
UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
FORM 10-Q

QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934.

For the quarterly period ended June 30, 2019

OR

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from to

Commission file number 001-33133

YIELD10 BIOSCIENCE, INC.

Delaware

(State or other jurisdiction of
incorporation or organization)

04-3158289

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

19 Presidential Way

Woburn, MA

(Address of principal executive offices)

01801

(Zip Code)

(617) 583-1700

(Registrant's telephone number, including area code)

(Former name, former address and former fiscal year, if changed since last report.)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock	YTEN	The Nasdaq Capital Market

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes No

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

Large accelerated filer	<input type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input checked="" type="checkbox"/>	Smaller reporting company	<input checked="" type="checkbox"/>
Emerging growth company	<input type="checkbox"/>		

If an emerging growth company, indicate by check mark if the registrant elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes No

The number of shares outstanding of the registrant's common stock as of August 7, 2019 was 12,519,017.

Yield10 Bioscience, Inc.
Form 10-Q
For the Quarter Ended June 30, 2019

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PART I. FINANCIAL INFORMATION

ITEM 1. CONDENSED CONSOLIDATED FINANCIAL STATEMENTS

**YIELD10 BIOSCIENCE, INC.
CONDENSED CONSOLIDATED BALANCE SHEETS
UNAUDITED**

(in thousands, except share and per share data)

	June 30, 2019	December 31, 2018
Assets		
Current Assets:		
Cash and cash equivalents	\$ 3,252	\$ 3,023
Short-term investments	998	2,746
Accounts receivable	148	94
Unbilled receivables	103	66
Prepaid expenses and other current assets	516	448
Total current assets	5,017	6,377
Restricted cash	332	332
Property and equipment, net	1,298	1,385
Right-of-use assets	4,467	4,766
Other assets	42	100
Total assets	\$ 11,156	\$ 12,960
Liabilities and Stockholders' Equity		
Current Liabilities:		
Accounts payable	\$ 55	\$ 117
Accrued expenses	586	680
Lease liabilities	865	844
Total current liabilities	1,506	1,641
Lease liabilities, net of current portion	5,196	5,621
Total liabilities	6,702	7,262
Commitments and contingencies (Note 9)		
Stockholders' Equity:		
Preferred Stock (\$0.01 par value per share); 5,000,000 shares authorized; no shares issued or outstanding	—	—
Common stock (\$0.01 par value per share); 60,000,000 shares authorized at June 30, 2019 and December 31, 2018; 12,494,731 and 10,025,811 shares issued and outstanding at June 30, 2019 and December 31, 2018, respectively	125	100
Additional paid-in capital	360,516	357,646
Accumulated other comprehensive loss	(118)	(110)
Accumulated deficit	(356,069)	(351,938)
Total stockholders' equity	4,454	5,698
Total liabilities and stockholders' equity	\$ 11,156	\$ 12,960

The accompanying notes are an integral part of these interim unaudited condensed consolidated financial statements

YIELD10 BIOSCIENCE, INC.
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS
UNAUDITED
(in thousands, except share and per share data)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Revenue:				
Grant revenue	\$ 318	\$ 285	\$ 442	\$ 345
Total revenue	318	285	442	345
Expenses:				
Research and development	1,191	1,260	2,414	2,361
General and administrative	1,025	1,456	2,211	2,732
Total expenses	2,216	2,716	4,625	5,093
Loss from operations	(1,898)	(2,431)	(4,183)	(4,748)
Other income (expense), net	27	38	52	63
Net loss	\$ (1,871)	\$ (2,393)	\$ (4,131)	\$ (4,685)
Basic and diluted net loss per share	\$ (0.15)	\$ (0.24)	\$ (0.36)	\$ (0.48)
Number of shares used in per share calculations:				
Basic and diluted	12,494,337	9,991,460	11,504,314	9,845,902

The accompanying notes are an integral part of these interim unaudited condensed consolidated financial statements

YIELD10 BIOSCIENCE, INC.
CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS
UNAUDITED
(in thousands)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Net loss:	\$ (1,871)	\$ (2,393)	\$ (4,131)	\$ (4,685)
Other comprehensive loss				
Change in unrealized gain (loss) on investments	—	(1)	—	—
Change in foreign currency translation adjustment	(3)	(9)	(8)	(14)
Total other comprehensive loss	(3)	(10)	(8)	(14)
Comprehensive loss	\$ (1,874)	\$ (2,403)	\$ (4,139)	\$ (4,699)

The accompanying notes are an integral part of these interim unaudited condensed consolidated financial statements

YIELD10 BIOSCIENCE, INC.
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
UNAUDITED
(in thousands)

	Six Months Ended June 30,	
	2019	2018
Cash flows from operating activities		
Net loss	\$ (4,131)	\$ (4,685)
Adjustments to reconcile net loss to cash used in operating activities:		
Depreciation	100	96
Charge for 401(k) company common stock match	49	70
Stock-based compensation	275	596
Non-cash lease expense	299	145
Changes in operating assets and liabilities:		
Accounts receivables	(54)	54
Unbilled receivables	(37)	22
Prepaid expenses and other assets	(10)	(56)
Accounts payable	(62)	(42)
Accrued expenses	(102)	(926)
Lease liabilities	(404)	(162)
Net cash used for operating activities	(4,077)	(4,888)
Cash flows from investing activities		
Purchase of property and equipment	(13)	(34)
Purchase of short-term investments	(998)	(7,986)
Proceeds from the sale and maturity of short-term investments	2,746	1,500
Net cash provided by (used for) investing activities	1,735	(6,520)
Cash flows from financing activities		
Proceeds from warrants exercised	—	124
Taxes paid on employees' behalf related to vesting of stock awards	(4)	(6)
Proceeds from registered direct offering, net of issuance costs	2,583	—
Net cash provided by financing activities	2,579	118
Effect of exchange rate changes on cash, cash equivalents and restricted cash	(8)	(14)
Net increase (decrease) in cash, cash equivalents and restricted cash	229	(11,304)
Cash, cash equivalents and restricted cash at beginning of period	3,355	14,804
Cash, cash equivalents and restricted cash at end of period	\$ 3,584	\$ 3,500
Supplemental disclosure of non-cash information:		
Right-of-use assets acquired in exchange for lease liabilities	\$ —	\$ 74

The accompanying notes are an integral part of these interim unaudited condensed consolidated financial statements

YIELD10 BIOSCIENCE, INC.
CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(UNAUDITED)
(In thousands, except share amounts)

Three Months Ended June 30, 2019

	Series A Convertible							Total Stockholders' Equity
	Preferred Stock		Common Stock		Additional Paid-In Capital	Accumulated other Comprehensive Loss	Accumulated Deficit	
	Shares	Par Value	Shares	Par Value				
Balance, March 31, 2019	—	\$ —	12,468,219	\$ 125	\$ 360,383	\$ (115)	\$ (354,198)	\$ 6,195
Non-cash stock-based compensation expense	—	—	—	—	113	—	—	113
Issuance of common stock for 401k match	—	—	21,860	—	24	—	—	24
Issuance of stock for restricted stock unit vesting, net of 2,449 shares withheld for employee taxes	—	—	4,652	—	(4)	—	—	(4)
Effect of foreign currency translation	—	—	—	—	—	(3)	—	(3)
Net loss	—	—	—	—	—	—	(1,871)	(1,871)
Balance, June 30, 2019	—	\$ —	12,494,731	\$ 125	\$ 360,516	\$ (118)	\$ (356,069)	\$ 4,454

Three Months Ended June 30, 2018

	Series A Convertible							Total Stockholders' Equity
	Preferred Stock		Common Stock		Additional Paid-In Capital	Accumulated other Comprehensive Loss	Accumulated Deficit	
	Shares	Par Value	Shares	Par Value				
Balance, March 31, 2018	—	\$ —	9,968,455	\$ 100	\$ 356,667	\$ (89)	\$ (345,045)	\$ 11,633
Non-cash stock-based compensation expense	—	—	—	—	315	—	—	315
Issuance of common stock for 401k match	—	—	19,121	—	37	—	—	37
Issuance of stock for restricted stock unit vesting, net of 2,703 shares withheld for employee taxes	—	—	4,401	—	(6)	—	—	(6)
Effect of foreign currency translation and unrealized gain on investments	—	—	—	—	—	(10)	—	(10)
Net loss	—	—	—	—	—	—	(2,393)	(2,393)
Balance, June 30, 2018	—	\$ —	9,991,977	\$ 100	\$ 357,013	\$ (99)	\$ (347,438)	\$ 9,576

The accompanying notes are an integral part of these interim unaudited condensed consolidated financial statements

YIELD10 BIOSCIENCE, INC.
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(UNAUDITED)
(In thousands, except share amounts)

Six Months Ended June 30, 2019

	Series A Convertible Preferred Stock		Common Stock		Additional Paid-In Capital	Accumulated other Comprehensive Loss	Accumulated Deficit	Total Stockholders' Equity
	Shares	Par Value	Shares	Par Value				
	Balance, December 31, 2018	—	\$ —	10,025,811				
Non-cash stock-based compensation expense	—	—	—	—	275	—	—	275
Issuance of common stock for 401k match	—	—	42,606	—	41	—	—	41
Issuance of stock for restricted stock unit vesting, net of 2,449 shares withheld for employee taxes	—	—	4,652	—	(4)	—	—	(4)
Issuance of common stock for registered direct offering, net of \$349 offering costs	—	—	2,421,662	25	2,558	—	—	2,583
Effect of foreign currency translation	—	—	—	—	—	(8)	—	(8)
Net loss	—	—	—	—	—	—	(4,131)	(4,131)
Balance, June 30, 2019	—	\$ —	12,494,731	\$ 125	\$ 360,516	\$ (118)	\$ (356,069)	\$ 4,454

Six Months Ended June 30, 2018

	Series A Convertible Preferred Stock		Common Stock		Additional Paid-In Capital	Accumulated other Comprehensive Loss	Accumulated Deficit	Total Stockholders' Equity
	Shares	Par Value	Shares	Par Value				
	Balance, December 31, 2017	1,826	\$ 818	9,089,159				
Non-cash stock-based compensation expense	—	—	—	—	596	—	—	596
Issuance of common stock for 401k match	—	—	31,760	—	59	—	—	59
Issuance of stock for restricted stock unit vesting, net of 2,703 shares withheld for employee taxes	—	—	4,401	—	(6)	—	—	(6)
Issuance of common stock upon conversion of Series A Convertible Preferred Stock	(1,826)	(818)	811,557	8	810	—	—	—
Issuance of common stock upon exercise of Class B warrants	—	—	55,100	1	123	—	—	124
Effect of foreign currency translation and unrealized gain on investments	—	—	—	—	—	(14)	—	(14)
Net loss	—	—	—	—	—	—	(4,685)	(4,685)
Balance, June 30, 2018	—	\$ —	9,991,977	\$ 100	\$ 357,013	\$ (99)	\$ (347,438)	\$ 9,576

The accompanying notes are an integral part of these interim unaudited condensed consolidated financial statements

YIELD10 BIOSCIENCE, INC.
NOTES TO THE CONDENSED CONSOLIDATED FINANCIAL STATEMENTS
UNAUDITED

(All dollar amounts, except share and per share amounts, are stated in thousands)

1. NATURE OF BUSINESS AND BASIS OF PRESENTATION

Yield10 Bioscience, Inc. is an agricultural bioscience company which uses its "Trait Factory" to develop high value seed traits for the agriculture and food industries. Specifically, Yield10 plans to efficiently develop superior gene traits for the major grain crops corn, soybean, canola, wheat and rice that will enable step-change increases in crop yield of at least 10-20 percent. While maintaining its focus on the development of novel yield traits for key crops based on a licensing model, the Company has recently begun to execute the second part of its strategy which is to develop independent business opportunities for Yield10 in the specialty oils and niche crop space using the oilseed Camelina. The target of this effort is sustainable business solutions to support agriculture, global food production and other specialty applications. Yield10 brings a unique history, skill set, and tools captured in its **Gene Ranking Artificial Intelligence Network ("GRAIN")** platform for developing advanced crop traits and increasing the concentration of specific biochemicals of commercial interest in crops. The Company's plan is to develop a source of revenue from funded research and development collaborations for traits, products and crops not being directly pursued internally. While there is no guarantee of success, the Company is currently engaged in a range of discussions with third parties on different crops, traits and products in the feed, food and pharmaceutical sectors. Yield10 Bioscience is headquartered in Woburn, Massachusetts and has an oilseed development Center of Excellence in Saskatoon, Saskatchewan, Canada.

The accompanying unaudited condensed consolidated financial statements are unaudited and have been prepared by Yield10 in accordance with accounting principles generally accepted in the United States of America ("GAAP") and pursuant to the rules and regulations of the U.S. Securities and Exchange Commission ("SEC"). Certain information and footnote disclosures normally included in the Company's annual consolidated financial statements have been condensed or omitted. The year-end condensed consolidated balance sheet data was derived from audited financial statements but does not include all disclosures required by GAAP. The condensed consolidated financial statements, in the opinion of management, reflect all adjustments (consisting only of normal recurring adjustments) necessary for fair statements of the financial position and results of operations for the interim periods ended June 30, 2019 and June 30, 2018. The Company adopted Accounting Standards Update ("ASU") No. 2016-02, *Leases*, ("Topic 842") on January 1, 2019 using a modified retrospective approach. As a result, the Company's unaudited condensed consolidated balance sheet at December 31, 2018 and its unaudited condensed consolidated statements of operations, comprehensive loss, cash flows and stockholders' equity for the three and six months ended June 30, 2018, included herein, have been adjusted to incorporate the guidance of Topic 842. See Note 8.

The results of operations for the interim periods are not necessarily indicative of the results of operations to be expected for any future period or the entire fiscal year. These interim unaudited condensed consolidated financial statements should be read in conjunction with the audited consolidated financial statements for the year ended December 31, 2018, which are contained in the Company's Annual Report on Form 10-K filed with the SEC on March 28, 2019.

The accompanying condensed consolidated financial statements have been prepared on a basis which assumes that the Company will continue as a going concern and which contemplates the realization of assets and satisfaction of liabilities and commitments in the normal course of business. With the exception of a single year, the Company has recorded losses since its initial founding, including the three and six months ended June 30, 2019.

As of June 30, 2019, the Company held unrestricted cash, cash equivalents and short-term investments of \$4,250. The Company follows the guidance of Accounting Standards Codification ("ASC") Topic 205-40, *Presentation of Financial Statements-Going Concern*, in order to determine whether there is substantial doubt about its ability to continue as a going concern for one year after the date its financial statements are issued. Based on its current cash forecast, management expects that the Company's present capital resources will be sufficient to fund its planned operations and meet its obligations into the fourth quarter of 2019. This forecast of cash resources is forward-looking information that involves risks and uncertainties, and the actual amount of expenses could vary materially and adversely as a result of a number of factors. The Company's ability to continue operations after its current cash resources are exhausted depends on its ability to obtain additional financing through, among other sources, public or private equity financing, secured or unsecured debt financing, equity or debt bridge financing, warrant holders' ability and willingness to exercise the Company's outstanding warrants, additional government grants or collaborative arrangements with third parties, as to which no assurance can be given. Management does not know whether additional financing will be available on terms favorable or acceptable to the Company when needed, if at all. If adequate additional funds are not available when required, management will be forced to curtail the Company's research efforts, explore strategic alternatives and/or wind down its operations and pursue options for liquidating its remaining assets, including

intellectual property. Based on its cash forecast, management has determined that the Company's present capital resources will not be sufficient to fund its planned operations for the twelve months from the date that these financial statements are filed, which raises substantial doubt about the Company's ability to continue as a going concern.

If the Company issues equity or debt securities to raise additional funds, (i) the Company may incur fees associated with such issuance, (ii) its existing stockholders may experience dilution from the issuance of new equity securities, (iii) the Company may incur ongoing interest expense and be required to grant a security interest in Company assets in connection with any debt issuance, and (iv) the new equity or debt securities may have rights, preferences and privileges senior to those of the Company's existing stockholders. In addition, utilization of the Company's net operating loss and research and development credit carryforwards may be subject to significant annual limitations under Section 382 of the Internal Revenue Code of 1986, as amended, due to ownership changes resulting from equity financing transactions. If the Company raises additional funds through collaboration, licensing or other similar arrangements, it may be necessary to relinquish valuable rights to its potential products or proprietary technologies or grant licenses on terms that are not favorable to the Company.

2. ACCOUNTING POLICIES

From time to time, new accounting pronouncements are issued by the Financial Accounting Standards Board ("FASB") or other standard setting bodies that the Company adopts as of the specified effective date. During the six months ended June 30, 2019, the Company adopted the following new accounting guidance.

In February 2016, the FASB issued ASU No. 2016-02, which requires lessees to recognize most leases on their balance sheet as right-of-use assets and lease liabilities. In July 2018, the FASB issued ASU No. 2018-10, "*Codification Improvements to Topic 842, Leases*" ("ASU 2018-10"), which provided narrow amendments to clarify how to apply certain aspects of the new lease standard, and ASU No. 2018-11, "*Leases (Topic 842 - Targeted Improvements)*" ("ASU 2018-11"), which addressed implementation issues related to the new lease standard. The new guidance was effective for annual reporting periods beginning after December 15, 2018 and interim periods within those fiscal years. Under the new standard, disclosures are required to enable users of financial statements to better assess the amount, timing, and uncertainty of cash flows arising from leases. Topic 842 required filers to adopt the new standard using a modified retrospective approach under either of two transition methods; (1) to apply the new lease requirements at the beginning of the earliest period presented, or (2) to apply the new lease requirements at the effective date. The Company adopted the new standard on January 1, 2019 and elected to adjust its 2018 financial statements in order to make them comparable to its 2019 financial statements. Adoption of Topic 842 had a material impact on the Company's previously reported 2018 financial statements. See Note 8.

New pronouncements that are not yet effective but may impact the Company's financial statements in the future are described below.

In June 2016, the FASB issued ASU No. 2016-13, *Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*. The FASB has subsequently issued amendments to ASU 2016-13, which have the same effective date and transition date of January 1, 2020. These standards require that credit losses be reported using an expected losses model rather than the incurred losses model that is currently used, and establishes additional disclosures related to credit risks. For available-for-sale debt securities with unrealized losses, this standard now requires allowances to be recorded instead of reducing the amortized cost of the investment. These standards limit the amount of credit losses to be recognized for available-for-sale debt securities to the amount by which carrying value exceeds fair value and requires the reversal of previously recognized credit losses if fair value increases. The Company is still evaluating the potential impact of the standard on its consolidated financial position, results of operations and related disclosures.

In August 2018, the FASB issued ASU No. 2018-13, *Fair Value Measurement (Topic 820): Disclosure Framework - Changes to the Disclosure Requirements for Fair Value Measurement*. This standard modifies certain disclosure requirements on fair value measurements and will become effective for the Company on January 1, 2020. The Company is still evaluating the potential impact of the standard on its consolidated financial position and results of operations and related disclosures.

In November 2018, the FASB issued ASU No. 2018-18, *Collaborative Arrangements (Topic 808): Clarifying the Interaction between Topic 808 and Topic 606*. This standard makes targeted improvements for collaborative arrangements as follows:

- Clarifies that certain transactions between collaborative arrangement participants should be accounted for as revenue under ASC 606, *Revenue from Contracts with Customers*, when the collaborative arrangement participant is a customer in the context of a unit of account. In those situations, the guidance in ASC 606 should be applied, including recognition, measurement, presentation and disclosure requirements;

- Adds unit-of-account guidance to ASC 808, *Collaborative Arrangements*, to align with the guidance in ASC 606 (that is, a distinct good or service) when an entity is assessing whether the collaborative arrangement or a part of the arrangement is within the scope of ASC 606; and
- Precludes a company from presenting transactions with collaborative arrangement participants that are not directly related to sales to third parties with revenue recognized under ASC 606 if the collaborative arrangement participant is not a customer.

This standard will become effective for the Company on January 1, 2020; however, early adoption is permitted. A retrospective transition approach is required for either all contracts or only for contracts that are not completed at the date of initial application of ASC 606, with a cumulative adjustment to opening retained earnings, as of January 1, 2019. The Company is currently evaluating the potential impact that this standard may have on its consolidated financial position, results of operations and related disclosures.

Principles of Consolidation

The Company's unaudited condensed consolidated financial statements are prepared in accordance with accounting principles generally accepted in the United States of America. The unaudited condensed consolidated financial statements include the accounts of the Company and its wholly owned subsidiaries. All intercompany transactions were eliminated, including transactions with its Canadian subsidiary, Metabolix Oilseeds, Inc.

Cash, Cash Equivalents and Restricted Cash

The Company considers all highly liquid investments purchased with an original maturity date of ninety days or less at the date of purchase to be cash equivalents.

The following table provides a reconciliation of cash, cash equivalents and restricted cash reported within the Company's Unaudited Condensed Consolidated Balance Sheets included herein:

	June 30, 2019	December 31, 2018
Cash and cash equivalents	\$ 3,252	\$ 3,023
Restricted cash	332	332
Total cash, cash equivalents and restricted cash	<u>\$ 3,584</u>	<u>\$ 3,355</u>

Amounts included in restricted cash represent those required to be set aside by contractual agreement. Restricted cash of \$332 at June 30, 2019 and December 31, 2018 consists of funds held in connection with the Company's lease agreement for its Woburn, Massachusetts facility.

Investments

The Company considers all investments purchased with an original maturity date of more than ninety days at the date of purchase and a maturity date of one year or less at the balance sheet date to be short-term investments. All other investments are classified as long-term. The Company held no long-term investments at June 30, 2019 and December 31, 2018.

Other-than-temporary impairments of equity investments are recognized in the Company's statements of operations if the Company has experienced a credit loss and has the intent to sell the investment or if it is more likely than not that the Company will be required to sell the investment before recovery of the amortized cost basis. Realized gains and losses, dividends, interest income and declines in value judged to be other-than-temporary credit losses are included in other income (expense). Any premium or discount arising at purchase is amortized and/or accreted to interest income.

Use of Estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of grant revenue and expenses during the reporting periods. Actual results could differ from those estimates.

Foreign Currency Translation

Foreign denominated assets and liabilities of the Company's wholly owned foreign subsidiaries are translated into U.S. dollars at the prevailing exchange rates in effect on the balance sheet date. Revenues and expenses are translated at average exchange rates prevailing during the period. Any resulting translation gains or losses are recorded in accumulated other comprehensive income (loss) in the consolidated balance sheet. When the Company dissolves, sells or substantially sells all of the assets of a consolidated foreign subsidiary, the cumulative translation gain or loss of that subsidiary is released from comprehensive income (loss) and included within its consolidated statement of operations during the fiscal period when the dissolution or sale occurs.

Income Taxes

The Company accounts for income taxes using the asset and liability method, which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been recognized in the consolidated financial statements or in the Company's tax returns. Under this method, deferred tax assets and liabilities are determined based on the difference between the financial statement and tax basis of assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to reverse. A valuation allowance is provided to reduce the deferred tax asset to a level which, more likely than not, will be realized.

Concentration of Credit Risk

Financial instruments that potentially subject the Company to concentrations of credit risk primarily consist of cash, cash equivalents and investments. The Company has historically invested its cash equivalents in highly rated money market funds, corporate debt, federal agency notes and U.S. treasury notes. Investments, when purchased, are acquired in accordance with the Company's investment policy which establishes a concentration limit per issuer.

At June 30, 2019, 100% of the Company's total accounts and unbilled receivables of \$251 are due from U.S. government grants.

3. BASIC AND DILUTED NET INCOME (LOSS) PER SHARE

Basic net income (loss) per share is computed by dividing net income (loss) by the weighted-average number of common shares outstanding. Diluted net income (loss) per share is computed by dividing net income (loss) by the weighted-average number of dilutive common shares outstanding during the period. Diluted shares outstanding is calculated by adding to the weighted shares outstanding any potential (unissued) shares of common stock from outstanding stock options and warrants based on the treasury stock method, as well as weighted shares outstanding of any potential (unissued) shares of common stock from restricted stock units. In periods when a net loss is reported, all common stock equivalents are excluded from the calculation because they would have an anti-dilutive effect, meaning the loss per share would be reduced. Therefore, in periods when a loss is reported, basic and dilutive loss per share are the same. Common stock equivalents include stock options, restricted stock awards and warrants.

The number of shares of potentially dilutive common stock presented on a weighted average basis, related to options, restricted stock units and warrants (prior to consideration of the treasury stock method) that were excluded from the calculation of dilutive shares since the inclusion of such shares would be anti-dilutive for the three and six months ended June 30, 2019 and June 30, 2018, respectively, are shown below. Issued and outstanding warrants shown in the table below are described in greater detail in Note 11, contained herein.

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Options	2,027,870	1,117,827	1,874,968	910,427
Restricted stock units	—	7,101	3,531	10,660
Warrants	7,368,254	10,597,486	7,400,490	10,597,486
Total	9,396,124	11,722,414	9,278,989	11,518,573

4. INVESTMENTS

Investments consist of the following:

June 30, 2019	Accumulated Cost	Unrealized		Market Value
		Gain	(Loss)	
Short-term investments				
Government securities	\$ 998	\$ —	\$ —	\$ 998
Total	\$ 998	\$ —	\$ —	\$ 998

December 31, 2018	Accumulated Cost	Unrealized		Market Value
		Gain	(Loss)	
Short-term investments				
Government securities	\$ 2,746	\$ —	\$ —	\$ 2,746
Total	\$ 2,746	\$ —	\$ —	\$ 2,746

There were no long-term investments at June 30, 2019, and December 31, 2018.

5. FAIR VALUE MEASUREMENTS

The Company has certain financial assets recorded at fair value which have been classified as either Level 1 or 2 within the fair value hierarchy as described in the accounting standards for fair value measurements. Fair value is the price that would be received from the sale of an asset or the price paid to transfer a liability in an orderly transaction between independent market participants at the measurement date. Fair values determined by Level 1 inputs utilize observable data such as quoted prices in active markets. Fair values determined by Level 2 inputs utilize data points other than quoted prices in active markets that are observable either directly or indirectly. Fair values determined by Level 3 inputs utilize unobservable data points in which there is little or no market data, which require the reporting entity to develop its own assumptions. The fair value hierarchy level is determined by the lowest level of significant input. At June 30, 2019 and December 31, 2018, the Company did not own any Level 3 financial assets.

The Company's financial assets classified as Level 2 at June 30, 2019 and December 31, 2018, were initially valued at the transaction price and subsequently valued utilizing third-party pricing services. Because the Company's investment portfolio may include securities that do not always trade on a daily basis, the pricing services use many observable market inputs to determine value including reportable trades, benchmark yields and benchmarking of like securities. The Company validates the prices provided by the third-party pricing services by reviewing their pricing methods and obtaining market values from other pricing sources. After completing the validation procedures, the Company did not adjust or override any fair value measurements provided by these pricing services as of June 30, 2019 and December 31, 2018.

The tables below present information about the Company's assets that are measured at fair value on a recurring basis as of June 30, 2019 and December 31, 2018 and indicate the fair value hierarchy of the valuation techniques utilized to determine such fair value.

Description	Fair value measurements at reporting date using			Balance as of June 30, 2019
	Quoted prices in active markets for identical assets	Significant other observable inputs	Significant unobservable inputs	
	(Level 1)	(Level 2)	(Level 3)	
Cash equivalents:				
Money market funds	\$ 2,371	\$ —	\$ —	\$ 2,371
Short-term investments:				
U.S. government and agency securities	—	998	—	998
Total	\$ 2,371	\$ 998	\$ —	\$ 3,369

Description	Fair value measurements at reporting date using			Balance as of December 31, 2018
	Quoted prices in active markets for identical assets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)	
Cash equivalents:				
Money market funds	\$ 2,663	\$ —	\$ —	\$ 2,663
Short-term investments:				
U.S. government agency securities	—	2,746	—	2,746
Total	\$ 2,663	\$ 2,746	\$ —	\$ 5,409

There were no transfers of financial assets between category levels for the three and six months ended June 30, 2019.

The Company owns 648,149 shares of Series A Redeemable Convertible Preferred Stock of Tephra, Inc. ("Tephra"), a privately held medical device company located in Lexington, Massachusetts, that is engaged in the development of medical device products that restore, maintain, or improve tissue function. The Company received the preferred shares from Tephra during 2002 in connection with a technology sublicense agreement that was later terminated during 2016. The preferred shares owned by the Company represent less than one percent of Tephra's current outstanding common shares on a fully diluted basis and were fully written off through an impairment charge during 2005 prior to Tephra initiating commercial product sales.

6. ACCRUED EXPENSES

Accrued expenses consisted of the following at:

	June 30, 2019	December 31, 2018
Employee compensation and benefits	\$ 217	\$ 98
Leased facilities	36	50
Professional services	169	234
Other	164	298
Total accrued expenses	\$ 586	\$ 680

7. STOCK-BASED COMPENSATION

Expense Information for Employee and Non-Employee Stock Awards

The Company recognized stock-based compensation expense related to stock awards, including awards to non-employees and members of the Board of Directors of \$113 and \$275 for the three and six months ended June 30, 2019. During the three and six months ended June 30, 2018, the Company recognized \$315 and \$596 of stock-based compensation expense, respectively. At June 30, 2019, there was approximately \$1,461 of pre-tax stock-based compensation expense related to unvested awards not yet recognized.

The compensation expense related to unvested stock options is expected to be recognized over a remaining weighted average period of 3.35 years.

Stock Options

A summary of option activity for the six months ended June 30, 2019 is as follows:

	Number of Shares	Weighted Average Exercise Price
Outstanding at December 31, 2018	1,745,037	\$ 6.38
Granted	710,275	\$ 0.91
Exercised	—	—
Forfeited	(7,500)	\$ 1.43
Expired	(1,730)	\$ 287.80
Outstanding at June 30, 2019	<u>2,446,082</u>	\$ 4.61
Options vested and expected to vest at June 30, 2019	2,446,082	\$ 4.61
Options exercisable at June 30, 2019	1,037,393	\$ 9.12

Restricted Stock Units

The Company records stock compensation expense for restricted stock units ("RSUs") on a straight-line basis over their requisite service period, which approximates the vesting period, based on each RSU's award date market value. As RSUs vest, the Company withholds a number of shares from its employees with an aggregate fair market value equal to the minimum tax withholding amount (unless the employee makes other arrangements for payment of the tax withholding) from the common stock issuable at the vest date. The Company then pays the minimum required income tax for the employees. During the six months ended June 30, 2019 and June 30, 2018, the Company paid \$4 and \$6, respectively, for income tax withholdings associated with RSUs during these periods.

A summary of RSU activity for the six months ended June 30, 2019 is as follows:

	Number of RSUs	Weighted Average Remaining Contractual Life (years)
Outstanding at December 31, 2018	7,101	
Awarded	—	
Common stock issued upon vesting	(7,101)	
Forfeited	—	
Outstanding at June 30, 2019	<u>—</u>	—

As of June 30, 2019, the Company had no remaining unvested RSUs outstanding.

8. LEASES

New Lease Accounting

Topic 842 is effective for annual reporting periods beginning after December 15, 2018 and for interim periods within those fiscal years. The Company adopted Topic 842 on January 1, 2019 and elected to apply the new lease accounting requirements to its financial statements beginning on January 1, 2018 (the earliest period presented in its comparative financial statements), using a modified retrospective approach. The new guidance also requires additional financial statement disclosures to enable users of financial statements to better assess the amount, timing, and uncertainty of cash flows arising from leases. Topic 842 replaced the previous lease accounting and reporting guidance of ASC Topic 840, *Leases*, ("ASC Topic 840") and requires lessees to reflect a right-of-use asset and a lease liability on their balance sheet for leases with terms of more than twelve months.

The Company's enactment of Topic 842, effective on January 1, 2019, resulted in it recording right-of-use assets and lease liabilities for real estate and equipment leases of \$4,766 and \$6,465, respectively, as of that date. The Company also eliminated \$1,005 in lease incentive obligations from its balance sheet on January 1, 2019 as a result of the discontinuation of the previous guidance under ASC Topic 840. Application of the new pronouncement to the Company's 2018 comparative year had a material effect on its previously issued 2018 financial statements. The Company's condensed consolidated balance sheet as of December 31, 2018 and its condensed consolidated statements of operations, comprehensive income (loss), cash flows and stockholders' equity for the three and six months ended June 30, 2018, included herein, have been adjusted to incorporate the guidance of Topic 842.

Under Topic 842, leases are classified as either operating or finance leases, with classification based on criteria similar to previous lease accounting guidance, but without the explicit quantitative determining factors used to establish a lease as either a capital or an operating lease. The Company reviewed its 2018 transitional leases and its currently active leases falling within the scope of Topic 842 and determined that all of these leases met the criteria for classification as operating leases.

Lease liabilities are recorded as of their commencement date and are calculated as the present value of the remaining lease payments, using the interest rate implicit in the lease, or if that rate is not readily determinable, using the lessee's incremental borrowing rate. Right-of-use assets are equal to the lease liability with adjustments made, as necessary, for lease prepayments, lease accruals, initial direct costs, lessor lease incentives and any lease impairments that may be present. Topic 842 further requires that lease expense for operating leases be calculated on a straight-line basis and reported as a single operating expense within income from operations.

Topic 842 provides a number of transitional practical expedients designed to assist lessees with initial implementation. The Company made the following elections in applying Topic 842.

- *Short-term lease exception.* Active leases as of January 1, 2018, and new leases entered into thereafter with terms of twelve months or less were and will be excluded from accounting under Topic 842.
- *Package of practical expedients.* These expedients, which must be elected in their entirety, permit a company to continue its historical accounting during the transition period for contractual arrangements containing embedded leases in lieu of performing a re-evaluation of the agreements in order to separate lease and non-lease components. The package of expedients also permit a company to maintain its previous accounting classification for transitional leases as either operating or finance leases without reassessment under the new guidance. Lastly, the package of practical expedients does not require reassessment and capitalization of initial direct costs incurred to establish a lease.

In applying the guidance of Topic 842 to the 2018 transition period, the Company did not elect the available hindsight expedient with respect to the determination of lease terms used in the calculation of lease liabilities and right-of-use assets by considering the actual outcome of lease renewals.

Maturity Analysis of Lease Liabilities

At June 30, 2019, the Company's lease liabilities will mature as follows:

Year ended December 31,	Undiscounted Cash Flows
2019 (July to December)	\$ 637
2020	1,080
2021	939
2022	969
2023	998
Thereafter	3,082
Total undiscounted future lease payments	7,705
Discount	(1,644)
Total lease liabilities	\$ 6,061
Short-term lease liabilities	\$ 865
Long-term lease liabilities	\$ 5,196

At June 30, 2019, real estate and equipment leases represent approximately 99% and 1%, of the Company's lease liabilities, respectively.

Quantitative Disclosure of Lease Costs (unaudited)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Lease cost:				
Operating lease cost	\$ 257	\$ 272	\$ 516	\$ 538
Short-term lease cost	108	139	254	257
Sublease income	(134)	(113)	(258)	(232)
Total lease cost, net	\$ 231	\$ 298	\$ 512	\$ 563

Other information as of:	June 30, 2019	December 31, 2018
Weighted-average remaining lease term (years)	7.1	7.4
Weighted-average discount rate	6.75%	6.75%

Impact of Topic 842 Adoption on Reported Results

Adoption of the new lease standard impacted the Company's 2018 previously reported financial statements as follows (unaudited):

	Three Months Ended June 30, 2018		
	As Reported	New Lease Standard Adjustment	As Adjusted
Condensed Consolidated Statements of Income:			
Revenue	\$ 285	\$ —	\$ 285
Expenses	2,705	11	2,716
Other Income (expense)	30	8	38
Net loss	(2,390)	(3)	(2,393)
Basic and diluted net loss per share	(0.24)	—	(0.24)

	Six Months Ended June 30, 2018		
	As Reported	New Lease Standard Adjustment	As Adjusted
Condensed Consolidated Statements of Income:			
Revenue	\$ 345	\$ —	\$ 345
Expenses	5,072	21	5,093
Other Income (expense)	47	16	63
Net loss	(4,680)	(5)	(4,685)
Basic and diluted net loss per share	(0.48)	—	(0.48)

	June 30, 2018		
	As Reported	New Lease Standard Adjustment	As Adjusted
Condensed Consolidated Balance Sheet:			
Current assets	\$ 10,104	\$ —	\$ 10,104
Restricted cash	332	—	332
Property and equipment, net	1,477	—	1,477
Right-of-use assets	—	5,209	5,209
Other assets	98	—	98
Total assets	\$ 12,011	\$ 5,209	\$ 17,220

Liabilities and Stockholders' Equity:			
Accounts payable	\$ 34	\$ —	\$ 34
Accrued expenses	1,455	(584)	871
Short-term lease liabilities	—	739	739
Lease incentive obligation, net of current portion	941	(941)	—
Long-term lease liabilities	—	6,000	6,000
Stockholders' equity	9,581	(5)	9,576
Total liabilities and stockholders' equity	\$ 12,011	\$ 5,209	\$ 17,220

	December 31, 2018		
	As Reported	New Lease Standard Adjustment	As Adjusted
Condensed Consolidated Balance Sheet:			
Current assets	\$ 6,377	\$ —	\$ 6,377
Restricted cash	332	—	332
Property and equipment, net	1,385	—	1,385
Right-of-use assets	—	4,766	4,766
Other assets	100	—	100
Total assets	\$ 8,194	\$ 4,766	\$ 12,960

Liabilities and Stockholders' Equity:			
Accounts payable	\$ 117	\$ —	\$ 117
Accrued expenses	1,429	(749)	680
Short-term lease liabilities	—	844	844
Lease incentive obligation, net of current portion	935	(935)	—
Long-term lease liabilities	—	5,621	5,621
Stockholders' equity	5,713	(15)	5,698
Total liabilities and stockholders' equity	\$ 8,194	\$ 4,766	\$ 12,960

Real Estate Leases

During 2016, the Company entered into a lease agreement for its headquarters, pursuant to which the Company leases approximately 29,622 square feet of office and research and development space located at 19 Presidential Way, Woburn, Massachusetts. The lease began on June 1, 2016 and will end on November 30, 2026. The lease agreement does not include any options for the early termination or the extension of the lease. The Company provided the landlord with a security deposit in the form of a letter of credit in the amount of \$307. Pursuant to the lease, the Company will also pay certain taxes and operating costs associated with the premises throughout the term of the lease. During the buildout of the rented space, the landlord paid \$889 for tenant improvements to the facility and an additional \$444 for tenant improvements that result in increased rental payments by the Company. Upon the adoption of Topic 842, these improvements were recorded as a reduction in the valuation of the right-of-use asset.

In October 2016, the Company entered into a sublease agreement with a subsidiary of CJ CheilJedang Corporation ("CJ") with respect to CJ's sublease of approximately 9,874 square feet of its leased facility located in Woburn, Massachusetts. The sublease space was determined to be in excess of the Company's needs. The sublease is coterminous with the Company's master lease, and CJ will pay rent and operating expenses equal to approximately one-third of the amounts payable to the landlord by the Company, as adjusted from time to time in accordance with the terms of the master lease. Future CJ sublease payments have not been presented as an offset to total undiscounted future lease payments of \$7,705 shown in the lease maturity analysis table above. CJ provided the Company with a security deposit of \$103 in the form of an irrevocable letter of credit.

The Company also leases approximately 13,702 square feet of office and laboratory space at 650 Suffolk Street, Lowell, Massachusetts. The lease for this facility, as amended, expires in May 2020. The terms of the agreement provide the Company with a five-year option to extend the lease provided written notice is given prior to August 31, 2019. The Company does not intend to elect this option. During July 2018, the Company discontinued further use of the Lowell space, and as a result, the Company recorded a non-cash lease exit charge of \$255 for the facility in accordance with ASC Topic 420-10, *Exit or Disposal Obligations*. The exit charge was recorded as an increase in the Company's lease expense and a reduction to the associated right-of-use asset. The Company will continue to make monthly rental payments for the Lowell facility through its expiration in May 2020.

The Company's wholly-owned subsidiary, Metabolix Oilseeds, Inc. ("MOI"), located in Saskatoon, Saskatchewan, Canada, leases approximately 6,200 square feet of office, laboratory and greenhouse space located within Innovation Place at 410 Downey Road and within the research facility of National Research Council Canada located at 110 Gymnasium Place. None of the leases contain renewal or early termination options. MOI's leases for these facilities expire on various dates through May 2020.

9. COMMITMENTS AND CONTINGENCIES

Litigation

From time to time, the Company may be subject to legal proceedings and claims in the ordinary course of business. The Company is not currently aware of any such proceedings or claims that it believes will have, individually or in the aggregate, a material adverse effect on its business, financial condition or results of operations.

Guarantees

As of June 30, 2019 and December 31, 2018, the Company did not have significant liabilities recorded for guarantees.

The Company enters into indemnification provisions under various agreements with other companies in the ordinary course of business, typically with business partners and contractors. Under these provisions, the Company generally indemnifies and holds harmless the indemnified party for losses suffered or incurred by the indemnified party as a result of its activities. These indemnification provisions generally survive termination of the underlying agreement. The maximum potential amount of future payments the Company could be required to make under these indemnification provisions is unlimited. However, to date Yield10 Bioscience has not incurred material costs to defend lawsuits or settle claims related to these indemnification provisions. As a result, the estimated fair value of the indemnifications under these agreements is believed to be minimal. Accordingly, the Company has no liabilities recorded for these agreements as of June 30, 2019 and December 31, 2018.

10. GEOGRAPHIC INFORMATION

The geographic distribution of the Company's grant revenues and long-lived assets are summarized in the tables below:

	U.S.	Canada	Eliminations	Total
Three Months Ended June 30, 2019:				
Grant revenue from external customers	\$ 318	\$ —	\$ —	\$ 318
Inter-geographic revenues	—	499	(499)	—
Revenues	<u>\$ 318</u>	<u>\$ 499</u>	<u>\$ (499)</u>	<u>\$ 318</u>
Three Months Ended June 30, 2018:				
Grant revenue from external customers	\$ 285	\$ —	\$ —	\$ 285
Inter-geographic revenues	—	372	(372)	—
Revenues	<u>\$ 285</u>	<u>\$ 372</u>	<u>\$ (372)</u>	<u>\$ 285</u>
Six Months Ended June 30, 2019:				
Net revenues from external customers	\$ 442	\$ —	\$ —	\$ 442
Inter-geographic revenues	—	836	(836)	—
Net revenues	<u>\$ 442</u>	<u>\$ 836</u>	<u>\$ (836)</u>	<u>\$ 442</u>
Six Months Ended June 30, 2018:				
Net revenues from external customers	\$ 345	\$ —	\$ —	\$ 345
Inter-geographic revenues	—	640	(640)	—
Net revenues	<u>\$ 345</u>	<u>\$ 640</u>	<u>\$ (640)</u>	<u>\$ 345</u>

Foreign revenue is based on the country in which the Company's subsidiary that earned the revenue is domiciled. During the three and six months ended June 30, 2019, the Company's grant revenue from the Michigan State University ("MSU") sub-award of \$318 and \$442 represented 100% of total revenue for both periods. During the three and six months ended June 30, 2018, revenue earned from the MSU sub-award totaled \$236 for both periods and represented 83% and 68% of total revenue, respectively.

The geographic distribution of the Company's long-lived assets is summarized as follows:

	U.S.	Canada	Eliminations	Total
June 30, 2019	\$ 1,276	\$ 22	\$ —	\$ 1,298
December 31, 2018	\$ 1,372	\$ 13	\$ —	\$ 1,385

11. CAPITAL STOCK

Common Stock

On March 18, 2019, the Company completed a registered direct offering of its common stock. Proceeds from the transaction were approximately \$2,932, before issuance costs of \$349. Investors participating in the transaction purchased a total of 2,421,662 shares of common stock at a price of \$1.2101 per share.

Preferred Stock

The Company's Certificate of Incorporation authorizes it to issue up to 5,000,000 shares of \$0.01 par value preferred stock.

In December 2017, the Company closed on a public offering of its securities that included issuance of 3,987 shares of Series A Convertible Preferred Stock. Each preferred share was convertible, at the holder's option, into 445 shares of common stock at a conversion price of \$2.25 per share. As of March 19, 2018, all of the 3,987 preferred shares had been converted to an aggregate of 1,772,000 shares of common stock. When converted, the shares of converted Series A Convertible Preferred Stock were restored to the status of authorized but unissued shares of preferred stock, subject to reissuance by the Board of Directors.

Warrants

The following table summarizes information with regard to outstanding warrants to purchase common stock as of June 30, 2019:

Issuance	Number of Shares Issuable Upon Exercise of Outstanding Warrants	Exercise Price	Expiration Date
July 2017 Registered Direct Offering	570,784	\$ 5.04	January 7, 2024
December 2017 Public Offering - Series A	6,439,000	\$ 2.25	December 21, 2022
Consultant	30,000	\$ 2.90	September 11, 2024
Total	<u>7,039,784</u>		

On June 15, 2019, 393,300 warrants issued in connection with the Company's private placement of securities on June 15, 2015, expired in accordance with the terms of the securities purchase agreement.

Reserved Shares

The following shares of common stock were reserved for future issuance upon exercise of stock options, vesting of RSUs and conversion of warrants:

	June 30, 2019	December 31, 2018
Stock Options	2,446,082	1,745,037
RSUs	—	7,101
Warrants	7,039,784	7,433,084
Total number of common shares reserved for future issuance	<u>9,485,866</u>	<u>9,185,222</u>

ITEM 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS.

(All dollar amounts are stated in thousands)

Forward Looking Statements

This Quarterly Report on Form 10-Q contains "forward-looking statements" within the meaning of 27A of the Securities Act of 1933 (the "Securities Act"), as amended, and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). These statements relate to our future plans, objectives, expectations and intentions and may be identified by words such as "may," "will," "should," "expects," "plans," "anticipate," "intends," "target," "projects," "contemplates," "believe," "estimates," "predicts," "potential," and "continue," or similar words.

Although we believe that our expectations are based on reasonable assumptions within the limits of our knowledge of our business and operations, these forward-looking statements contained in this document are neither promises nor guarantees. Our business is subject to significant risk and uncertainties and there can be no assurance that our actual results will not differ materially from our expectations. These forward looking statements include, but are not limited to, statements concerning our business plans and strategies; expected future financial results and cash requirements; plans for obtaining additional funding; plans and expectations that depend on our ability to continue as a going concern; and plans for development and commercialization of our Yield10 technologies. Such forward-looking statements are subject to a number of risks and uncertainties that could cause actual results to differ materially from those anticipated including, without limitation, risks related to our limited cash resources, uncertainty about our ability to secure additional funding, risks related to the execution of our business plans and strategies, risks associated with the protection and enforcement of our intellectual property rights, as well as other risks and uncertainties set forth under the caption "Risk Factors" in Part I, Item 1A, of the Company's Annual Report on Form 10-K for the year ended December 31, 2018 and in our other filings with the SEC.

The forward-looking statements and risk factors presented in this document are made only as of the date hereof and we do not intend to update any of these risk factors or to publicly announce the results of any revisions to any of our forward-looking statements other than as required under the federal securities laws.

Unless the context otherwise requires, all references in this Quarterly Report on Form 10-Q to "Yield10 Bioscience," "Yield10," "we," "our," "us," "our company" or "the company" refer to Yield10 Bioscience, Inc., a Delaware corporation, and its subsidiaries.

Overview

Yield10 Bioscience, Inc. is an agricultural bioscience company which uses its "Trait Factory" to develop high value seed traits for the agriculture and food industries. Specifically, Yield10 plans to efficiently develop superior gene traits for the major grain crops corn, soybean, canola, wheat and rice that will enable step-change increases in crop yield of at least 10-20 percent. While maintaining our focus on the development of novel yield traits for key crops based on a licensing model, we have recently begun to execute the second part of our strategy which is to develop independent business opportunities for Yield10 in the specialty oils and niche crop space using the oilseed Camelina. The target of this effort is sustainable business solutions to support agriculture, global food production and other specialty applications. Yield10 brings a unique history, skill set, and tools captured in our **Gene Ranking Artificial Intelligence Network** ("GRAIN") platform for developing advanced crop traits and increasing the concentration of specific biochemicals of commercial interest in crops. Our plan is to develop a source of revenue from funded research and development collaborations for traits, products and crops not being directly pursued internally. While there is no guarantee of success, the Company is currently engaged in a range of discussions with third parties on different crops, traits and products in the feed, food and pharmaceutical sectors. Yield10 Bioscience is headquartered in Woburn, Massachusetts and has an oilseed development Center of Excellence in Saskatoon, Saskatchewan, Canada.

As of June 30, 2019, the Company held unrestricted cash, cash equivalents and short-term investments of \$4,250. We follow the guidance of ASU 2014-15, *Presentation of Financial Statements-Going Concern (Subtopic 205-40)* in order to determine whether there is substantial doubt about the Company's ability to continue as a going concern for one year after the date its financial statements are filed.

If we issue equity or debt securities to raise additional funds, (i) we may incur fees associated with such issuance, (ii) our existing stockholders may experience dilution from the issuance of new equity securities, (iii) we may incur ongoing interest expense and be required to grant a security interest in Company assets in connection with any debt issuance, and (iv) the new equity or debt securities may have rights, preferences and privileges senior to those of our existing stockholders. In addition, utilization of the Company's net operating loss and research and development credit carryforwards may be subject to significant annual limitations under Section 382 of the Code due to ownership changes resulting from equity financing transactions. If we raise additional funds through collaboration, licensing or other similar arrangements, it may be necessary to relinquish valuable rights to the Company's potential products or proprietary technologies or grant licenses on terms that are not favorable to the Company.

Government Grants

During 2018 we entered into a sub-award with Michigan State University ("MSU") to support a Department of Energy ("DOE") funded grant entitled "A Systems Approach to Increasing Carbon Flux to Seed Oil." Our participation under this projected five-year grant will be awarded on an annual basis with the first year commencing September 15, 2017. Although our funding under this sub-award has been appropriated through September 2019 for \$1,212, we anticipate that each additional option year will be awarded annually to Yield10 through September 14, 2022 for total sub-award funding of \$2,957, provided the U.S. Congress continues to appropriate funds for the program, we are able to make progress towards meeting grant objectives and we remain in compliance with other terms and conditions of the sub-award.

As of June 30, 2019, proceeds of \$351 remain to be recognized under our MSU sub-award as shown in the table below. This includes amounts for reimbursement to our subcontractors, as well as reimbursement for our employees' time, benefits and other expenses related to future performance.

Program Title	Funding Agency	Total Government Funded Appropriations	Total revenue recognized through June 30, 2019	Remaining amount to be recognized as of June 30, 2019	Contract/Grant Expiration
Subcontract from Michigan State University project funded by DOE entitled "A Systems Approach to Increasing Carbon Flux to Seed Oil"	Department of Energy	\$ 1,212	\$ 861	\$ 351	September 2019

Critical Accounting Estimates and Judgments

The discussion and analysis of our financial condition and results of operations are based upon our consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States of America GAAP for interim financial information. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosure of contingent assets and liabilities. On an ongoing basis, we evaluate our estimates, including those related to revenue recognition, stock-based compensation, measurement of right-of-use assets and lease liabilities and the recognition of lease expense. We base our estimates on historical experience and on various other assumptions that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates. With the exception of our accounting for operating leases under the new guidance of Topic 842, *Leases*, that became effective for us on January 1, 2019, the critical accounting policies and the significant judgments and estimates used in the preparation of our condensed consolidated financial statements for the three and six months ended June 30, 2019, are consistent with those discussed in our Annual Report on Form 10-K for the year ended December 31, 2018, in the section captioned “Management’s Discussion and Analysis of Financial Condition and Results of Operations—Critical Accounting Estimates and Judgments.”

Results of Operations

Comparison of the Three Months Ended June 30, 2019 and 2018

Revenue

	Three Months Ended June 30,		Change
	2019	2018	
Grant revenue	\$ 318	\$ 285	\$ 33

Grant revenue was \$318 and \$285 for the three months ended June 30, 2019 and June 30, 2018, respectively. Grant revenue for the three months ended June 30, 2019 was derived solely from the Company's sub-award with MSU. During the three months ended June 30, 2018, \$236 was earned from the MSU sub-award with the remainder being earned from our Camelina grant with the DOE that completed in 2018.

We anticipate that grant revenue recognized during the remainder of 2019 from our DOE sub-award with MSU will remain consistent with the level of grant revenue recognized during 2018.

Expenses

	Three Months Ended June 30,		Change
	2019	2018	
Research and development expenses	\$ 1,191	\$ 1,260	\$ (69)
General and administrative expenses	1,025	1,456	(431)
Total expenses	\$ 2,216	\$ 2,716	\$ (500)

Research and Development Expenses

Research and development expense during the three months ended June 30, 2019 and June 30, 2018 were \$1,191 and \$1,260, respectively. The five-percent decrease of \$69 is primarily due to lower facility costs of \$62 that resulted from an impairment charge taken on our Lowell, Massachusetts lease in August 2018 that reduced remaining ongoing lease expense for that facility until its conclusion in May 2020. Net compensation and benefit expense also decreased by \$39 from \$681 during the three months ended June 30, 2018 to \$642 during the three months ended June 30, 2019, and is the result of reductions in stock compensation and bonus expense of \$73 and \$42, respectively, partially offset by an increase in employee payroll of \$72 from the addition of headcount. We did not accrue for 2019 employee bonuses during the quarter ended June 30, 2019.

Based on our current financial forecasts, we expect research and development expenses during 2019 will increase over expenses incurred during 2018 as we add additional research staff and shift greater resources towards our research programs, provided that we are able to raise additional funds to support our ongoing operations. Our forecasts related to research and development expenses are subject to significant change as events and opportunities occur during 2019 that could

result in modifications to our business plans.

General and Administrative Expenses

General and administrative expenses for the three months ended June 30, 2019 and June 30, 2018 decreased by \$431 from \$1,456 to \$1,025. The change is partially due to a decrease in net compensation and benefits of \$194 as a result of lower stock compensation and bonus expenses. The Company did not accrue for 2019 employee bonuses during the three months ended June 30, 2019. Professional fees decreased by \$120 during the three months ended June 30, 2019 as a result of lower legal, audit and patent processing charges. License fees also decreased by \$71 during the three months ended June 30, 2019 and is due to our entering into an exclusive technology license with the University of Missouri during the second quarter of 2018. Facility expense also decreased by \$58 as a result of the impairment charge taken on the Lowell facility during August 2018.

Based on our current financial forecasts, we expect general and administrative expenses during 2019 will remain below 2018 expenses, primarily as a result of lower stock compensation expense, and provided that we are able to raise additional funds to support our ongoing operations. Our forecasts related to general and administrative expenses are subject to significant change as events and opportunities occur during 2019 that could result in modifications to our business plans.

Other Income (Expense), Net

	Three Months Ended June 30,		Change
	2019	2018	
Total other income (expense), net	\$ 27	\$ 38	\$ (11)

Other income (expense), net, was \$27 and \$38 for the three months ended June 30, 2019 and June 30, 2018, respectively. Net other income during each period was primarily derived from investment income earned from the Company's short-term investments.

Comparison of the Six Months Ended June 30, 2019 and 2018

Revenue

	Six Months Ended June 30,		Change
	2019	2018	
Grant revenue	\$ 442	\$ 345	\$ 97

Grant revenue was \$442 and \$345 for the six months ended June 30, 2019 and June 30, 2018, respectively. Grant revenue for the six months ended June 30, 2019 was derived solely from the Company's sub-award with MSU. During the six months ended June 30, 2018, \$236 was earned from the MSU sub-award with the remainder earned from our Camelina grant with the DOE that completed in 2018.

Expenses

	Six Months Ended June 30,		Change
	2019	2018	
Research and development expenses	\$ 2,414	\$ 2,361	\$ 53
General and administrative expenses	2,211	2,732	(521)
Total expenses	\$ 4,625	\$ 5,093	\$ (468)

Research and Development Expenses

Research and development expenses for the six months ended June 30, 2019 and six months ended June 30, 2018 remained consistent with a \$53, or 2% net increase between the two periods. No individual expense categories within research and development showed a notable variance.

General and Administrative Expenses

General and administrative expenses decreased by \$521 from \$2,732 during the six months ended June 30, 2018 to \$2,211 during the six months ended June 30, 2019. The 19% decrease was primarily due to a net decrease in compensation and benefits and a decrease in professional fees of \$356 and \$155, respectively. The favorable variance in net compensation and benefits is primarily the result of lower stock compensation and bonus expenses. Stock compensation expense decreased during the six months ended June 30, 2019 due to the final vesting and expense recognition for a significant number of employee stock options that completed vesting during October 2018. No bonuses were accrued for 2019 employee bonuses during the six months ended June 30, 2019, in contrast to the six months ended June 30, 2018 when the Company recorded a six-month proportional accrual for 2018 employee bonuses. Professional fees decreased during the six months ended June 30, 2019 as a result of lower legal, audit and patent processing charges.

Other Income (Expense), Net

	Six Months Ended June 30,		Change
	2019	2018	
Total other income (expense), net	\$ 52	\$ 63	\$ (11)

Other income (expense), net, was \$52 and \$63 for each of the six months ended June 30, 2019 and June 30, 2018, respectively. Net other income during each period was primarily derived from investment income earned from the Company's short-term investments.

Liquidity and Capital Resources

Currently, we require cash to fund our working capital needs, to purchase capital assets, to pay our operating lease obligations and other operating costs. The primary sources of our liquidity have historically included equity financings, government research grants and income earned on cash and short-term investments.

Since our inception, we have incurred significant expenses related to our research, development and commercialization efforts. With the exception of 2012, when we recognized \$38,885 of deferred revenue from a terminated joint venture, we have recorded losses since our initial founding, including the three and six months ended June 30, 2019. As of June 30, 2019, we had an accumulated deficit of \$356,069. Our total unrestricted cash, cash equivalents and short-term investments as of June 30, 2019, were \$4,250 as compared to cash, cash equivalents and short-term investments of \$5,769 at December 31, 2018. As of June 30, 2019, we had no outstanding debt.

Our cash and cash equivalents are held primarily for working capital purposes. As of June 30, 2019, we had restricted cash of \$332. Restricted cash consists of \$307 held in connection with the lease agreement for our Woburn, Massachusetts facility and \$25 held in connection with our corporate credit card used for incidental purchases.

Investments are made in accordance with our corporate investment policy, as approved by our Board of Directors. The primary objective of this policy is to preserve principal and investments are limited to high quality corporate debt, U.S. Treasury bills and notes, money market funds, bank debt obligations, municipal debt obligations and asset-backed securities. The policy establishes maturity limits, concentration limits, and liquidity requirements. As of June 30, 2019, we were in compliance with this policy.

We currently anticipate \$9,000 - \$9,500 of cash usage during 2019 to fund our operations. We estimate that our current cash resources will be sufficient to fund operations and meet our obligations, when due, into the fourth quarter of 2019. This forecast of cash resources is forward-looking information that involves risks and uncertainties, and the actual amount of expenses could vary materially and adversely as a result of a number of factors. We follow the guidance of ASC Topic 205-40, *Presentation of Financial Statements-Going Concern*, in order to determine whether there is substantial doubt about the Company's ability to continue as a going concern for one year after the date our financial statements are issued. The Company's ability to continue operations after its current cash resources are exhausted depends on its ability to obtain additional financing through, among other sources, public or private equity financing, secured or unsecured debt financing, equity or debt bridge financing, additional government research grants or collaborative arrangements with third parties, as to which no assurances can be given. We do not know whether additional financing will be available on terms favorable or acceptable to the Company when needed, if at all. If adequate additional funds are not available when required, we will be forced to curtail our research efforts, explore strategic alternatives and/or wind down our operations and pursue options for liquidating our remaining assets, including intellectual property and equipment. Based on our cash forecast, we have

determined that the Company's present capital resources are not sufficient to fund our planned operations for a twelve-month period ending in August 2020, and therefore, raise substantial doubt about our ability to continue as a going concern.

If we issue equity or debt securities to raise additional funds, (i) the Company may incur fees associated with such issuance, (ii) our existing stockholders will experience dilution from the issuance of new equity securities, (iii) the Company may incur ongoing interest expense and be required to grant a security interest in Company assets in connection with any debt issuance, and (iv) the new equity or debt securities may have rights, preferences and privileges senior to those of our existing stockholders. In addition, utilization of our net operating loss and research and development credit carryforwards may be subject to significant annual limitations under Section 382 of the Code due to ownership changes resulting from future equity financing transactions. If we raise additional funds through collaboration, licensing or other similar arrangements, it may be necessary to relinquish valuable rights to our potential products or proprietary technologies or grant licenses on terms that are not favorable to the Company.

Net cash used for operating activities was \$4,077 during the six months ended June 30, 2019, compared to net cash used for operating activities during the six months ended June 30, 2018 of \$4,888. Net cash used for operations during the six months ended June 30, 2019 primarily reflects the net loss of \$4,131 and payments made to reduce the Company's lease liabilities of \$404 partially offset by non-cash expenses, including stock-based compensation expense of \$275, depreciation expense of \$100, 401(k) stock matching contribution expense of \$49 and non-cash lease expense of \$299. The higher net cash usage for operating activities during the six months ended June 30, 2018 of \$4,888 is primarily the result of the Company's greater net loss of \$4,685 and payment of 2017 employee bonuses of \$529.

Net cash of \$1,735 was provided by investing activities during the six months ended June 30, 2019 as a result of \$2,746 of short-term investments reaching their maturity dates and converting to cash. The Company also purchased \$998 of new short-term investments during the six-month period.

Net cash of \$2,579 was provided by financing activities during the six months ended June 30, 2019 as a result of the Company's completion of a registered direct sale of 2,421,662 shares of common stock at an offering price of \$1.2101 per share. Gross proceeds from the sale totaled \$2,932 before cash payment of offering costs of \$349.

Off-Balance Sheet Arrangements

As of June 30, 2019, we had no off-balance sheet arrangements as defined in Item 303(a)(4) of the SEC's Regulation S-K.

Recent Accounting Pronouncements

See Note 2, "Accounting Policies," to our condensed consolidated financial statements included in this Quarterly Report on Form 10-Q for a full description of recent accounting pronouncements.

ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK.

Not applicable.

ITEM 4. CONTROLS AND PROCEDURES.**Evaluation of Disclosure Controls and Procedures**

Our management (with the participation of our Principal Executive Officer and Principal Accounting Officer) evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act), as of June 30, 2019. Disclosure controls and procedures are designed to ensure that information required to be disclosed by the Company in the reports it files or submits under the Exchange Act is recorded, processed, summarized and reported on a timely basis and that such information is accumulated and communicated to management, including the Principal Executive Officer and the Principal Accounting Officer, as appropriate, to allow timely decisions regarding disclosure. Based on this evaluation, our Principal Executive Officer and Principal Accounting Officer concluded that these disclosure controls and procedures are effective.

Changes in Internal Control over Financial Reporting

There have been no changes in our internal control over financial reporting (as defined in Rules 13a-15(f) under the Exchange Act) during the quarter ended June 30, 2019 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II — OTHER INFORMATION

ITEM 1. LEGAL PROCEEDINGS.

From time to time, the Company may be subject to legal proceedings and claims in the ordinary course of business. The Company is not currently aware of any such proceedings or claims that it believes will have, individually or in the aggregate, a material adverse effect on the business, financial condition or the results of operations.

ITEM 1A. RISK FACTORS.

There have been no material changes in information regarding our risk factors as described in Item 1A of our Annual Report on Form 10-K for the year ended December 31, 2018, other than the updated risk factor noted below. Our business is subject to numerous risks. We caution you that the important factors annotated within our risk factors, among others, could cause our actual results to differ materially from those expressed in forward-looking statements made by us or on our behalf in filings with the SEC, press releases, communications with investors and oral statements. Any or all of our forward-looking statements in this Quarterly Report on Form 10-Q and any other public statements we make may turn out to be wrong. They can be affected by inaccurate assumptions we might make or by known or unknown risks and uncertainties. Many factors discussed in our risk factors will be important in determining future results. Consequently, no forward-looking statement can be guaranteed. Actual future results may differ materially from those anticipated in forward-looking statements. We undertake no obligation to update any forward-looking statements, whether as a result of new information, future events or otherwise, other than as required under the federal securities laws. You are advised, however, to consult any further disclosure we make in our reports filed with the Securities and Exchange Commission.

If we fail to continue to meet all applicable Nasdaq Capital Market requirements and the Nasdaq Stock Market determines to delist our common stock, the delisting could adversely affect the market liquidity of our common stock, impair the value of your investment and harm our business.

Our common stock is currently listed on the Nasdaq Capital Market. In order to maintain that listing, we must satisfy minimum financial and other requirements. On June 25, 2019, we received a notice from the Listing Qualifications Department of the Nasdaq Stock Market indicating that, for the previous 30 consecutive business days, the bid price for our common stock had closed below the minimum \$1.00 per share required for continued inclusion on the Nasdaq Capital Market under Nasdaq Listing Rule 5550(a)(2). The notification letter states that pursuant to Nasdaq Listing Rule 5810(c)(3)(A) the Company will be afforded 180 calendar days, or until December 23, 2019, to regain compliance with the minimum bid price requirement. In order to regain compliance, shares of the Company's common stock must maintain a minimum bid closing price of at least \$1.00 per share for a minimum of ten consecutive business days. If we do not regain compliance by December 23, 2019, Nasdaq will provide written notification to us that our common stock will be delisted. At that time, we may appeal Nasdaq's delisting determination to a Nasdaq Listing Qualifications Panel. Alternatively, we may be eligible for an additional 180 day grace period if we satisfy all of the requirements, other than the minimum bid price requirement, for listing on the Nasdaq Capital Market set forth in Nasdaq Listing Rule 5505.

While we intend to engage in efforts to regain compliance, and thus maintain our listing, there can be no assurance that we will be able to regain compliance during the applicable time periods set forth above. If we fail to continue to meet all applicable Nasdaq Capital Market requirements in the future and Nasdaq determines to delist our common stock, the delisting could substantially decrease trading in our common stock and adversely affect the market liquidity of our common stock; adversely affect our ability to obtain financing on acceptable terms, if at all, for the continuation of our operations; and harm our business. Additionally, the market price of our common stock may decline further and stockholders may lose some or all of their investment. The closing bid price of our common stock on the Nasdaq Capital Market was \$0.94 on July 7, 2019.

ITEM 2. UNREGISTERED SALES OF EQUITY SECURITIES AND USE OF PROCEEDS.

Recent Sales of Unregistered Securities

On April 1, 2019, we issued 21,860 shares of common stock to participants in the Yield10 Bioscience, Inc. 401(k) Plan as a matching contribution. The issuance of these securities is exempt from registration pursuant to Section 3(a)(2) of the Securities Act, as amended as exempted securities.

Issuer Purchases of Equity Securities

During the three months ended June 30, 2019, there were no repurchases made by us or on our behalf, or by any “affiliated purchasers,” of shares of our common stock.

ITEM 3. DEFAULTS UPON SENIOR SECURITIES.

None.

ITEM 4. MINE SAFETY DISCLOSURES.

Not applicable.

ITEM 5. OTHER INFORMATION.

None.

ITEM 6. EXHIBITS.

[31.1](#) Certification Pursuant to Rule 13a-14(a)/15d-14(a) of the Securities Exchange Act of 1934 of the Principal Executive Officer (filed herewith).

[31.2](#) Certification Pursuant to Rule 13a-14(a)/15d-14(a) of the Securities Exchange Act of 1934 of the Principal Financial Officer (filed herewith).

[32.1](#) Section 1350 Certification (furnished herewith).

101.1 The following financial information from the Yield10 Bioscience, Inc. Quarterly Report on Form 10-Q for the quarter ended June 30, 2019 formatted in XBRL: (i) Condensed Consolidated Balance Sheets, June 30, 2019 and December 31, 2018; (ii) Condensed Consolidated Statements of Operations, Three and Six Months Ended June 30, 2019 and 2018; (iii) Condensed Consolidated Statements of Comprehensive Loss, Three and Six Months Ended June 30, 2019 and 2018; (iv) Condensed Consolidated Statements of Cash Flows, Six Months Ended June 30, 2019 and 2018; (v) Condensed Consolidated Statements of Stockholders' Equity, Three and Six Months Ended June 30, 2019 and 2018; and (vi) Notes to Consolidated Financial Statements.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

YIELD10 BIOSCIENCE, INC.

August 12, 2019

By: /s/ OLIVER PEOPLES

Oliver Peoples

President and Chief Executive Officer

(Principal Executive Officer)

August 12, 2019

By: /s/ CHARLES B. HAASER

Charles B. Haaser

Chief Accounting Officer

(Principal Financial and Accounting Officer)

CERTIFICATION

I, Oliver Peoples, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Yield10 Bioscience, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Dated: August 12, 2019

/s/ OLIVER PEOPLES

Name: Oliver Peoples
Title: *President and Chief Executive Officer*
(Principal Executive Officer)

CERTIFICATION

I, Charles B. Haaser, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Yield10 Bioscience, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Dated: August 12, 2019

/s/ CHARLES B. HAASER

Name: Charles B. Haaser
 Title: Chief Accounting Officer
 (Principal Financial and Accounting Officer)

**CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Quarterly Report on Form 10-Q of Yield10 Bioscience, Inc. (the "Company") for the quarter ended June 30, 2019 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), we, Oliver Peoples, President, Chief Executive Officer and Principal Executive Officer of the Company and Charles B. Haaser, Chief Accounting Officer and Principal Financial and Accounting Officer of the Company, certify, pursuant to 18 U.S.C. 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, to our knowledge that:

1. The Report fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and
2. The information in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

This certification is being provided pursuant to 18 U.S.C. 1350 and is not to be deemed a part of the Report, nor is it to be deemed to be "filed" for any purpose whatsoever.

Dated: August 12, 2019

/s/ OLIVER PEOPLES

Oliver Peoples

*President and Chief Executive Officer
(Principal Executive Officer)*

Dated: August 12, 2019

/s/ CHARLES B. HAASER

Charles B. Haaser

*Chief Accounting Officer
(Principal Financial and Accounting Officer)*