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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

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))**
- Definitive Proxy Statement
- Definitive Additional Materials
- Soliciting Material under §240.14a-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):

- 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:



April 11, 2017

Dear Stockholder:

You are cordially invited to attend the 2017 Annual Meeting of Stockholders of Yield10 Bioscience, Inc. (the "Company") to be held on Wednesday, May 24, 2017, at 9:30 a.m., Eastern time, at the offices of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C. at One Financial Center, Boston, MA 02111. Directions to the location of the Annual Meeting can be found at <http://ir.yield10bio.com/index.cfm>.

At this Annual Meeting, you will be asked (i) to elect two Class II Directors for three-year terms, (ii) to authorize the Board of Directors of the Company to amend the Company's Restated Certificate of Incorporation to effect a reverse stock split of the Company's common stock, par value \$0.01 per share, by a ratio in the range of 1-for-2 to 1-for-10, with the Board of Directors having the discretion as to whether or not the reverse split is to be effected, and with the exact ratio of any reverse split to be set at a whole number within the above range, as determined by the Board of Directors, and (iii) to ratify the appointment of RSM US LLP as our independent registered public accounting firm for the year ending December 31, 2017. The Board of Directors unanimously recommends that you vote FOR the election of the director nominees, FOR the reverse stock split and FOR the ratification of the appointment of RSM US LLP.

Details regarding the matters to be acted upon at this Annual Meeting appear in the accompanying proxy statement. Please give this material your careful attention.

Whether or not you plan to attend the Annual 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 Annual 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 Annual Meeting, you may vote in person even if you have previously returned your proxy card. Your prompt cooperation will be greatly appreciated.

Very truly yours,

A handwritten signature in black ink, appearing to read 'Oliver P. Peoples', with a stylized flourish at the end.

OLIVER P. PEOPLES
President and Chief Executive Officer

YIELD10 BIOSCIENCE, INC.

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

NOTICE OF ANNUAL MEETING OF STOCKHOLDERS TO BE HELD ON MAY 24, 2017

To the Stockholders of Yield10 Bioscience, Inc.:

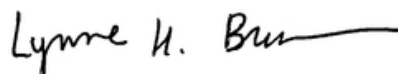
The 2017 Annual Meeting of Stockholders of Yield10 Bioscience, Inc., a Delaware corporation, will be held on Wednesday, May 24, 2017, at 9:30 a.m., Eastern time, at the offices of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C. at One Financial Center, Boston, MA 02111, for the following purposes:

1. To elect two (2) Class II Directors, nominated by the Board of Directors, to the Board of Directors, each to serve for a three-year term and until his successor has been duly elected and qualified or until his earlier death, resignation or removal;
2. To authorize the Board of Directors of the Company to amend the Company's Restated Certificate of Incorporation to effect a reverse stock split of the Company's common stock, par value \$0.01 per share, by a ratio in the range of 1-for-2 to 1-for-10, with the Board of Directors having the discretion as to whether or not the reverse split is to be effected, and with the exact ratio of any reverse split to be set at a whole number within the above range, as determined by the Board of Directors in its discretion; provided that the reverse split must be effected, if at all, no later than November 24, 2017;
3. To ratify the appointment of RSM US LLP as our independent registered public accounting firm for the year ending December 31, 2017; and
4. To transact such other business as may properly come before the Annual Meeting and any adjournments or postponements thereof.

Only stockholders of record at the close of business on March 27, 2017, are entitled to notice of and to vote at the Annual Meeting and at any adjournment or postponement thereof.

All stockholders are cordially invited to attend the Annual Meeting in person. **However, to assure your representation at the Annual Meeting, we urge you, whether or not you plan to attend the Annual Meeting, 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 Annual 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 Annual Meeting, you may vote in person even if you have previously returned your proxy card.

By Order of the Board of Directors,



LYNNE H. BRUM
Secretary

Woburn, Massachusetts
April 11, 2017

WHETHER OR NOT YOU EXPECT TO ATTEND THE ANNUAL MEETING, PLEASE 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 ANNUAL 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 ANNUAL MEETING MAY BE REQUIRED TO PRESENT PICTURE IDENTIFICATION.

YIELD10 BIOSCIENCE, INC.

19 Presidential Way

Woburn, Massachusetts 01801

PROXY STATEMENT

For the Annual Meeting of Stockholders

To Be Held on May 24, 2017

April 11, 2017

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 Annual Meeting of Stockholders of Yield10 to be held on Wednesday, May 24, 2017, at 9:30 a.m., Eastern time, or at any adjournments or postponements thereof (the "Annual Meeting") at the offices of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C. at One Financial Center, Boston, MA 02111. Directions to the location of the Annual Meeting are available at <http://ir.yield10bio.com/index.cfm>. An Annual Report to Stockholders, containing financial statements for the fiscal year ended December 31, 2016, is being mailed together with this proxy statement to all stockholders entitled to vote at the Annual Meeting. This Proxy Statement and the form of proxy were first sent or given to stockholders on or about April 20, 2017.

The purposes of the Annual Meeting are to:

1. Elect two (2) Class II Directors, nominated by the Board of Directors, to the Board of Directors, each to serve for a three-year term and until his successor has been duly elected and qualified or until his earlier death, resignation or removal;
2. Authorize the Board of Directors of the Company to amend the Company's Restated Certificate of Incorporation (the "Restated Charter") to effect a reverse stock split of the Company's common stock, par value \$0.01 per share ("Common Stock"), by a ratio in the range of 1-for-2 to 1-for-10, with the Board of Directors having the discretion as to whether or not the reverse split is to be effected, and with the exact ratio of any reverse split to be set at a whole number within the above range, as determined by the Board of Directors in its discretion; provided that the reverse split must be effected, if at all, no later than November 24, 2017;
3. Ratify the appointment of RSM US LLP as our independent registered public accounting firm for the year ending December 31, 2017; and
4. Transact such other business as may properly come before the Annual Meeting and any adjournments or postponements thereof.

Only stockholders of record at the close of business on March 27, 2017 (the "Record Date") will be entitled to receive notice of and to vote at the Annual Meeting. As of the Record Date, 28,402,471 shares of Common Stock were issued, outstanding and entitled to vote.

VOTING

The holders of Common Stock are entitled to one vote per share on any proposal presented at the Annual 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 postage-prepaid 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 Annual 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 Annual Meeting. Proxies may be revoked by (1) filing with the Secretary of Yield10, before the taking of the vote at the Annual 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 Annual 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 Annual Meeting and voting in person (although attendance at the Annual 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 Annual Meeting.

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 Annual Meeting. To be able to vote your shares held in street name at the Annual 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 Annual Meeting will be voted by such persons at the Annual 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:

- FOR election of the director nominees,
- FOR authorizing the Board of Directors to effect a reverse stock split,
- FOR the ratification of the appointment of RSM US LLP, and
- as the persons named as proxies may determine in their discretion with respect to any other matters properly presented at the meeting.

The representation in person or by proxy of at least a majority of the outstanding shares of Common Stock entitled to vote at the Annual Meeting is necessary to constitute a quorum for the transaction of business. Votes withheld from any nominee, abstentions and broker "non-votes" are counted as present or represented for purposes of determining the presence or absence of a quorum for the Annual Meeting. A "non-vote" occurs when a nominee holding shares for a beneficial owner votes on one proposal but does not vote on another proposal because, with respect to such other proposal, the nominee does not have discretionary voting power and has not received instructions from the beneficial owner.

If your shares are held in street name, and you do not instruct the broker as to how to vote your shares on the approval of the Reverse Stock Split or the ratification of the appointment of RSM US LLP as our independent registered public accounting firm for the year ending December 31, 2017, the broker may exercise its discretion to vote for or against such proposals. If, however, you do not instruct the broker as to how to vote your shares on Proposal 1 (the election of directors), the broker may not exercise discretion to vote with respect to the election of the nominees. This would be a "broker non-vote" and these shares will not be counted as having been voted on that proposal. **Please vote your proxy so your vote can be counted.**

Proposal 1: Election of Directors. Directors are elected by a plurality of the votes cast, in person or by proxy, at the Annual Meeting. The two nominees who receive the highest number of affirmative votes of the shares present or represented and voting on the election of directors at the Annual Meeting will be elected to the Board of Directors. Any stockholder submitting a proxy has the right to withhold authority to vote for any individual nominee to the Board by checking the box "For All Except" and marking the nominee's name in the space provided on the proxy card. Proxies that are submitted and not so marked as to withhold authority to vote for a particular nominee will be voted FOR that nominee and will be counted toward such nominee's achievement of a plurality. Shares present at the meeting or represented by proxy where the stockholder properly withholds authority to vote for such nominee in accordance with the proxy instructions will not be counted toward such nominee's achievement of plurality.

Proposal 2: Authorization of the Reverse Split. The affirmative vote of a majority of our outstanding common stock is required to approve the amendment of the Restated Charter, and to authorize our Board of Directors, in their judgment it is necessary, to effect the Reverse Stock Split. Brokerage firms do have authority to vote customers' unvoted shares held by the firms in street name on this proposal. Abstentions and broker non-votes (resulting from a broker choosing not to exercise its authority to vote) will be counted towards the vote total for this proposal and will have the same effect as "against" votes.

Proposal 3: Ratification of Independent Registered Public Accounting Firm. The affirmative vote of a majority of the shares of common stock cast by the stockholders present in person or represented by proxy at the Annual Meeting is required to ratify the selection of RSM US LLP as our independent registered public accounting firm for the year ending December 31, 2017. Shares voted to abstain are included in the number of shares present or represented and voting on Proposal 3.

Other Matters. The Board knows of no other matters to be presented at the Annual Meeting. If any other matter should be presented at the Annual Meeting upon which a vote properly may be taken, the affirmative vote of the majority of shares present, in person or represented by proxy, and voting on that matter is required for approval and all such shares represented by proxies received by the Board will be voted with respect thereto in accordance with the judgment of the persons named as attorneys in the proxies. Shares voted to abstain are included in the number of shares present or represented and voting on each matter.

Important Notice Regarding the Availability of Proxy Materials for the Annual Meeting: The proxy statement and annual report to stockholders are available for viewing, printing and downloading at <http://ir.yield10bio.com/index.cfm>.

SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The following table sets forth certain information regarding beneficial ownership of the Company's Common Stock as of March 27, 2017: (i) by each person known to us to be the beneficial owner of more than 5% of our outstanding shares of Common Stock; (ii) by each of our directors and nominees; (iii) by each of our named executive officers; and (iv) by all of our directors and executive officers as a group. 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.

Beneficial Owner	Shares of Common Stock(1)	Options Exercisable Within 60 Days(2)	Warrants Exercisable Within 60 Days(2)	RSUs Vesting Within 60 days(2)	Total Shares Beneficially Owned	Percentage of Outstanding Shares(3)
5% Stockholders:						
Jack W. Schuler(4) 28161 North Keith Drive Lake Forest, IL 60045	11,969,795	—	2,996,712	—	14,966,507	47.7%
William P. Scully(5) 771 Manatee Cove Vero Beach, FL 32963	2,933,333	—	—	—	2,933,333	10.3%
Matthew Strobeck(6) C/O Birchview Capital 688 Pine Street, Suite D Burlington, VT 05401	2,284,934	16,667	131,103	—	2,432,704	8.5%
Directors, Nominees and Named Executive Officers:						
Oliver P. Peoples(7)	242,674	494,274	13,113	26,250	776,311	2.7%
Richard W. Hamilton	—	—	—	—	—	*
Peter N. Kellogg	12,500	25,002	—	—	37,502	*
Joseph Shaulson(8)	320,515	941,667	31,500	—	1,293,682	4.4%
Anthony J. Sinskey(9)	72,390	21,669	—	—	94,059	*
Robert L. Van Nostrand	3,333	24,169	—	31,250	58,752	*
Lynne H. Brum(10)	65,209	140,416	13,113	19,583	238,321	*
Kristi D. Snell(11)	44,062	285,289	—	14,583	343,934	1.2%
All directors and executive officers as a group (9 persons)(12)	791,283	2,083,571	57,726	98,749	3,031,329	9.9%

* less than 1%.

- (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, warrants and restricted stock units ("RSUs") held by the person that are currently vested or will vest within 60 days after March 27, 2017.
- (3) Percentages of ownership are based upon 28,402,471 shares of Common Stock issued and outstanding as of March 27, 2017. Shares of Common Stock that may be acquired pursuant to options, warrants and RSUs that are vested and exercisable within 60 days after March 27, 2017, 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) Information regarding Mr. Schuler is based solely on a Schedule 13D/A filed with the SEC on June 23, 2015. According to such Schedule 13D/A, Mr. Schuler reported sole voting and dispositive power as to 3,684,008 shares and shared voting and dispositive power as to 11,282,499 shares.

- (5) Information regarding Mr. Scully is based solely on a Schedule 13D/A filed with the SEC on January 7, 2016. According to such Schedule 13D/A, Mr. Scully reported sole voting power and sole dispositive power as to all of the shares.
- (6) Includes 710,366 shares held by Birchview Fund, LLC and 39,330 shares subject to warrants held by Birchview Fund, LLC. Dr. Strobeck is the sole member of Birchview Capital GP, LLC (the "GP"), the general partner of Birchview Capital, LP (the "Investment Manager"), which is the investment Manager of Birchview Fund, LLC (the "Fund") and the sole member of Birchview Partners, LLC (the "Manager"), which is a member of the Fund. Dr. Strobeck disclaims Section 16 beneficial ownership of the shares of Common Stock held by the Fund (collectively, the "Fund Shares"), except to the extent of his pecuniary interest, if any, in the Fund Shares by virtue of his membership interest in the GP. Also includes 66,664 shares held in accounts for minor children for which Dr. Strobeck serves as a custodian, 14,949 shares held by Dr. Strobeck's spouse as custodian for their children, and 6,819 shares held indirectly by a trust for the benefit of Dr. Strobeck's children. Dr. Strobeck is a trustee of the trust. Dr. Strobeck disclaims beneficial ownership of these shares except to the extent of his pecuniary interest in them, if any. Dr. Strobeck resigned from our Board on January 10, 2017.
- (7) Includes 15,991 shares held for Dr. Peoples in the Company's 401(k) plan.
- (8) Includes 14,696 shares held for Mr. Shaulson in the Company's 401(k) plan.
- (9) Includes 8,224 shares owned by Dr. Sinskey's spouse and 1,666 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 27,092 shares held for Ms. Brum in the Company's 401(k) plan.
- (11) Includes 25,854 shares held for Dr. Snell in the Company's 401(k) plan.
- (12) Includes a total of 104,917 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

ELECTION OF DIRECTORS

Nominees

The Company's Board of Directors currently consists of six (6) members. The Company's amended and restated certificate of incorporation divides the Board of Directors into three classes. One class is elected each year for a term of three years and until their successors have been duly elected and qualified, or until their earlier death, resignation or removal. The Board of Directors, upon the recommendation of the Nominating and Corporate Governance Committee, has nominated Oliver P. Peoples and Joseph Shaulson, and recommends that each be elected to the Board of Directors as a Class II Director, each to hold office until the annual meeting of stockholders to be held in the year 2020 and until his successor has been duly elected and qualified or until his earlier death, resignation or removal. All of the nominees are Class II Directors, whose terms expire at this Annual Meeting. The Board of Directors is also composed of (i) two Class I Directors (Peter N. Kellogg and Robert L. Van Nostrand), whose terms expire at the annual meeting of stockholders to be held in 2019, and (ii) two Class III Directors (Richard Hamilton and Anthony J. Sinskey), whose terms expire at the annual meeting of stockholders to be held in 2018. Mr. Van Nostrand serves as the Chairman of the Board of Directors.

The Board of Directors knows of no reason why any of the nominees would be unable or unwilling to serve, but if any nominee should for any reason be unable or unwilling to serve, the proxies will be voted for the election of such other person for the office of director as the Board of Directors may recommend in the place of such nominee. Unless otherwise instructed, the proxy holders will vote the proxies received by them for the nominees named below.

Recommendation of the Board

The Board of Directors unanimously recommends that you vote "FOR" the nominees listed below.

The following table sets forth the nominees to be elected at the Annual Meeting and the continuing directors, the year each such nominee or director was first elected a director, the positions with the Company currently held by each such nominee or director, the year each nominee's or continuing director's current term will expire, and each nominee's and continuing director's current class:

<u>Nominee's or Director's Name</u>	<u>Year First Became Director</u>	<u>Position(s) with the Company</u>	<u>Year Current Term Will Expire</u>	<u>Current Director Class</u>
Nominees for Class II Directors:				
Oliver P. Peoples, Ph.D.	1992	President and Chief Executive Officer, Director	2017	II
Joseph Shaulson	2013	Director	2017	II
Continuing Directors:				
Peter N. Kellogg	2007	Director	2019	I
Robert L. Van Nostrand	2006	Director	2019	I
Anthony J. Sinskey, Sc.D.	1992	Director	2018	III
Richard Hamilton, Ph.D.	2017	Director	2018	III

DIRECTORS AND EXECUTIVE OFFICERS

The Company's executive officers are appointed on an annual basis by, and serve at the discretion of the Board. Each executive officer is a full-time employee of Yield10. The following table sets forth the directors and executive officers of the Company, their ages, and the positions currently held by each such person with the Company as of the date of this proxy statement:

<u>Name</u>	<u>Age</u>	<u>Position</u>
Oliver P. Peoples, Ph.D.	59	President and Chief Executive Officer, Director
Richard W. Hamilton, Ph.D.(1)(2)	54	Director
Peter N. Kellogg(1)	61	Director
Joseph Shaulson	51	Director
Anthony J. Sinskey, Sc.D.(2)(3)	77	Director
Robert L. Van Nostrand(1)(2)	59	Chairman of the Board, Director
Lynne H. Brum	53	Vice President, Planning and Communications
Charles B. Haaser	61	Vice President, Finance, Chief Accounting Officer and Treasurer
Kristi D. Snell, Ph.D.	49	Chief Science Officer

-
- (1) Member of the Audit Committee
 - (2) Member of the Compensation Committee
 - (3) Member of the Nominating and Corporate Governance Committee

BIOGRAPHICAL INFORMATION

Oliver P. Peoples, Ph.D., has served as our President and Chief Executive Officer since October 2016. He was co-founder of Yield10 Bioscience. He served as our Chief Scientific Officer starting in January 2000 and was previously our Vice President of Research and Development. Dr. Peoples has served as a Director since June 1992. Before founding the Company, Dr. Peoples was a research scientist with the Department of Biology at MIT. The research carried out by Dr. Peoples at MIT established the fundamental tools and methods for engineering bacteria and plants to produce polyhydroxyalkanoates. Dr. Peoples received a Ph.D. in Molecular Biology from the University of Aberdeen, Scotland. The Board believes that Dr. Peoples provides important technical and scientific understanding to the Board's analysis of Company strategy. As Chief Executive Officer and a founder of the Company, Dr. Peoples has unique information related to the Company's research and technology and has led and directed many of our scientific research and development programs. Dr. Peoples also contributes to the Board's understanding of the intellectual property aspects of the Company's technology platforms.

Richard W. Hamilton, Ph.D., joined Yield10 Bioscience as a Director during March 2017. From 2002 to 2016, he served as Chief Executive Officer and as a member of the board of directors at Ceres, Inc., after previously serving as Ceres' Chief Financial Officer from 1998 to 2002. In addition to his leadership role at Ceres, Dr. Hamilton has sat on the Keck Graduate Institute Advisory Council and he was a founding member of the Council for Sustainable Biomass Production. He has served on the U.S. Department of Energy's Biomass Research and Development Technical Advisory Committee and has been active in the Biotechnology Industry Organization where he has served as Vice Chairman of the organization, chaired its Food and Agriculture Governing Board and served in other leadership roles. From 1992 to 1997, Dr. Hamilton was a Principal at Oxford Bioscience Partners and from 1993 to 1996 he was an Associate at Boston-based MVP Ventures. From 1990 to 1991, Dr. Hamilton was a Howard Hughes Medical Institute Research Fellow at Harvard Medical School. Dr. Hamilton received a B.S. in biology from St. Lawrence University and holds a Ph.D. in molecular biology from Vanderbilt University. The Board believes that Dr. Hamilton brings extensive management, biotechnology and financial experience that will contribute to his role on the Board.

Peter N. Kellogg has served as a Director of Yield10 Bioscience since March 2007. He was named Executive Vice President and Chief Financial Officer of Celgene Corporation in August 2014. Previously, Mr. Kellogg was Chief Financial Officer and Executive Vice President of Merck & Co. Inc. since August 2007. From 2000 to 2007, Mr. Kellogg served as Chief Financial Officer and Executive Vice President of Finance (since 2003) at Biogen Idec Inc. and the former Biogen, Inc. Before that, he served as Senior Vice President, PepsiCo E-Commerce at PepsiCo Inc. from March to July 2000 and as Senior Vice President and Chief Financial Officer, Frito-Lay International, from March 1998 to March 2000. From 1987 to 1998, he served in a variety of senior financial, international and general management positions at PepsiCo and the Pepsi-Cola International, Pepsi-Cola North America, and Frito-Lay International divisions. Prior to joining PepsiCo, Mr. Kellogg was a senior consultant with Arthur Andersen & Co. and Booz Allen & Hamilton. He received a BSE from Princeton University in 1978 and an MBA from The Wharton School in 1982. The Board of Directors has concluded that Mr. Kellogg should serve as a director because his experience in finance and biotechnology will be valuable to Yield10 Bioscience. Mr. Kellogg brings valuable insights from his current and prior positions that contribute to his role on the Board. He also serves as an important resource on the Audit Committee.

Joseph Shaulson has served as a Director since December 2013. He was previously our President and Chief Executive Officer from January 2014 until October 2016. Mr. Shaulson was previously Executive Vice President of Arch Chemicals with responsibility for a variety of global businesses, including Personal Care and Industrial Biocides, Wood Protection, Performance Products and Industrial Coatings. He also led Arch's strategic planning and corporate development functions when he joined

the company as Vice President, Strategic Development in 2008. Prior to Arch, Mr. Shaulson served in various leadership positions at Hexcel Corporation, an advanced composites company, including President of the Reinforcements Business Unit. Prior to Hexcel, Mr. Shaulson served as a corporate associate at the law firm of Skadden, Arps, Slate, Meagher & Flom. Mr. Shaulson received a Bachelor of Science degree in Economics and a Master of Business Administration degree from the Wharton School at the University of Pennsylvania, as well as a Juris Doctor degree from the University of Pennsylvania Law School. The Board of Directors has concluded that Mr. Shaulson should serve as a Director because he is a proven executive who has successfully led and developed global specialties businesses and he has valuable knowledge and experience related to the Company's agricultural biotechnology gained during his tenure as the Company's President and Chief Executive Officer.

Anthony J. Sinskey, Sc.D., has served as a Director since June 1992 and was a co-founder of Metabolix. From 1968 to present, Dr. Sinskey has been on the faculty of MIT. Currently at MIT, he serves as Professor of Microbiology in the Department of Biology and Professor of Health Sciences and Technology in the Harvard-MIT Health Sciences and Technology Program Engineering Systems Division, as well as faculty director of the Center for Biomedical Innovation. Dr. Sinskey serves on the board of directors of Tepha, Inc. (see "Certain Relationships and Related Person Transactions"). Dr. Sinskey received a B.S. from the University of Illinois and a Sc.D. from MIT. The Board believes that, as a faculty member of an academic institution with significant research activity in areas related to the Company's own research, Dr. Sinskey contributes to the Board his scientific knowledge and his awareness of new developments in these fields. Dr. Sinskey's involvement with other start-up and developing enterprises also makes him a valuable Board member.

Robert L. Van Nostrand is a consultant who has served as Chairman of the Board since October 2013 and as a Director since October 2006. From January 2010 to July 2010, he was Executive Vice President and Chief Financial Officer of Aureon Laboratories, Inc. From July 2007 until September 2008, Mr. Van Nostrand served as Executive Vice President and Chief Financial Officer of AGI Dermatics, Inc. Mr. Van Nostrand was with OSI Pharmaceuticals, Inc. from 1986 to 2007, serving as Senior Vice President and Chief Compliance Officer from May 2005 until July 2007, and as the Vice President and Chief Financial Officer from 1996 through 2005. Prior to joining OSI, Mr. Van Nostrand was in a managerial position with Touche Ross & Co. (currently Deloitte and Touche). Mr. Van Nostrand serves on the board of directors and is Chairman of the audit committee and a member of the compensation committee of Achillion Pharmaceuticals, Inc. (since 2007), serves on the board of directors and is Chairman of the audit committee of Intra-Cellular Therapies, Inc. (since January 2014), serves on the boards of directors of Enumeral Biomedical, Inc. (since December 2014) and the Biomedical Research Alliance of New York (BRANY) (since 2011), and served on the board of directors and as Chair of the audit committee of Apex Bioventures, Inc. from 2006 to 2009. Mr. Van Nostrand received a B.S. in Accounting from Long Island University, New York, completed advanced management studies at the Wharton School, and he is a Certified Public Accountant. The Board believes that the Company is very fortunate to have Mr. Van Nostrand serve as a director and as Chairman of our Audit Committee because of the depth of his experience and expertise in financial reporting and corporate compliance, as well as his operational experience.

Lynne H. Brum has served as Vice President, Planning and Communications since October 2016. She joined the Company in November 2011 as Vice President, Marketing and Corporate Communications. Prior to joining the Company, in 2010 to 2011 she was a communications consultant and served in various roles including as a freelance project director for Seidler Bernstein Inc. Ms. Brum served from 2007 to 2009 as an Executive Vice President at Porter Novelli Life Sciences, a subsidiary of global PR firm, Porter Novelli International. Prior to that, Ms. Brum was responsible for corporate communications, investor relations and brand management for Vertex Pharmaceuticals, Inc. from 1994 to 2007 in various positions, including Vice President of Strategic Communications. Ms. Brum was also a vice president at Feinstein Kean Healthcare and was part of the communications team at

Biogen, Inc.. Ms. Brum holds a bachelor's degree in biological sciences from Wellesley College and a master's degree in business administration from Simmons College's School of Management.

Charles B. Haaser has served as the Company's Vice President, Finance, Chief Accounting Officer and Treasurer since October 2016 after having served as Chief Accounting Officer and Treasurer since November 2014, and its Corporate Controller since 2008. Mr. Haaser has more than thirty years of experience in accounting and finance, primarily working for publicly traded U.S. companies. Before joining Yield10 Bioscience, Mr. Haaser was the Corporate Controller of Indevus Pharmaceuticals, Inc. from 2006 to 2008. He was the Corporate Controller and Principal Accounting Officer at ABIOMED, Inc. from 1998 to 2006 and additionally served as ABIOMED's Acting Chief Financial Officer from 2003 to 2006. From 1997 to 1998 Mr. Haaser was Controller for Technical Communications Corporation and from 1986 to 1997 was the Director of Finance at ISI Systems, Inc. From 1984 to 1986 Mr. Haaser was an auditor in the commercial audit division of Price Waterhouse LLP (now PricewaterhouseCoopers LLP). Mr. Haaser received a bachelor's degree in business administration (finance) from the University of Notre Dame, an MBA from Northeastern University and a Masters of Science in Taxation from Bentley University. Mr. Haaser became a Certified Public Accountant in 1997.

Kristi D. Snell, Ph.D. was named Vice President, Research and Chief Science Officer in October 2016 in conjunction with the transition to Yield10 Bioscience as the Company's core business. Dr. Snell joined the Company in 1997 and she has led the plant science research program since its inception. She has held a number of positions with the Company, including Vice President, Research and Biotechnology from July 2013 until October 2016 and President of Metabolix Oilseeds, the Company's wholly owned Canadian subsidiary, from April 2014 to present. Dr. Snell has more than 20 years of relevant experience and is an industry recognized expert in metabolic engineering of plants and microbes for the production of novel products and increased plant yield. Dr. Snell received a bachelor of science degree in Chemistry from the University of Michigan, and a Ph.D. in Organic Chemistry from Purdue University where she worked on metabolic engineering strategies to increase carbon flow to industrial products. Dr. Snell conducted her post-doctoral research at MIT in biochemistry and metabolic engineering.

Independence of Members of the Board of Directors

The Board of Directors has determined that each of the Company's non-employee directors (Dr. Hamilton, Mr. Kellogg, Dr. Sinskey, Mr. Shaulson, and Mr. Van Nostrand) is independent within the meaning of the director independence standards of The NASDAQ Stock Market, LLC. ("NASDAQ") and the Securities and Exchange Commission ("SEC"), including rules under the Securities Exchange Act of 1934, as amended (the "Exchange Act"). Furthermore, the Board of Directors has determined that each member of each of the Audit, Compensation and Nominating and Corporate Governance committees of the Board of Directors is independent within the meaning of the director independence standards of NASDAQ and the SEC, and that each member of the Audit Committee meets the heightened director independence standards for audit committee members as required by the SEC. In evaluating the independence of the directors, the Board considered the relationships of Dr. Sinskey as a stockholder and member of the board of directors of Tepha, Inc. The Board determined that these relationships did not impair the independence of Dr. Sinskey. See "Certain Relationships and Related Person Transactions."

At least annually, a committee of the Board of Directors evaluates all relationships between the Company and each director in light of relevant facts and circumstances for the purpose of determining whether a material relationship exists that might signal a potential conflict of interest or otherwise interfere with such director's ability to satisfy his responsibilities as an independent director.

Executive Sessions

The Board of Directors generally holds executive sessions of the independent directors following regularly scheduled in-person meetings of the Board of Directors, at least four times a year. Executive sessions do not include any employee directors of the Company.

Board Leadership Structure

Robert L. Van Nostrand serves as our non-executive chairman of the board. Since March 2008, we have maintained a leadership structure with the non-executive chairman separate from the chief executive officer, although the Board of Directors has no formal policy with respect to the separation of such offices. Our Board of Directors believes that having separate offices of the chairman and chief executive officer currently functions well and is the appropriate leadership structure for our Company. While the Board of Directors may combine these offices in the future if it considers such a combination to be in the best interest of the Company, it currently intends to retain this structure. Separating these positions allows our chief executive officer to focus on our day-to-day business, while allowing the chairman of the board to lead our Board of Directors in its fundamental role of providing advice to and independent oversight of management.

The Board of Directors' Role in Risk Oversight

The risk oversight function of the Board is carried out by both the Board and its committees. The full Board (or the appropriate Board committee in the case of risks that are under the purview of a particular committee) discusses with management our major risk exposures, their potential impact on our Company, and the steps we take to manage them. The Board regularly reviews information regarding our liquidity and operations, as well as the risks associated with each, and oversees management of risks associated with environmental, health and safety, and other compliance matters. Our Audit Committee meets periodically with management to discuss our major financial and operating risk exposures and the steps, guidelines and policies taken or implemented relating to risk assessment and risk management. The Compensation Committee is responsible for overseeing the management of risks relating to our executive compensation plans and arrangements. Our Nominating and Corporate

Governance Committee manages risks associated with the independence of the Board and potential conflicts of interest.

Compensation Risk Assessment

The Compensation Committee believes that our employee compensation policies and practices are not structured to be reasonably likely to present a material adverse risk to the Company. We believe we have allocated our compensation among base salary and short- and long-term incentive compensation opportunities in such a way as to not encourage excessive or inappropriate risk-taking by our executives and other employees. We also believe our approach to goal setting and evaluation of performance results reduce the likelihood of excessive risk-taking that could harm our value or reward poor judgment.

Policies Governing Director Nominations

Director Qualifications

The Nominating and Corporate Governance Committee of the Board of Directors is responsible for reviewing, from time to time, the appropriate qualities, skills and characteristics desired of members of the Board of Directors in the context of the current make-up of the Board of Directors and selecting or recommending to the Board of Directors, nominees for election as Directors. This assessment includes consideration of the following minimum qualifications set forth in our Corporate Governance Guidelines that can be found in the corporate governance section of our website at <http://ir.yield10bio.com/governance.cfm>:

- The director shall have experience at a strategic or policymaking level in a business, government, non-profit or academic organization of high standing.
- The director shall be highly accomplished in his or her respective field, with superior credentials and recognition.
- The director shall be well regarded in the community and shall have a long-term reputation for high ethical and moral standards.
- The director shall have sufficient time and availability to devote to the affairs of the Company, particularly in light of the number of boards on which the nominee may serve.
- To the extent such director serves or has previously served on other boards, the director shall have a demonstrated history of actively contributing at board meetings.

The Nominating and Corporate Governance Committee also considers numerous other qualities, skills and characteristics when evaluating director nominees, such as:

- An understanding of and experience in the biotechnology, chemicals or agricultural industries;
- An understanding of and experience in accounting oversight, governance, finance, marketing or regulatory affairs; and
- Leadership experience with public companies or other significant organizations.

These factors and others are considered useful by the Board of Directors, and are reviewed in the context of an assessment of the perceived needs of the Board of Directors at a particular point in time. While the Board does not have a formal diversity policy, the Nominating and Corporate Governance Committee seeks nominees with a broad diversity of experience, professions, skills, and backgrounds.

The Board of Directors is responsible for selecting and nominating candidates for election as directors but delegates the selection and nomination process to the Nominating and Corporate Governance Committee, with the expectation that other members of the Board of Directors or members of management will be requested to take part in the process as appropriate.

Generally, the Nominating and Corporate Governance Committee identifies candidates for director nominees in consultation with management, through the use of search firms or other advisers, through the recommendations submitted by stockholders or through such other methods as the Nominating and Corporate Governance Committee deems to be helpful to identify candidates. Once candidates have been identified, the Nominating and Corporate Governance Committee confirms that the candidates meet all of the minimum qualifications for director nominees established by the Nominating and Corporate Governance Committee. The Nominating and Corporate Governance Committee may gather information about the candidates through interviews, background checks, or any other means that the Nominating and Corporate Governance Committee deems to be helpful in the evaluation process. The Nominating and Corporate Governance Committee discusses and evaluates the qualities and skills of each candidate, taking into account the overall composition and needs of the Board. Based on the results of the evaluation process, the Nominating and Corporate Governance Committee recommends candidates for the Board's approval as director nominees for election to the Board. The Nominating and Corporate Governance Committee also recommends candidates for the Board's appointment to the committees of the Board.

Procedures for Recommendation of Nominees by Stockholders

The Nominating and Corporate Governance Committee will consider director candidates who are recommended by the stockholders of the Company. Stockholders, in submitting recommendations to the Nominating and Corporate Governance Committee for director candidates, shall follow the procedures set forth in the Company's Corporate Governance Guidelines found on our website at <http://ir.yield10bio.com/governance.cfm>. The Nominating and Corporate Governance Committee must receive any such recommendation for nomination 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.

Such recommendation for nomination must be in writing and include the following:

- Name and address of the stockholder making the recommendation, as they appear on the Company's books and records, and of such record holder's beneficial owner;
- Number of shares of capital stock of the Company that are owned beneficially and held of record by such stockholder and such beneficial owner;
- Name and address of the individual recommended for consideration as a director nominee (a "Director Nominee");
- The principal occupation of the Director Nominee;
- The total number of shares of capital stock of the Company that will be voted for the Director Nominee by the stockholder making the recommendation;
- All other information relating to the recommended candidate that would be required to be disclosed in solicitations of proxies for the election of directors, or is otherwise required, in each case pursuant to Regulation 14A under the Securities Exchange Act of 1934, as amended (the "Exchange Act") (including the recommended candidate's written consent to being named in the proxy statement as a nominee and to serving as a director if approved by the Board and elected); and

- A written statement from the stockholder making the recommendation stating why such recommended candidate would be able to fulfill the duties of a director.

Nominations must be sent to the attention of the Secretary of the Company by U.S. Mail (including courier or expedited delivery service) to Yield10 Bioscience, Inc., 19 Presidential Way, Woburn, MA 01801 or by facsimile at (617) 583-1767. The Secretary of the Company will promptly forward any such nominations to the Nominating and Corporate Governance Committee. Once the Nominating and Corporate Governance Committee receives the nomination of a candidate, the candidate will be evaluated and a recommendation with respect to such candidate will be delivered to the Board. Nominations not made in accordance with the foregoing policy shall be disregarded by the Nominating and Corporate Governance Committee and votes cast for such nominees shall not be counted.

Policy Governing Stockholder Communications with the Board of Directors

The Board provides to every stockholder the ability to communicate with the Board, as a whole, and with individual directors on the Board through an established process for stockholder communication (as that term is defined by the rules of the SEC). Stockholders may send such communication to the attention of the Chairman of the Board or to the attention of the individual director by U.S. Mail (including courier or expedited delivery service) to Yield10 Bioscience, Inc., 19 Presidential Way, Woburn, MA 01801 or by facsimile at (617) 583-1767. The Company will forward any such stockholder communication to the Chairman of the Board, as a representative of the Board, and/or to the director to whom the communication is addressed.

Policy Governing Director Attendance at Annual Meetings of Stockholders

Our policy is to schedule a regular meeting of the Board of Directors on the same date as the Company's annual meeting of stockholders and, accordingly, directors are encouraged to be present at our stockholder meetings. None of the individuals who were directors of the Company at the time of the 2016 annual meeting of stockholders attended that meeting.

Code of Business Conduct and Ethics

The Company has adopted the Code of Business Conduct and Ethics ("Code of Business Conduct") as its "code of ethics" as defined by regulations promulgated under the Securities Act of 1933, as amended (the "Securities Act"), and the Exchange Act (and in accordance with the NASDAQ requirements for a "code of conduct"), which applies to all of the Company's directors, officers and employees, including our principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions. A current copy of the Code of Business Conduct is available at the Company's website at <http://www.yield10bio.com> under "Investor Relations—Corporate Governance." A copy of the Code of Business Conduct may also be obtained free of charge from the Company upon a request directed to Yield10 Bioscience, Inc., 19 Presidential Way, Woburn, MA 01801, Attention: Investor Relations. The Company will promptly disclose any substantive changes in or waivers, along with reasons for the waivers, of the Code of Business Conduct granted to its executive officers, including its principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions, and its directors by posting such information on its website at <http://www.yield10bio.com> under "Investor Relations—Corporate Governance."

Board of Directors

The Board of Directors held four meetings during the year ended December 31, 2016. In addition, there were numerous conference calls held with the Board for informational updates and discussion. During the year ended December 31, 2016, no director attended fewer than 75% of the aggregate of (i) the total number of meetings of the Board and (ii) the total number of meetings held by all committees of the Board on which such director served. The Board has a standing Audit Committee, Compensation Committee and Nominating and Corporate Governance Committee. Each of these committees has a charter that has been approved by the Board of Directors. A current copy of each charter is available on the Company's website at <http://www.yield10bio.com> under "Investor Relations—Corporate Governance." Each committee reviews the appropriateness of its charter periodically, as conditions dictate. Each committee retains the authority to engage its own advisors and consultants. The composition and responsibilities of each committee are summarized below.

Audit Committee

Mr. Van Nostrand, Mr. Kellogg and Dr. Hamilton serve on the Audit Committee. Mr. Van Nostrand is the chairman of the Audit Committee. The Board of Directors has determined that each member of the Audit Committee is independent within the meaning of the Company's and NASDAQ's director independence standards and the SEC's heightened director independence standards for Audit Committee members as determined under the Exchange Act. The Board of Directors has also determined that each of Mr. Kellogg, Mr. Van Nostrand and Dr. Hamilton also qualify as "Audit Committee financial experts" under the rules of the SEC. The Audit Committee met four times during the year ended December 31, 2016.

The Audit Committee is responsible for overseeing the accounting and financial reporting processes of the Company and the audits of the financial statements of the Company and exercising the responsibilities and duties set forth in its charter, including but not limited to:

- appointing, approving the compensation of, and assessing the independence of our independent registered public accounting firm;
- pre-approving auditing and permissible non-audit services, and the terms of such services, to be provided by our independent registered public accounting firm;
- reviewing and discussing with management and the independent registered public accounting firm our annual and quarterly financial statements and related disclosures;
- coordinating the oversight and reviewing the adequacy of our internal control over financial reporting;
- establishing policies and procedures for the receipt and retention of accounting related complaints and concerns; and
- preparing the Audit Committee report required by SEC rules to be included in our annual proxy statement.

Compensation Committee

Dr. Sinskey, Dr. Hamilton and Mr. Van Nostrand serve on the Compensation Committee. Dr. Sinskey is the chairman of the Compensation Committee. The Board of Directors has determined that each member of the Compensation Committee is independent within the meaning of the Company's, the SEC's and NASDAQ's director independence standards. The Compensation Committee

held two meetings during the year ended December 31, 2016. The Compensation Committee's responsibilities include:

- annually reviewing and approving goals and objectives relevant to compensation of our executive officers, including the chief executive officer;
- evaluating the performance of our chief executive officer and other executive officers in light of such goals and objectives;
- determining the compensation of our chief executive officer and other executive officers;
- reviewing and approving, for the chief executive officer and the other executive officers of the Company, any employment agreements, severance arrangements, and change in control agreements or provisions;
- overseeing the administration of our incentive-based and equity-based compensation plans; and
- reviewing and making recommendations to the Board with respect to director compensation.

Nominating and Corporate Governance Committee

Dr. Sinskey serves on the Nominating and Corporate Governance Committee. The Board of Directors has determined that the member of the Nominating and Corporate Governance Committee is independent within the meaning of the Company's, the SEC's and NASDAQ's director independence standards. The Nominating and Corporate Governance Committee did not hold any meetings during the year ended December 31, 2016, but did take action by written consent. The Nominating and Corporate Governance Committee's responsibilities include:

- developing and recommending to the Board criteria for Board and committee membership;
- establishing procedures for identifying and evaluating director candidates, including nominees recommended by stockholders;
- identifying individuals qualified to become Board members;
- recommending to the Board the persons to be nominated for election as directors and to each of the Board's committees;
- developing succession plans for the Board;
- developing and recommending to the Board a code of business conduct and ethics and a set of corporate governance guidelines; and
- overseeing the evaluation of the Board and its committees.

COMPENSATION COMMITTEE INTERLOCKS AND INSIDER PARTICIPATION

During 2016, Dr. Sinskey, Ms. Celeste Beeks Mastin (who resigned as a member of the Board on March 1, 2017), and Mr. Van Nostrand served as members of the Compensation Committee. During 2016, no executive officer of the Company served as: (i) a member of the compensation committee (or other committee of the Board of Directors performing equivalent functions or, in the absence of any such committee, the entire Board of Directors) of another entity, one of whose executive officers served on the Compensation Committee of the Company; (ii) a director of another entity, one of whose executive officers served on the Compensation Committee of the Company; or (iii) a member of the compensation committee (or other committee of the Board of Directors performing equivalent functions or, in the absence of any such committee, the entire Board of Directors) of another entity, one of whose executive officers served as a director of the Company.

**EXECUTIVE COMPENSATION
SUMMARY COMPENSATION TABLE**

The following table summarizes the compensation earned during the years ended December 31, 2016 and December 31, 2015 by our principal executive officer, our former principal executive officer and the two other most highly paid executive officers who were serving as executive officers on December 31, 2016 (our named executive officers):

Name and Principal Position	Year	Salary	Bonus	Stock Awards(1)	Option Awards(1)	Non-Equity Incentive Plan Compensation(2)	All Other Compensation(3)	Total
Oliver P. Peoples, Ph.D.	2016	\$237,500	—	—	\$ 389,355	—	\$ 11,925	\$ 638,780
President and Chief Executive Officer	2015	\$240,000	—	\$ 396,900	—	\$ 144,000	\$ 11,925	\$ 792,825
Lynne H. Brum	2016	\$220,000	—	—	\$ 196,850	—	\$ 11,925	\$ 428,775
Vice President, Planning and Communications	2015	\$220,000	—	\$ 342,975	—	\$ 88,000	\$ 11,675	\$ 662,650
Joseph Shaulson,	2016	\$320,833	—	—	\$ 196,105	—	\$ 67,350	\$ 584,288
Former President and Chief Executive Officer	2015	\$350,000	—	\$ 762,300	—	\$ 210,000	\$ 71,925	\$ 1,394,225
Kristi D. Snell, Ph.D.	2016	\$214,347	—	—	\$ 289,600	—	\$ 11,925	\$ 515,872
Vice President, Research and Chief Scientific Officer								

- (1) The amounts listed in the "Stock Awards" and "Option Awards" columns do not represent the actual amounts paid in cash or value realized by the named executive officers. These amounts represent the aggregate grant date fair value of restricted stock units and stock option awards for each individual computed in accordance with FASB ASC Topic 718. For a discussion of valuation assumptions, see Note 10 to our 2016 Consolidated Financial Statements, and Note 12 to our 2015 Consolidated Financial Statements included in our Annual Reports on Form 10-K for the years ended December 31, 2016 and 2015, respectively.
- (2) 2015 Non-Equity Incentive Plan Compensation represents bonus amounts paid in March 2016 based on the Compensation Committee's review of corporate performance for fiscal 2015 pursuant to the Company's executive cash incentive performance bonus program.
- (3) Other Compensation for 2016 and 2015 includes the value of the Company's Common Stock contributed to the Company's 401(k) plan as a matching contribution. In Mr. Shaulson's case, Other Compensation also includes \$50,000 and \$60,000 paid to him for temporary living and commuting costs during 2016 and 2015, respectively, and in 2016, cash payment of \$5,425 for unused vacation earned through his date of termination.

Narrative Disclosure to Summary Compensation Table

Base Salaries

During 2016, Dr. Peoples' base salary decreased from \$240,000 to \$225,000 per year in recognition of his increased opportunity to obtain future value from stock options awarded to him during 2016. Other than Dr. Peoples, base salary levels for the named executive officers remained unchanged during 2016 as compared to 2015. Since 2008 there have been no increases in base salaries for the named executive officers other than in connection with promotions.

Pay for Performance

Executive bonuses have historically been awarded based on overall corporate performance and to recognize and reward the teamwork of the named executive officers in advancing corporate goals, although the Compensation Committee retained the discretion to adjust individual bonus amounts in exceptional cases.

During 2016, the Board of Directors of the Company approved a strategic restructuring plan under which Yield10 Bioscience became its core business with a focus on developing disruptive technologies

for step-change improvements in crop yield. As part of the restructuring, the Company discontinued its biopolymer operations and eliminated approximately 45 positions in its biopolymer and corporate organization. To further conserve cash resources and to more strongly link employee performance to the future success of Yield10 Bioscience, executive officers and other employees with the Company, received stock options during 2016 in lieu of cash bonuses that would normally have been paid during the Company's first quarter of 2017.

Long-Term Incentives

In connection with the Company's strategic pivot to Yield10 Bioscience, the Compensation Committee awarded long-term stock option incentives in 2016 to the executive officers and other employees whose employment continued beyond the completed restructuring. Each awarded option has an exercise price per share equal to the fair market value of the Company's common stock on the date of the grant, vests in four equal semi-annual installments at a rate of 25% per installment over two years, and has a term of ten years from the date of grant. Named executive officers receiving these stock option awards were as follows:

<u>Named Executive Officer</u>	<u>Number of Options</u>
Oliver P. Peoples	1,650,000
Kristi D. Snell	1,000,000
Lynne H. Brum	500,000

Option Awards and Award Modifications in lieu of Cash Severance

On November 4, 2016, the Company's Board of Directors awarded Mr. Shaulson, its former Chief Executive Officer, a non-qualified stock option grant for 750,000 shares under a separation agreement. These options have an exercise price per share equal to the fair market value of the Company's common stock on the date of grant, were fully vested on the effective date of the separation agreement, became exercisable on the effective date of the release required by the separation agreement and will remain exercisable through December 19, 2023.

In December 2013, the Company's Board of Directors granted a non-qualified stock option award for the purchase of 191,667 shares of common stock to Mr. Shaulson in connection with his agreement to serve as a member of the Company's Board and to accept employment as its President and Chief Executive Officer. Upon execution of his separation agreement on November 4, 2016, the 143,750 remaining unvested stock options under this award became fully vested and 151,250 previously outstanding RSUs awarded to Mr. Shaulson in 2015 became fully vested.

The new stock option award and the accelerated vesting of the previously awarded RSUs and stock options were provided to Mr. Shaulson in lieu of any cash severance and 2016 cash bonus payable under his previous employment agreement.

OUTSTANDING EQUITY AWARDS AT FISCAL YEAR-END

The following table summarizes stock option and restricted stock awards held by our named executive officers at December 31, 2016:

Name	Grant Date	Option Awards				Stock Awards	
		Number of Securities Underlying Unexercised Options(1) Exercisable	Number of Securities Underlying Unexercised Options(1) Unexercisable(1)	Option Exercise Price(\$)	Option Expiration Date	Number of Shares or Units of Stock That Have Not Vested (#)	Market Value of Shares or Units of Stock That Have Not Vested (\$)(2)
Oliver P. Peoples	5/17/2007	6,667	—	\$ 143.94	5/17/2017	—	—
	3/5/2008	6,667	—	\$ 90.00	3/5/2018	—	—
	5/28/2009	6,667	—	\$ 41.58	5/28/2019	—	—
	5/27/2010	7,500	—	\$ 86.94	5/27/2020	—	—
	5/19/2011	7,501	—	\$ 43.50	5/19/2021	—	—
	2/1/2012	15,000	—	\$ 15.96	2/1/2022	—	—
	9/18/2012	20,833	—	\$ 9.30	9/18/2022	—	—
	5/30/2013	10,209	1,458	\$ 10.14	5/30/2023	—	—
	10/26/2016	—	1,650,000	\$ 0.53	10/26/2026	—	—
	4/1/2015(3)					78,750	\$ 27,563
Lynne H. Brum	11/17/2011	5,833	—	\$ 24.78	11/17/2021	—	—
	5/31/2012	3,333	—	\$ 12.00	5/31/2022	—	—
	5/30/2013	5,833	834	\$ 10.14	5/30/2023	—	—
	10/26/2016	—	500,000	\$ 0.53	10/26/2026	—	—
	4/1/2015(3)					58,749	\$ 20,562
Joseph Shaulson	12/19/2013	191,667	—	\$ 7.98	12/19/2023	—	—
	11/4/2016	750,000	—	\$ 0.44	12/19/2023	—	—
Kristi D. Snell	3/5/2008	417	—	\$ 90.00	3/5/2018	—	—
	5/30/2008	2,500	—	\$ 67.32	5/30/2018	—	—
	10/21/2008	1,400	—	\$ 54.72	10/21/2018	—	—
	8/21/2009	1,333	—	\$ 63.24	8/21/2019	—	—
	2/12/2010	1,667	—	\$ 58.62	2/12/2020	—	—
	2/11/2011	1,667	—	\$ 54.72	2/11/2021	—	—
	2/1/2012	3,334	—	\$ 15.96	2/1/2022	—	—
	5/31/2012	3,334	—	\$ 12.00	5/31/2022	—	—
	9/18/2012	10,000	—	\$ 9.30	9/18/2022	—	—
	2/13/2013	1,563	104	\$ 10.08	2/13/2023	—	—
	7/22/2013	3,386	781	\$ 8.88	7/22/2023	—	—
	2/24/2014	3,439	1,562	\$ 7.74	2/24/2024	—	—
	10/26/2016	—	1,000,000	\$ 0.53	10/26/2026	—	—
	4/1/2015(3)					21,249	\$ 7,437
	9/30/2015(3)					22,500	\$ 7,875

(1) All stock options that are not yet fully exercisable vest in equal quarterly installments over a period of four years from the grant date, except for options awarded to Dr. Peoples, Dr. Snell and

Ms. Brum on 10/26/16, that vest in four equal semi-annual installments at the rate of 25% per installment commencing on 10/26/16.

- (2) The aggregate market value of the unvested RSUs as shown in the table is based on \$0.35 per share, the closing price per share of the Company's common stock on December 30, 2016.
- (3) These RSUs will vest in four equal annual installments over a period of four years from the grant date.

Executive Employment Agreements

Oliver P. Peoples. The Company has an employment agreement with Dr. Oliver P. Peoples, President and Chief Executive Officer. The agreement includes a minimum salary of \$225,000 and provides that Dr. Peoples will be eligible to receive annual bonuses based on individual and Company performance. Pursuant to the terms of Dr. Peoples' agreement, if the Company terminates Dr. Peoples' employment without "cause" or if Dr. Peoples terminates his employment for "good reason" (each, as defined in the agreement), he will be entitled to "separation benefits" (as defined in the agreement) including a lump-sum cash payment equal to the greater of \$480,000 or 24 months' base salary and a pro rata portion of the target bonus for the year in which termination occurs, but not less than a pro rata portion of \$180,000, plus payment of COBRA premiums for 24 months, provided that he signs a separation agreement that includes an irrevocable general release and non-disparagement and confidentiality provisions in favor of the Company. If the Company terminates Dr. Peoples' employment without cause or if Dr. Peoples terminates his employment for good reason within the twenty-four month period immediately following, or the two month period immediately prior to, a "change of control" (as defined in the agreement), in addition to any accrued obligations, and subject to certain conditions, Dr. Peoples will be entitled to the separation benefits and automatic full vesting of his unvested stock options. To the extent Dr. Peoples would be subject to tax under Section 4999 of the Internal Revenue Code as a result of company payments and benefits, the payments and benefits will be reduced if the reduction would maximize his total after-tax payments.

Lynne H. Brum. The Company has an employment agreement with Lynne H. Brum, Vice President of Planning and Communications. The agreement includes a minimum salary of \$220,000 and provides that Ms. Brum will be eligible to receive annual bonuses based on individual and Company performance. Pursuant to the terms of Ms. Brum's agreement, if the Company terminates Ms. Brum's employment without "cause" or if Ms. Brum terminates her employment for "good reason" (each, as defined in the agreement), she will be entitled to "separation benefits" (as defined in the agreement) including a lump-sum cash payment equal to 12 months' base salary and payment of COBRA premiums for 12 months, provided that she signs a separation agreement that includes an irrevocable general release and non-disparagement and confidentiality provisions in favor of the Company. If the Company terminates Ms. Brum's employment without cause or if Ms. Brum terminates her employment for good reason within the twenty-four month period immediately following, or the two month period immediately prior to, a "change of control" (as defined in the agreement), in addition to any accrued obligations, and subject to certain conditions, Ms. Brum will be entitled to the separation benefits and automatic full vesting of her unvested stock options. To the extent Ms. Brum would be subject to tax under Section 4999 of the Internal Revenue Code as a result of company payments and benefits, the payments and benefits will be reduced if the reduction would maximize her total after-tax payments.

Charles B. Haaser. The Company has an employment agreement with Charles B. Haaser, Vice President of Finance & Chief Accounting Officer. The agreement includes a minimum salary of \$205,000 and provides that Mr. Haaser will be eligible to receive annual bonuses based on individual and Company performance. Pursuant to the terms of Mr. Haaser's agreement, if the Company terminates Mr. Haaser's employment without "cause" or if Mr. Haaser terminates his employment for "good reason" (each, as defined in the agreement), he will be entitled to "separation benefits" (as

defined in the agreement) including a lump-sum cash payment equal to 12 months' base salary and payment of COBRA premiums for 12 months, provided that he signs a separation agreement that includes an irrevocable general release and non-disparagement and confidentiality provisions in favor of the Company. If the Company terminates Mr. Haaser's employment without cause or if Mr. Haaser terminates his employment for good reason within the twenty-four month period immediately following, or the two month period immediately prior to, a "change of control" (as defined in the agreement), in addition to any accrued obligations, and subject to certain conditions, Mr. Haaser will be entitled to the separation benefits and automatic full vesting of his unvested stock options. To the extent Mr. Haaser would be subject to tax under Section 4999 of the Internal Revenue Code as a result of company payments and benefits, the payments and benefits will be reduced if the reduction would maximize his total after-tax payments.

Joseph Shaulson. The Company had an employment contract with Joseph Shaulson, our former Chief Executive Officer, under which Mr. Shaulson was entitled to the following compensation in connection with his service as the president and CEO: an annual base salary of \$350,000, subject to increase to \$425,000 if the Company achieves certain revenue targets, and an annual cash bonus of up to 140% of base salary with a target bonus of no less than 70% of base salary, subject to the achievement of performance goals.

Pursuant to the terms of Mr. Shaulson's employment agreement, if Mr. Shaulson's employment were to be terminated without "cause" or for "good reason" (each, as defined in the agreement), Mr. Shaulson would be entitled to severance of 1.7 times his base salary, provided that he signed and did not revoke a general release. In addition, the vesting of all unvested equity awards would continue as scheduled, and the exercise period for all equity awards would be extended. In connection with the Company's transition to Yield10 Bioscience and the related restructuring of management, on October 17, 2016, Mr. Shaulson resigned from his executive responsibilities as president and chief executive officer of the Company and on November 4, 2016, Mr. Shaulson and the Company entered into a Separation Agreement as described below (the "Separation Agreement").

The Separation Agreement provides that Mr. Shaulson would remain an employee and provide transition support to the Company and its management team through the end of 2016. He also continues to serve on the Company's board of directors. He received base compensation and standard employee benefits during the transition period through December 31, 2016. Base compensation was continued at the rate of \$350,000 per year through the end of October and then reduced to the rate of \$175,000 per year through the end of December. Contemporaneously with the execution of this Separation Agreement, Mr. Shaulson and the Company entered into a Release Agreement, which became effective on November 11, 2016.

The Separation Agreement provided for the following in lieu of any cash severance and 2016 cash bonus payable under Mr. Shaulson's previous employment agreement:

- Mr. Shaulson's outstanding non-qualified stock options covering 143,750 shares of Common Stock were immediately vested and remain exercisable for the balance of their original term through December 19, 2023.
- Mr. Shaulson's outstanding restricted stock units covering 151,250 shares of Common Stock were immediately vested.
- Mr. Shaulson was granted new non-qualified stock options under the Company's stock option plan exercisable for a total of 750,000 shares of Common Stock. The new options have an exercise price equal to the closing price of the Company's Common Stock on the date of grant, are fully vested and became exercisable on November 11, 2016, the effective date of the Release Agreement, and will be exercisable through December 19, 2023.

Kristi D. Snell The Company has an employment agreement with Kristi D. Snell, Vice President of Research & Chief Science Officer. The agreement includes a minimum salary of \$220,000 and provides that Ms. Snell will be eligible to receive annual bonuses based on individual and Company performance. Pursuant to the terms of Ms. Snell's agreement, if the Company terminates Ms. Snell's employment without "cause" or if Ms. Snell terminates her employment for "good reason" (each, as defined in the agreement), she will be entitled to "separation benefits" (as defined in the agreement) including a lump-sum cash payment equal to 12 months' base salary and payment of COBRA premiums for 12 months, provided that she signs a separation agreement that includes an irrevocable general release and non-disparagement and confidentiality provisions in favor of the Company. If the Company terminates Ms. Snell's employment without cause or if Ms. Snell terminates her employment for good reason within the twenty-four month period immediately following, or the two month period immediately prior to, a "change of control" (as defined in the agreement), in addition to any accrued obligations, and subject to certain conditions, Ms. Snell will be entitled to the separation benefits and automatic full vesting of her unvested stock options. To the extent Ms. Snell would be subject to tax under Section 4999 of the Internal Revenue Code as a result of company payments and benefits, the payments and benefits will be reduced if the reduction would maximize her total after-tax payments.

Executive Noncompetition, Nonsolicitation, Confidentiality, and Inventions Agreements

All employees named above have signed the Company's *Employee Noncompetition, Nonsolicitation, Confidentiality, and Inventions* agreement which prohibits them, during their employment by us and for a period of one year thereafter, from engaging in certain business activities which are directly or indirectly in competition with the products or services being developed, manufactured, marketed, distributed, planned, or sold by the Company during the term of their employment.

DIRECTOR COMPENSATION

The following table summarizes the compensation earned by our non-employee directors in 2016:

<u>Name</u>	<u>Fees Earned or Paid in Cash (\$)(1)</u>	<u>Stock Awards (\$)</u>	<u>Total (\$)</u>
Peter N. Kellogg	\$ 17,500	\$ —	\$ 17,500
Celeste Beeks Mastin(2)	\$ 30,000	\$ —	\$ 30,000
Anthony J. Sinskey, Sc.D.	\$ 33,750	\$ —	\$ 33,750
Matthew Strobeck, Ph.D.(2)	\$ —	\$ —	\$ —
Robert L. Van Nostrand	\$ 37,500	\$ —	\$ 37,500

- (1) Represents fees for the year 2016. All such fees were paid during 2016. Mr. Strobeck waived all cash compensation for Board and committee membership.
- (2) Dr. Strobeck and Ms. Mastin resigned from the Company's Board on January 10, 2017, and March 1, 2017, respectively.

Narrative to Director Compensation Table

Under the Company's policy for compensation of non-employee directors, each non-employee member of our Board of Directors had previously been entitled to an annual retainer of \$30,000, paid in equal quarterly installments. In addition, the chairs of the Audit Committee, Compensation Committee and Nominating and Corporate Governance Committee were entitled to an additional annual retainer of \$15,000, \$10,000 and \$10,000, respectively. Each non-employee director serving as a member but not chair of our Audit Committee, Compensation Committee and Nominating and Corporate Governance Committee received an annual retainer of \$5,000. Effective September 30, 2016, the Company's Board determined that it would temporarily suspend cash compensation to its non-employee members. The Board is exploring increased equity compensation in lieu of the reduced cash compensation and plans to revisit the matter later in 2017.

SECURITIES AUTHORIZED FOR ISSUANCE UNDER EQUITY COMPENSATION PLANS

The following table provides information about the Common Stock that may be issued upon the exercise of options, warrants and rights under all the Company's existing equity compensation plans as of December 31, 2016.

<u>Plan category</u>	<u>Number of securities to be issued upon exercise of outstanding options, warrants and rights</u>	<u>Weighted-average exercise price of outstanding options, warrants and rights</u>	<u>Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a))</u>
	(a)	(b)	(c)
Equity compensation plans approved by stockholders(1)	6,120,383	\$ 3.30	4,234,034
Equity compensation plans not approved by stockholders(2)	191,667	\$ 7.98	—

- (1) Consists of the 2006 Stock Option and Incentive Plan and the 2014 Stock Option and Incentive Plan. For a description of these plans see Note 10 to our 2016 Consolidated Financial Statements included in this Annual Report on Form 10-K for the year ended December 31, 2016.
- (2) Consists of a stock option granted to Mr. Shaulson as an inducement for him to join the Company. These options originally vested over a four year period, but the remaining unvested portion became fully vested upon execution of Mr. Shaulson's separation agreement in November 2016.

CERTAIN RELATIONSHIPS AND RELATED PERSON TRANSACTIONS

The charter of the Nominating and Corporate Governance Committee provides that the committee shall conduct an appropriate review of all related party transactions (including those required to be disclosed pursuant to Item 404 of Regulation S-K) for potential conflict of interest situations on an ongoing basis, and the approval of that committee shall be required for all such transactions.

Also, under the Company's Code of Business Conduct, any transaction or relationship that reasonably could be expected to give rise to a conflict of interest involving an employee must be reported promptly to the Company's Chief Accounting Officer, who has been designated as the Company's Compliance Officer. The Compliance Officer may notify the Board of Directors or a committee thereof as he deems appropriate. Actual or potential conflicts of interest involving a director, executive officer or the Compliance Officer must be disclosed directly to the Chairman of the Board of Directors.

The transactions set forth below were approved by a majority of the Board of Directors, including a majority of the independent and disinterested members of the Board of Directors. The Company believes that it has executed all of the transactions set forth below on terms no less favorable to us than could have been obtained from unaffiliated third parties.

The Company previously licensed certain technology to Tephra, Inc., a related party, for use in medical applications. During May 2016, the Company entered into an amendment to its license agreement with Tephra, in which the Company received a lump sum payment of \$2,000,000 in consideration for an early buyout of all future royalties under the agreement and the licensing of two additional production strains and related intellectual property that was fully delivered to Tephra during 2016. The Company recognized \$2,272,000 and \$578,000 of license and royalty revenue from Tephra for the years ended December 31, 2016 and 2015, respectively. During 2016, the Company also received \$11,000 from Tephra in connection with their purchase of certain laboratory equipment previously used in the Company's biopolymer operations. Dr. Sinskey, a member of our Board of Directors, serves on the board of directors of Tephra. Dr. Peoples, Dr. Sinskey and Dr. Snell are stockholders of Tephra, and the Company owns 648,149 shares of Tephra's Series A redeemable convertible preferred stock. We believe that the terms of the transactions with Tephra were no less favorable to us than license agreements that might be entered into with an independent third party.

REPORT OF THE AUDIT COMMITTEE

The Audit Committee for the last fiscal year consisted of Mr. Van Nostrand, Chairman, Mr. Kellogg and Dr. Strobeck. The Audit Committee has the responsibility and authority described in the Yield10 Audit Committee Charter, which has been approved by the Board of Directors. A copy of the Audit Committee Charter is available on our website at <http://www.yield10bio.com> under "Investor Relations—Corporate Governance—Essential Governance Documents." The Board of Directors has determined that the current members of the Audit Committee meet the independence requirements set forth in Rule 10A-3(b)(1) under the Securities Exchange Act of 1934, as amended, and the applicable rules of the NASDAQ Stock Market, and that Mr. Van Nostrand, Mr. Kellogg and Dr. Hamilton each qualify as an "Audit Committee financial expert" under the rules of the SEC. The Audit Committee oversees the accounting and financial reporting processes of the Company and its subsidiaries and the audits of the financial statements of the Company. Management has the primary responsibility for the financial statements and the reporting process, including the systems of internal controls.

In fulfilling its oversight responsibilities, the Audit Committee reviewed and discussed with both the management of the Company and RSM US LLP, the Company's independent registered public accounting firm, the audited financial statements included in the Company's Annual Report on Form 10-K for the year ended December 31, 2016, including a discussion of the acceptability of the accounting principles, the reasonableness of significant judgments and the clarity of disclosures in the

financial statements. The Audit Committee authorized a change in the Company's independent registered public accounting firm from PricewaterhouseCoopers LLP to RSM US LLP effective on January 3, 2017. Prior to this change, the Audit Committee reviewed the Company's quarterly financial statements for the first three fiscal quarters of the fiscal year ended December 31, 2016 and discussed them with both the management of the Company and PricewaterhouseCoopers LLP prior to including such interim financial statements in the Company's quarterly reports on Form 10-Q and its other filings with the SEC.

The Audit Committee has reviewed with RSM US LLP their judgments as to the application of the Company's accounting principles and such other matters as are required to be discussed with the Audit Committee by Statement on Auditing Standards No. 61, as amended (AICPA, Professional Standards, Vol. 1, AU Section 380), as adopted by the Public Company Accounting Oversight Board in Rule 3200T. In addition, the Audit Committee has received from RSM US LLP the written disclosures and the letter required by applicable requirements of the Public Company Accounting Oversight Board regarding RSM US LLP's communications with the Audit Committee concerning independence, has discussed with RSM US LLP their independence from management and the Company, and has considered the compatibility with RSM US LLP's independence as auditors of any non-audit services performed for the Company by RSM US LLP.

The Audit Committee discussed with RSM US LLP the overall scope and plans for their audit. The Audit Committee met with RSM US LLP, with and without management present, to discuss the results of their examinations and their evaluations of the Company's financial reporting.

Prior to its dismissal of PricewaterhouseCoopers LLP, the Audit Committee evaluated the performance of PricewaterhouseCoopers LLP, including, among other things, the amount of fees paid to PricewaterhouseCoopers LLP for audit and non-audit services during the fiscal year ended December 31, 2016.

The Audit Committee met four times during fiscal year 2016. In reliance on the reviews and discussions referred to above, the Audit Committee recommended to the Board of Directors that the Company's audited financial statements be included in the Annual Report on Form 10-K for the year ended December 31, 2016 and filed with the SEC, and the Board of Directors approved such inclusion.

Respectfully submitted by the Audit Committee,

Robert L. Van Nostrand, Chairman
Peter N. Kellogg
Richard Hamilton

INDEPENDENT REGISTERED PUBLIC ACCOUNTANTS

As noted above, the Audit Committee of the Board of Directors selected the firm of RSM US LLP, an independent registered public accounting firm, to serve as independent auditors for the fiscal year ended December 31, 2016. Prior to January 3, 2017, PricewaterhouseCoopers LLP had served as the Company's independent auditors.

Fees

The following sets forth the aggregate fees billed by RSM US LLP, to the Company for the year ended December 31, 2016:

Audit Fees

Fees related to audit services were approximately \$119,000 for the year ended December 31, 2016 and relate to the year-end audit of the Company's financial statements for that year.

Audit Related Fees

RSM US LLP billed no audit related fees for the year ended December 31, 2016.

Tax Fees

RSM US LLP billed no fees for tax services for the fiscal year ended December 31, 2016.

All Other Fees

RSM US LLP billed no other fees for the year ended December 31, 2016.

Pre-Approval Policy of the Audit Committee

All of the services performed by RSM US LLP for the fiscal year ended December 31, 2016, were pre-approved in accordance with the pre-approval policy set forth in the Audit Committee Charter. The Audit Committee pre-approves all audit services and permitted non-audit services performed or proposed to be undertaken by the independent registered public accounting firm (including the fees and terms thereof), except where such services are determined to be *de minimis* under the Exchange Act, giving particular attention to the relationship between the types of services provided and the independent registered public accounting firm's independence.

PROPOSAL 2

TO AUTHORIZE THE BOARD OF DIRECTORS TO AMEND OUR CERTIFICATE OF INCORPORATION TO EFFECT A REVERSE STOCK SPLIT

Our Board of Directors has approved and recommended a proposal to authorize the Board to effect a reverse stock split of all of our outstanding Common Stock at a ratio of not less than 1-for-2 and not more than 1-for-10, with our Board having the discretion as to whether or not the reverse split is to be effected, and with the exact ratio of any reverse split to be set at a whole number within the above range as determined by our Board in its sole discretion; provided that the reverse split must be effected, if at all, no later than November 24, 2017.

The proposal provides that our Board will have sole discretion pursuant to Section 242(c) of the Delaware General Corporation Law to elect, as it determines to be in our best interest, whether or not to effect the reverse split at any time on or before November 24, 2017, and, if so, the number of our shares of Common Stock between and including two (2) and ten (10) which will be combined into one share of our Common Stock. Our Board believes that the availability of alternative reverse split ratios will provide it with the flexibility to implement the reverse stock split in a manner designed to maximize the anticipated benefits for us and our stockholders. In determining whether to implement the reverse split following the receipt of stockholder approval, our Board of Directors may consider, among other things, factors such as:

- the historical trading price and trading volume of our Common Stock;
- the then prevailing trading price and trading volume of our Common Stock and the anticipated impact of the reverse split on the trading market for our Common Stock;
- our ability to have our shares of Common Stock remain listed on The NASDAQ Capital Market;
- the anticipated impact of the reverse split on our ability to raise additional financing;
- the anticipated reduction in our administrative costs that might result from the reverse split; and
- prevailing general market and economic conditions.

If our Board determines that effecting the reverse split is in our best interest, the reverse split will become effective upon filing of an amendment to our Certificate of Incorporation with the Secretary of State of the State of Delaware. The amendment filed thereby will set forth the number of shares to be combined into one share of our Common Stock within the limits set forth in this proposal. Except for adjustments that may result from the treatment of fractional shares as described below, each stockholder will hold the same percentage of our outstanding Common Stock immediately following the reverse split as such stockholder holds immediately prior to the reverse split.

Certain of our officers and directors have an interest in the reverse stock split as a result of their ownership of Common Stock, as set forth in the section entitled "Security Ownership of Certain Beneficial Owners and Management."

Reasons for the Reverse Stock Split

The Board believes that a reverse stock split may be desirable for two reasons. First, the Board believes that a reverse stock split may be necessary to maintain the listing of our Common Stock on The NASDAQ Capital Market. Second, the Board believes that a reverse stock split could improve the marketability and liquidity of the Common Stock.

To maintain our listing on The NASDAQ Capital Market. By potentially increasing our stock price, a reverse stock split would reduce the risk that our stock could be delisted from The NASDAQ Capital

Market. To continue our listing on The NASDAQ Capital Market, we must comply with NASDAQ Marketplace Rules, which include a minimum bid price of \$1.00 per share. On June 30, 2016, we were notified by the NASDAQ Listing Qualifications Department that we do not comply with the \$1.00 minimum bid threshold as our Common Stock had traded below the \$1.00 minimum bid price for 30 consecutive business days. We were provided with a 180-calendar day period, which ended December 27, 2016, within which to regain compliance. On December 28, 2016, we were notified by the NASDAQ Listing Qualifications Department that we were eligible for an additional 180 calendar day period, ending June 26, 2017, within which to regain compliance. To regain compliance, the closing bid price of the Company's Common Stock must be \$1.00 per share or more for a minimum of 10 consecutive business days. If the Company regains compliance, NASDAQ will provide the Company with written confirmation and will close the matter.

If the Company does not regain compliance with NASDAQ's minimum bid price rule by June 26, 2017, NASDAQ will notify the Company that its securities will be delisted. In the event of such a notification, the Company may appeal NASDAQ's determination to delist its securities, but there can be no assurance that NASDAQ would grant the Company's request for continued listing.

The Board of Directors has considered the potential harm to us and our stockholders should NASDAQ delist our Common Stock from The NASDAQ Capital Market. Delisting could adversely affect the liquidity of our Common Stock because alternatives, such as the OTC Bulletin Board and the pink sheets, are generally considered to be less efficient markets. An investor likely would find it less convenient to sell, or to obtain accurate quotations in seeking to buy, our Common Stock on an over-the-counter market. Many investors likely would not buy or sell our Common Stock due to difficulty in accessing over-the-counter markets, policies preventing them from trading in securities not listed on a national exchange or other reasons.

The Board of Directors believes that a reverse stock split is a potentially effective means for us to maintain compliance with NASDAQ Marketplace Rules and to avoid, or at least mitigate, the likely adverse consequences of our Common Stock being delisted from The NASDAQ Capital Market by producing the immediate effect of increasing the bid price of our Common Stock.

To improve the marketability and liquidity of the Common Stock. The Board of Directors believes that the increased market price of the Common Stock expected as a result of implementing a reverse stock split could improve the marketability and liquidity of the Common Stock and could encourage interest and trading in the Common Stock. A reverse stock split could allow a broader range of institutions to invest in our stock (namely, funds that are prohibited from buying stocks whose price is below a certain threshold), potentially increasing the liquidity of our Common Stock. A reverse stock split could help increase analyst and broker interest in our stock as their policies can discourage them from following or recommending companies with low stock prices. Because of the trading volatility often associated with low-priced stocks, many brokerage houses and institutional investors have internal policies and practices that either prohibit them from investing in low-priced stocks or tend to discourage individual brokers from recommending low-priced stocks to their customers. Some of those policies and practices may make the processing of trades in low-priced stocks economically unattractive to brokers. Additionally, because brokers' commissions on low-priced stocks generally represent a higher percentage of the stock price than commissions on higher-priced stocks, a low average price per share of Common Stock can result in individual stockholders paying transaction costs representing a higher percentage of their total share value than would be the case if the share price were higher.

The Board of Directors does not intend for this transaction to be the first step in a series of plans or proposals of a "going private transaction" within the meaning of Rule 13e-3 of the Securities Exchange Act.

Risks of the Proposed Reverse Stock Split

We cannot assure you that the proposed reverse stock split will increase our stock price and have the desired effect of maintaining compliance with NASDAQ Marketplace Rules. The Board of Directors expects that a reverse stock split of our Common Stock will increase the market price of our Common Stock so that we are able to regain and maintain compliance with the NASDAQ minimum bid price listing standard. However, the effect of a reverse stock split upon the market price of our Common Stock cannot be predicted with any certainty, and the history of similar stock splits for companies in like circumstances is varied. It is possible that the per share price of our Common Stock after the reverse stock split will not rise in proportion to the reduction in the number of shares of our Common Stock outstanding resulting from the reverse stock split, and the market price per post-reverse stock split share may not exceed or remain in excess of the \$1.00 minimum bid price for a sustained period of time, and the reverse stock split may not result in a per share price that would attract brokers and investors who do not trade in lower priced stocks. Even if we effect a reverse stock split, the market price of our Common Stock may decrease due to factors unrelated to the stock split. In any case, the market price of our Common Stock may also be based on other factors which may be unrelated to the number of shares outstanding, including our future performance. If the reverse stock split is consummated and the trading price of the 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 the reverse stock split. Even if the market price per post-reverse stock split share of our Common Stock remains in excess of \$1.00 per share, we may be delisted due to a failure to meet other continued listing requirements, including NASDAQ requirements related to the minimum stockholder's equity, the minimum number of shares that must be in the public float, the minimum market value of the public float and the minimum number of round lot holders.

The proposed reverse stock split may decrease the liquidity of our stock. The liquidity of our capital stock may be harmed by the proposed reverse stock split given the reduced number of shares that would be outstanding after the reverse stock split, particularly if the stock price does not increase as a result of the reverse stock split.

In addition, investors might consider the increased proportion of unissued authorized shares to issued shares to have an anti-takeover effect under certain circumstances, because the proportion allows for dilutive issuances which could prevent certain stockholders from changing the composition of the Board of Directors or render tender offers for a combination with another entity more difficult to successfully complete. The Board of Directors does not intend for the reverse stock split to have any anti-takeover effects.

Effects of the Reverse Stock Split

If the reverse stock split is approved and implemented, the principal effect will be to proportionately decrease the number of outstanding shares of our Common Stock based on the reverse stock split ratio selected by our Board of Directors. Our shares of Common Stock currently trade on The NASDAQ Capital Market. The reverse stock split will not directly affect the listing of our Common Stock on The NASDAQ Capital Market, although we believe that a reverse stock split could potentially increase our stock price, facilitating compliance with NASDAQ's minimum bid price listing requirement. Following the reverse stock split, our Common Stock will continue to be listed on The NASDAQ Capital Market under the symbol "YTEN," although our Common Stock would have a new CUSIP number, which is a number used to identify our Common Stock.

Proportionate voting rights and other rights and preferences of the holders of our Common Stock will not be affected by the proposed reverse stock split (other than as a result of the payment of cash in lieu of fractional shares). For example, a holder of 2% of the voting power of the outstanding shares of our Common Stock immediately prior to the effectiveness of the reverse stock split will generally

continue to hold 2% of the voting power of the outstanding shares of our Common Stock immediately after the reverse stock split. Moreover, the number of stockholders of record will not be affected by the reverse stock split (except to the extent any stockholders are cashed out as a result of holding fractional shares).

If the reverse stock split is approved and implemented, the Company will have additional shares of Common Stock available for issuance because the number of outstanding shares of Common Stock will decrease, while the number of authorized shares of Common Stock will be unchanged. Although the Company expects to use some of the additional authorized shares of Common Stock in the future to raise additional capital, it has no specific plans, arrangements, or understandings to do so. The additional shares would also be available for issuance pursuant to the exercise of existing outstanding options and awards under the Company's Plans and for additional equity incentive compensation awards that have been or may in the future be granted under the Plans or other arrangements.

The Common Stock is currently registered under Section 12(b) of the Securities Exchange Act, and we are subject to the periodic reporting and other requirements of the Securities Exchange Act. The proposed reverse stock split will not affect the registration of the Common Stock under the Securities Exchange Act. Our Common Stock would continue to be reported on The NASDAQ Capital Market under the symbol "YTEN," although it is likely that NASDAQ would add the letter "D" to the end of the trading symbol for a period of twenty trading days after the effective date of the reverse stock split to indicate that the reverse stock split had occurred.

Effect on Employee Plans, Options, Restricted Stock Awards and Convertible or Exchangeable Securities

Pursuant to the terms of the Plans, the Board of Directors or a committee thereof, as applicable, will adjust the number of shares available for future grant under the Plans, the number of shares underlying outstanding awards, the exercise price per share of outstanding stock options and warrants and other terms of outstanding awards issued pursuant to the Plans to equitably reflect the effects of the reverse stock split. Based upon the reverse stock split ratio determined by the Board, proportionate adjustments are also generally required to be made to the per share exercise price and the number of shares issuable upon the exercise or conversion of outstanding options, restricted stock units under other plans and arrangements and any convertible or exchangeable securities, such as warrants, entitling the holders to purchase, exchange for, or convert into, shares of Common Stock. This would result in approximately the same aggregate price being required to be paid under such options, restricted stock units and convertible or exchangeable securities upon exercise, and approximately the same value of shares of Common Stock being delivered upon such exercise, exchange or conversion, immediately following the reverse stock split as was the case immediately preceding the reverse stock split. The number of shares subject to vesting under restricted stock awards will be similarly adjusted, subject to our treatment of fractional shares. The number of shares reserved for issuance pursuant to these securities and our Plans will be adjusted proportionately based upon the reverse stock split ratio determined by the Board, subject to our treatment of fractional shares.

Board Discretion to Implement or Abandon Reverse Stock Split

The reverse split will be effected, if at all, only upon a determination by our Board that the reverse split (with an exchange ratio determined by our Board as described above) is in our best interest. Such determination shall be based upon certain factors, including, but not limited to, our ability to meet stock exchange listing requirements, existing and expected marketability and liquidity of our Common Stock, and the expense of effecting the reverse split. Notwithstanding approval of the reverse split by our stockholders, our Board may, in its sole discretion, abandon the proposal and determine, prior to the effectiveness of any filing with the Secretary of State of the State of Delaware, not to effect the reverse split.

Effective Date

If implemented by our Board, the reverse split would become effective upon the filing of an amendment to our Certificate of Incorporation with the Secretary of State of the State of Delaware; provided that the reverse split must be effected, if at all, no later than November 24, 2017. Except as explained below with respect to fractional shares, on the effective date, shares of Common Stock issued and outstanding immediately prior thereto will be combined and converted, automatically and without any action on the part of the stockholders, into new shares of Common Stock in accordance with the reverse split ratio determined by the Board within the limits set forth in this proposal.

Fractional Shares

No fractional shares of Common Stock will be issued as a result of the reverse split. Instead, stockholders who otherwise would be entitled to receive fractional shares will be entitled to receive cash in an amount equal to the product obtained by multiplying (i) the closing price of our shares of Common Stock on the day immediately preceding the effective date of the reverse split, as reported on The NASDAQ Capital Market (or, if the closing price of our Common Stock is not then reported on The NASDAQ Capital Market, then the fair market value of our shares of Common Stock as determined by the Board) by (ii) the number of shares of our Common Stock held by such stockholder that would otherwise have been exchanged for such fractional share interest.

Other Effects

If approved and implemented, the reverse split will result in some stockholders owning "odd-lots" of fewer than 100 shares of Common Stock. Brokerage commissions and other costs of transactions in odd-lots are generally somewhat higher than the costs of transactions in "round-lots" of even multiples of 100 shares.

Record and Beneficial Stockholders

If the reverse stock split is authorized by the stockholders and the Board of Directors elects to implement the reverse stock split, stockholders of record holding some or all of their shares of our Common Stock electronically in book-entry form under the direct registration system for securities will receive a transaction statement at their address of record indicating the number of shares of our Common Stock they hold after the reverse stock split. Non-registered stockholders holding Common Stock through a bank, broker or other nominee should note that such banks, brokers or other nominees may have different procedures for processing the consolidation than those that would be put in place by us for registered stockholders. If you hold your shares with such a bank, broker or other nominee and if you have questions in this regard, you are encouraged to contact your nominee.

If the reverse stock split is authorized by the stockholders and the Board of Directors elects to implement the reverse stock split, stockholders of record holding some or all of their shares in certificate form will receive a letter of transmittal, as soon as practicable after the effective date of the reverse stock split. Our transfer agent will act as "exchange agent" for the purpose of implementing the exchange of stock certificates. Holders of pre-reverse stock split shares will be asked to surrender to the exchange agent certificates representing pre-reverse stock split shares in exchange for post-reverse stock split shares, including whole shares to be issued in lieu of fractional shares (if any) in accordance with the procedures to be set forth in the letter of transmittal. Until surrender, each certificate representing shares before the reverse stock split would continue to be valid and would represent the adjusted number of shares based on the exchange ratio of the reverse stock split rounded up to the nearest whole share. No new post-reverse stock split share certificates, including those representing whole shares to be issued in lieu of fractional shares, 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.

STOCKHOLDERS SHOULD NOT DESTROY ANY PRE-SPLIT STOCK CERTIFICATE AND SHOULD NOT SUBMIT ANY CERTIFICATES UNTIL THEY ARE REQUESTED TO DO SO.

No Appraisal Rights

Our stockholders are not entitled to dissenters' or appraisal rights under the Delaware General Corporation Law with respect to the proposed authorization of a reverse stock split and we will not independently provide the stockholders with any such right if the reverse stock split is implemented.

Tax Consequences

The following is a summary of certain material United States federal income tax consequences of the reverse stock split to our stockholders. This summary does not purport to be a complete discussion of all of the possible federal income tax consequences of the reverse stock split and is included for general information only. Further, it does not address any state, local or foreign income or other tax consequences. Also, it does not address the tax consequences to stockholders that are subject to special tax rules, such as banks, insurance companies, and regulated investment entities. Other stockholders may also be subject to special tax rules, including but not limited to: stockholders that received Common Stock as compensation for services or pursuant to the exercise of an employee stock option, or stockholders who have held, or will hold, stock as part of a straddle, hedging or conversion transaction for federal income tax purposes. This summary also assumes that you are a United States holder (defined below) who has held, and will hold, shares of Common Stock as a "capital asset," as defined in the Internal Revenue Code of 1986, as amended (the "Code"), i.e., generally, property held for investment. Finally, the following discussion does not address the tax consequences of transactions occurring prior to or after the reverse stock split (whether or not such transactions are in connection with the reverse stock split), including, without limitation, the exercise of options or rights to purchase Common Stock in anticipation of the reverse stock split.

The tax treatment of a stockholder may vary depending upon the particular facts and circumstances of such stockholder. You should consult with your own tax advisor with respect to the tax consequences of the reverse stock split. As used herein, the term United States holder means a stockholder that is, for federal income tax purposes: a citizen or resident of the United States; a corporation or other entity taxed as a corporation created or organized in or under the laws of the United States or any state, including the District of Columbia; an estate the income of which is subject to federal income tax regardless of its source; or a trust that (i) is subject to the primary supervision of a U.S. court and the control of one or more U.S. persons or (ii) has a valid election in effect under applicable U.S. Treasury regulations to be treated as a U.S. person.

The following discussion is based on the Code, applicable Treasury Regulations, judicial authority and administrative rulings and practice, all as of the date hereof. The Internal Revenue Service could adopt a contrary position. In addition, future legislative, judicial or administrative changes or interpretations could adversely affect the accuracy of the statements and conclusions set forth herein. Any such changes or interpretations could be applied retroactively and could affect the tax consequences described herein. No ruling from the Internal Revenue Service or opinion of counsel has been obtained in connection with the reverse stock split.

No gain or loss should be recognized by a stockholder upon such stockholder's exchange of pre-reverse stock split shares of Common Stock for post-reverse stock split shares of Common Stock pursuant to the reverse stock split. The aggregate tax basis of the post-reverse stock split shares received in the reverse stock split (including any whole share received in exchange for a fractional share) will be the same as the stockholder's aggregate tax basis in the pre-reverse stock split shares

exchanged therefore. The stockholder's holding period for the post-reverse stock split shares will include the period during which the stockholder held the pre-reverse stock split shares surrendered in the reverse stock split.

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.

Accounting Consequences

If a reverse stock split is authorized and implemented, the par value per share of Common Stock would remain unchanged at \$0.01 per share after the reverse stock split. As a result, on the effective date of the reverse stock split, the stated capital on our balance sheet attributable to the Common Stock will be reduced proportionately, based on the exchange ratio of the reverse stock split, from its present amount, and the additional paid-in capital account will be credited with the amount by which the stated capital is reduced. The per share Common Stock net income or loss and net book value will be increased because there will be fewer shares of Common Stock outstanding. The shares of Common Stock held in treasury, if any, will also be reduced proportionately based on the exchange ratio of the reverse stock split. We will reclassify prior period per share amounts and the Consolidated Statements of Stockholders' Equity for the effect of the reverse stock split for any prior periods in our financial statements and reports such that prior periods are comparable to current period presentation. We do not anticipate that any other accounting consequences would arise as a result of the reverse stock split.

Recommendation

The Board of Directors unanimously recommends that you vote "FOR" approval of the proposal to authorize our board to effect the reverse split.

PROPOSAL NO. 3

**RATIFICATION OF APPOINTMENT OF INDEPENDENT REGISTERED
PUBLIC ACCOUNTING FIRM**

Our Audit Committee is responsible for the appointment, compensation, retention and oversight of the work of our independent registered public accounting firm. Although shareholder approval of the selection of an independent registered public accounting firm is not required by law, our Board of Directors believes that it is advisable to give shareholders an opportunity to ratify this selection. Our Audit Committee has appointed RSM US LLP to perform the independent audit, review and attestation services with respect to our financial statements for the fiscal year ending December 31, 2017.

If this proposal is not approved at the Annual Meeting, our Audit Committee will reconsider the selection of RSM US LLP for the ensuing fiscal year, but may determine that continued retention of RSM US LLP is in our Company's and our stockholders' best interests. Even if the appointment is ratified, the Audit Committee, in its discretion, may direct the appointment of a different independent registered public accounting firm at any time during the year if it determines that such a change would be in our Company's and our stockholders' best interests.

We expect representatives of RSM US LLP to be present at the Annual Meeting. They will have the opportunity to make a statement if they desire to do so and will also be available to respond to appropriate questions from stockholders.

Recommendation of the Board

The Board of Directors unanimously recommends that you vote "FOR" ratification of the appointment of RSM US LLP as our independent registered public accounting firm for the year ending December 31, 2017.

OTHER MATTERS

The Board of Directors knows of no other matters to be brought before the Annual Meeting. If any other matters are properly brought before the Annual Meeting, the persons appointed in the accompanying proxy intend to vote the shares represented thereby in accordance with their best judgment on such matters, under applicable laws.

STOCKHOLDER PROPOSALS FOR THE 2018 ANNUAL MEETING

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 2018 annual meeting must be received by Yield10 on or before December 20, 2017 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 2018 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 2018 annual meeting, must be received in writing at our principal executive office not earlier than January 24, 2018, nor later than February 23, 2018, unless our 2018 annual meeting of stockholders is scheduled to take place before April 24, 2018 or after July 23, 2018. 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.

SECTION 16(a) BENEFICIAL OWNERSHIP REPORTING COMPLIANCE

Section 16(a) of the Exchange Act requires our directors, executive officers and persons who own more than ten percent of a registered class of our equity securities to file reports of ownership and changes in ownership with the SEC. Such persons are required by regulations of the SEC to furnish us with copies of all such filings. Based on our review of the copies of such filings received by us with respect to the fiscal year ended December 31, 2016, we believe that all required persons complied with all Section 16(a) filing requirements.

EXPENSES AND SOLICITATION

The cost of solicitation of proxies will be borne by the Company and, in addition to soliciting stockholders by mail through its regular employees, the Company may request banks, brokers and other custodians, nominees and fiduciaries to solicit their customers who have stock of the Company registered in the names of a nominee and, if so, will reimburse such banks, brokers and other custodians, nominees and fiduciaries for their reasonable out-of-pocket costs. Solicitation by officers and employees of the Company may also be made of some stockholders in person or by mail, telephone or e-mail following the original solicitation. If Yield10 does retain a proxy solicitation firm, Yield10 would pay such firm's customary fees and expenses, which fees would be expected not to exceed \$10,000 plus expenses.

YIELD10 BIOSCIENCE, INC.

19 Presidential Way, Woburn, Massachusetts 01801
PROXY FOR ANNUAL MEETING OF STOCKHOLDERS
May 24, 2017

YIELD10 BIOSCIENCE'S BOARD OF DIRECTORS SOLICITS THIS PROXY

The undersigned, revoking any previous proxies relating to these shares, hereby appoints Oliver P. Peoples and Charles B. Haaser, and each of them (with full power to act alone), the attorneys and proxies of the undersigned, with power of substitution to each, to vote all shares of the Common Stock of Yield10 Bioscience registered in the name provided in this Proxy which the undersigned is entitled to vote at the 2017 Annual Meeting of Stockholders, to be held at 9:30 am on Wednesday, May 24, 2017 at the offices of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C. at One Financial Center, Boston, MA 02111, and at any adjournments of the meeting, with all the powers the undersigned would have if personally present at the meeting. Without limiting the general authorization given by this Proxy, the proxies are, and each of them is, instructed to vote or act as follows on the proposals set forth in the Proxy.

See reverse for voting instructions.

ANNUAL MEETING OF STOCKHOLDERS OF
YIELD10 BIOSCIENCE, INC.

May 24, 2017

GO GREEN

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Important Notice Regarding Internet Availability of Proxy Materials for the Annual Meeting:

The proxy statement and annual report to shareholders are available at <http://ir.yield10bio.com/index.cfm>

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. ↓

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THE BOARD OF DIRECTORS RECOMMENDS A VOTE FOR ALL NOMINEES IN PROPOSAL 1 AND FOR PROPOSALS 2 AND 3.
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 elect Oliver P. Peoples, Ph.D. and Joseph Shaulson as Class II Directors of the Company.

FOR ALL NOMINEES

NOMINEES:

- Oliver P. Peoples, Ph.D.
 Joseph Shaulson

WITHHOLD AUTHORITY FOR ALL NOMINEES

FOR ALL EXCEPT (See instructions below)

2. Proposal to authorize the Board of Directors to effect a reverse stock split by a ratio in the range of 1-for-2 to 1-for-10, to be determined by the Board of Directors in its discretion. FOR AGAINST ABSTAIN

3. Proposal to ratify the appointment of RSM US LLP as the Company's independent public accountants for the fiscal year ending December 31, 2017. FOR AGAINST ABSTAIN

This Proxy, when executed, will be voted in the manner directed herein. If you do not specify below how you want your shares to be voted, this Proxy will be voted FOR all nominated Class II Directors, and FOR Proposals 2 and 3. In their discretion the proxies are authorized to vote upon such other matters as may properly come before the meeting or any adjournments of the meeting.

INSTRUCTIONS: To withhold authority to vote for any individual nominee(s), mark "FOR ALL EXCEPT" and fill in the circle next to each nominee you wish to withhold, as shown here: ●

VOTE BY MAIL

Mark, sign and date your proxy card. Return it in the postage-paid envelope we have provided, or return it to Yield10 Bioscience, Inc., c/o American Stock Transfer & Trust Company, 6201 15th Avenue, Brooklyn, NY 11219.

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 or names appear on this Proxy. When shares are held jointly, each holder should sign. When signing as executor, administrator, attorney, trustee or guardian, please give full title as such. If the signer is a corporation, please sign full corporate name by duly authorized officer, giving full title as such. If signer is a partnership, please sign in partnership name by authorized person.

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