number of whole shares of Common Stock after the Effective Time into which the shares of Common Stock formerly represented by such certificate shall have been reclassified (as well as the right to receive a cash payment in lieu of a fractional share of Common Stock), provided, however, that each person of record holding a certificate that represented shares of Common Stock that were issued and outstanding immediately prior to the Effective Time shall receive, upon surrender of such certificate, a new certificate evidencing and representing the number of whole shares of Common Stock after the Effective Time into which the shares of Common Stock formerly represented by such certificate shall have been reclassified (including the right to receive a cash payment in lieu of a fractional share of Common Stock)."]

4. The Amendment of the Amended and Restated Certificate of Incorporation, as amended, herein certified has been duly adopted in accordance with the provisions of Section 242 of the General Corporation Law of the State of Delaware.

5. This Certificate of Amendment shall be effective on [] at [], Eastern Time.

IN WITNESS WHEREOF, the Corporation has caused this Certificate of Amendment to be signed by its duly authorized officer on this [] day of [].

YIELD10 BIOSCIENCE, INC.

By: _____

Name: Oliver P. Peoples

Title: President and Chief Executive Officer