Table of Contents

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

FORM 10-Q

(Mark One)

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

For the quarterly period ended December 31, 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: 001-38720

Twist Bioscience Corporation
(Exact Name of Registrant as Specified in its Charter)

Delaware	**46-2058888**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**

681 Gateway Blvd, South San Francisco, CA 94080
(Address of principal executive offices and zip code)

(800) 719-0671
(Registrant's telephone number, including area code)

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock	**TWST**	**The Nasdaq Global Select 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. (Check one):

Large accelerated filer	☐	Accelerated filer	☐
Non-accelerated filer	☐	Small reporting company	☒
		Emerging growth company	☒

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 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 ☒

APPLICABLE ONLY TO ISSUERS INVOLVED IN BANKRUPTCY PROCEEDINGS DURING THE PRECEDING FIVE YEARS:

Indicate by check mark whether the registrant has filed all documents and reports required to be filed by Section 12, 13 or 15(d) of the Securities Exchange Act of 1934 subsequent to the distribution of securities under a plan confirmed by a court. Yes ☐ No ☐

APPLICABLE ONLY TO CORPORATE ISSUERS

Indicate the number of shares outstanding of each of the issuer's classes of common stock, as of the latest practicable date.

The number of shares of the Registrant's common stock outstanding as of February 6, 2020, was 35,446,291.

TWIST BIOSCIENCE CORPORATION

QUARTERLY REPORT ON FORM 10-Q
FOR THE QUARTER ENDED DECEMBER 31, 2019

TABLE OF CONTENTS

Forward-looking statements

PART I. Financial information

Item 1.	Financial statements	2
	Condensed Consolidated Balance Sheets (unaudited)	2
	Condensed Consolidated Statements of Operations and Comprehensive Loss (unaudited)	3
	Condensed Consolidated Statements of Redeemable Convertible Preferred Stock and Stockholders' Equity (Deficit) (Unaudited)	4
	Condensed Consolidated Statements of Cash Flows (unaudited)	5
	Notes to Unaudited Condensed Consolidated Financial Statements	6
Item 2.	Management's discussion and analysis of financial condition and results of operations	15
Item 3.	Quantitative and qualitative disclosures about market risk	22
Item 4.	Controls and procedures	23

PART II. Other information

Item 1.	Legal proceedings	24
Item 1A.	Risk factors	25
Item 2.	Unregistered sales of equity securities and use of proceeds	52
Item 3.	Defaults upon senior securities	53
Item 4.	Mine safety disclosures	53
Item 5.	Other information	53
Item 6.	Exhibits	54
Signatures		55

Forward-looking statements

This Quarterly Report on Form 10-Q for the Quarter ended December 31, 2019, or Form 10-Q, contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act. The words “believe,” “will,” “may,” “estimate,” “continue,” “anticipate,” “intend,” “should,” “plan,” “expect,” “predict,” “could,” “potentially” and variations of such words and similar expressions are intended to identify such forward-looking statements, which may include, but are not limited to, statements concerning the following:

- our ability to increase our revenue and our revenue growth rate;
- estimates of our expenses, future revenues, capital requirements and our needs for additional financing; our estimates of the size of our market opportunities;
- our expectations regarding our ability to increase DNA production, reduce turnaround times and drive cost reductions for our customers;
- our ability to effectively manage our growth;
- our ability to successfully enter new markets and manage our international expansion;
- our ability to protect our intellectual property, including our proprietary DNA synthesis platform;
- costs associated with defending intellectual property infringement and other claims;
- the effects of increased competition in our business;
- our ability to keep pace with changes in technology and our competitors;
- our ability to successfully identify, evaluate and manage any future acquisitions of businesses, solutions or technologies;
- the success of our marketing efforts;
- the potential purchases of common stock by certain of our existing stockholders and their affiliated entities, including stockholders who are associated with certain of our directors;
- a significant disruption in, or breach in security of our information technology systems and resultant interruptions in service and any related impact on our reputation;
- the attraction and retention of qualified employees and key personnel;
- the effects of natural or man-made catastrophic events;
- the effectiveness of our internal controls;
- changes in government regulation affecting our business;
- the impact of adverse economic conditions; and
- other risk factors included under the section titled “Risk Factors.”

You should not rely upon forward-looking statements as predictions of future events. Such statements are based on management’s expectations as of the date of this filing and involve many risks and uncertainties that could cause our actual results, events or circumstances to differ materially from those expressed or implied in our forward-looking statements. Such risks and uncertainties include those described throughout this report and particularly in the sections entitled “Risk factors” and “Management’s discussion and analysis of financial condition and results of operations.” Given these risks and uncertainties, readers are cautioned not to place undue reliance on such forward-looking statements. Readers are urged to carefully review and consider all of the information in this Form 10-Q and in other documents we file from time to time with the Securities and Exchange Commission, or SEC. We undertake no obligation to update any forward-looking statements made in this Form 10-Q to reflect events or circumstances after the date of this filing or to reflect new information or the occurrence of unanticipated events, except as required by law. We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments we may make.

When we use the terms “Twist,” “Twist Bioscience,” the “Company,” “we,” “us” or “our” in this report, we are referring to Twist Bioscience Corporation and its consolidated subsidiaries unless the context requires otherwise. Sequencespace and the Twist logo are trademarks of Twist Bioscience Corporation. All other company and product names may be trademarks of the respective companies with which they are associated.

PART I. Financial information

Item 1. *Financial statements*

Twist Bioscience Corporation
Condensed Consolidated Balance Sheets (unaudited)

(In thousands, except share and per share data)	December 31, 2019	September 30, 2019
Assets		
Current assets		
Cash and cash equivalents	$ 26,032	$ 46,735
Short-term investments	77,075	91,372
Accounts receivable, net	13,054	12,104
Inventories	7,416	7,330
Prepaid expenses and other current assets	5,711	2,594
Total current assets	$ 129,288	$ 160,135
Property and equipment, net	21,339	20,835
Operating lease right-of-use assets	37,238	—
Goodwill	1,138	1,138
Intangible assets, net	458	508
Restricted cash, non-current	579	579
Other non-current assets	2,237	3,799
Total assets	$ 192,277	$ 186,994
Liabilities and stockholders' equity		
Current liabilities		
Accounts payable	$ 9,106	$ 9,760
Accrued expenses	4,687	5,965
Accrued compensation	8,848	10,479
Accrued litigation settlement	22,500	—
Current portion of operating lease liabilities	8,371	—
Current portion of long-term debt	3,333	3,333
Other current liabilities	999	817
Total current liabilities	$ 57,844	$ 30,354
Operating lease liabilities, net of current portion	27,539	—
Long-term debt, net of current portion	3,669	4,400
Other non-current liabilities	144	158
Total liabilities	$ 89,196	$ 34,912
Commitments and contingencies (Note 6)		
Stockholders' equity		
Preferred stock, $0.00001 par value—10,000,000 shares authorized; no shares issued or outstanding	$ —	$ —
Common stock, $0.00001 par value—100,000,000 shares authorized; 33,260,761 and 32,872,675 shares issued and outstanding as of December 31, 2019 and September 30, 2019, respectively.	—	—
Additional paid-in capital	477,053	470,425
Accumulated other comprehensive income	190	181
Accumulated deficit	(374,162)	(318,524)
Total stockholders' equity	$ 103,081	$ 152,082
Total liabilities and stockholders' equity	$ 192,277	$ 186,994

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

Twist Bioscience Corporation
Condensed Consolidated Statements of Operations and Comprehensive Loss (unaudited)

(In thousands, except share and per share data)	Three months ended December 31, 2019	2018
Revenues	$ 17,164	$ 11,492
Operating expenses:		
Cost of revenues	$ 13,792	$ 11,857
Research and development	10,297	7,273
Selling, general and administrative	26,405	15,259
Litigation settlement	22,500	—
Total operating expenses	$ 72,994	$ 34,389
Loss from operations	$ (55,830)	$ (22,897)
Interest income	564	664
Interest expense	(248)	(348)
Other income (expense), net	(87)	(15)
Loss before income taxes	$ (55,601)	$ (22,596)
Provision for income taxes	(37)	(43)
Net loss attributable to common stockholders	$ (55,638)	$ (22,639)
Other comprehensive loss:		
Change in unrealized loss on investments	16	(7)
Foreign currency translation adjustment	(7)	(56)
Comprehensive loss	(55,629)	$ (22,702)
Net loss per share attributable to common stockholders—basic and diluted	$ (1.69)	$ (1.18)
Weighted average shares used in computing net loss per share attributable to common stockholders—basic and diluted	32,976,145	19,187,533

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

Twist Bioscience Corporation

Condensed Consolidated Statements of Redeemable Convertible Preferred Stock and Stockholders' Equity (Deficit) (unaudited)

(In thousands, except share data)	Series A convertible preferred stock		Series B convertible preferred stock		Series C convertible preferred stock		Series D convertible preferred stock		Common stock		Additional paid-in capital	Accumulated other comprehensive income	Accumulated deficit	Total stockholders' equity (deficit)
	Shares	Amount	Shares	Amount	Shares	Amount	Shares	Amount	Shares	Amount				
Balances as of September 30, 2019	—	$ —	—	$ —	—	$ —	—	$ —	32,872,675	$ —	$ 470,425	$ 181	$ (318,524)	$ 152,082
Issuance of common stock in public offering, net of underwriting discounts and commissions and offering expenses of $276	—	—	—	—	—	—	—	—	96,827	—	2,024	—	—	2,024
Vesting of restricted stock units	—	—	—	—	—	—	—	—	84,565	—	—	—	—	—
Exercise of stock options	—	—	—	—	—	—	—	—	242,382	—	1,715	—	—	1,715
Repurchases of early exercised stock options	—	—	—	—	—	—	—	—	(896)	—	—	—	—	—
Repurchases of common stock for income tax withholding	—	—	—	—	—	—	—	—	(34,792)	—	(808)	—	—	(808)
Stock-based compensation	—	—	—	—	—	—	—	—	—	—	3,697	—	—	3,697
Other comprehensive income	—	—	—	—	—	—	—	—	—	—	—	9	—	9
Net loss	—	—	—	—	—	—	—	—	—	—	—	—	(55,638)	(55,638)
Balances as of December 31, 2019	—	$ —	—	$ —	—	$ —	—	$ —	33,260,761	$ —	$ 477,053	$ 190	$ (374,162)	$ 103,081

(In thousands, except share data)	Series A convertible preferred stock		Series B convertible preferred stock		Series C convertible preferred stock		Series D convertible preferred stock		Common stock		Additional paid-in capital	Accumulated other comprehensive income	Accumulated deficit	Total stockholders' equity (deficit)
	Shares	Amount	Shares	Amount	Shares	Amount	Shares	Amount	Shares	Amount				
Balances as of September 30, 2018	2,817,723	$ 9,141	3,315,645	$ 25,900	2,491,483	$ 36,726	10,326,454	$ 218,716	3,206,048	$ —	$ 9,346	$ 87	$ (210,855)	$ (201,422)
Issuance of common stock in public offering, net of underwriting discounts and commissions and offering expenses of $10,903	—	—	—	—	—	—	—	—	5,750,000	—	69,597	—	—	69,597
Exercise of stock options	—	—	—	—	—	—	—	—	48,841	—	166	—	—	166
Conversion of redeemable convertible preferred stock warrant liability to equity	—	—	—	—	—	—	—	—	—	—	631	—	—	631
Conversion of redeemable convertible preferred stock to common stock	(2,817,723)	(9,141)	(3,315,645)	(25,900)	(2,491,483)	(36,726)	(10,326,454)	(218,716)	18,951,305	—	290,462	—	—	290,462
Repurchases of early exercised stock options	—	—	—	—	—	—	—	—	(442)	—	—	—	—	—
Net exercise of stock warrants	—	—	—	—	—	—	—	—	57,122	—	—	—	—	—
Stock-based compensation	—	—	—	—	—	—	—	—	—	—	1,864	—	—	1,864
Other comprehensive income	—	—	—	—	—	—	—	—	—	—	—	(63)	—	(63)
Net loss	—	—	—	—	—	—	—	—	—	—	—	—	(22,639)	(22,639)
Balances as of December 31, 2018	—	$ —	—	$ —	—	$ —	—	$ —	28,012,874	$ —	$ 372,066	$ 24	$ (233,494)	$ 138,596

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

Twist Bioscience Corporation
Condensed Consolidated Statements of Cash Flows (unaudited)

(in thousands)	Three months ended December 31, 2019	2018
Cash flows from operating activities		
Net loss	$(55,638)	$ (22,639)
Adjustments to reconcile net loss to net cash used in operating activities		
Depreciation and amortization	1,505	1,472
Loss on disposal of property and equipment	—	8
Non-cash lease expense	236	—
Stock-based compensation	3,697	1,864
Discount accretion on investment securities	(150)	—
Non-cash interest expense	46	64
Amortization of debt discount	56	78
Changes in assets and liabilities:		
Accounts receivable, net	(950)	(1,559)
Inventories	(86)	467
Prepaid expenses and other current assets	(2,917)	(366)
Other non-current assets	62	(392)
Accounts payable	(556)	(715)
Accrued expenses	(1,279)	39
Accrued compensation	(1,629)	(140)
Accrued litigation settlement	22,500	—
Other liabilities	189	135
Net cash used in operating activities	(34,914)	(21,684)
Cash flows from investing activities		
Purchases of property and equipment	(2,058)	(1,922)
Purchases of investments	(6,537)	(63,835)
Proceeds from maturity of investments	21,000	—
Net cash provided by (used in) investing activities	12,405	(65,757)
Cash flows from financing activities		
Proceeds from exercise of stock options	1,674	220
Proceeds from public offering, net of underwriting discounts and commissions and offering expenses	2,024	72,779
Repayments of long-term debt	(833)	—
Repurchases of common stock for income tax withholding	(808)	—
Net cash provided by financing activities	2,057	72,999
Effect of exchange rates on cash, cash equivalents and restricted cash	9	—
Net decrease in cash, cash equivalents, and restricted cash	(20,443)	(14,442)
Cash, cash equivalents, and restricted cash at beginning of period	47,398	81,537
Cash, cash equivalents, and restricted cash at end of period	26,955	67,095
Supplemental disclosure of cash flow information		
Interest paid	146	207
Income taxes paid, net of refunds	44	53
Non-cash investing and financing activities		
Property and equipment additions included in accounts payable and accrued expenses	66	1,117
Operating lease right-of-use assets obtained in exchange for operating lease liabilities	2,833	—
Deferred offering costs included in accounts payable and accrued expenses	—	826
Conversion of redeemable convertible preferred stock warrant liability to equity	—	631
Conversion of redeemable convertible preferred stock to common stock	—	290,462

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

Twist Bioscience Corporation
Notes to Unaudited Condensed Consolidated Financial Statements

1. The Company

Twist Bioscience Corporation (the Company) was incorporated in the state of Delaware on February 4, 2013. The Company is a synthetic biology and genomics company that has developed a disruptive DNA synthesis platform. DNA is used in many applications across different industries: industrial chemicals, academic, healthcare and agriculture. The Company's fiscal year ends on September 30.

The Company has generated net losses in all periods since its inception. As of December 31, 2019, the Company had an accumulated deficit of $374.2 million and has not generated positive cash flows from operations since inception. Losses are expected to continue as the Company continues to invest in product development, manufacturing, and sales and marketing.

The Company has raised multiple rounds of debt and equity financing since its inception. In October 2018, the Company completed an initial public offering (IPO) of its common stock which raised proceeds of $69.6 million, after deducting underwriting discounts and commissions and offering expenses. In May 2019, the Company completed an underwritten public offering of its common stock with proceeds of $84.3 million, after deducting underwriting discounts and commissions and offering expenses. In December 2019, the Company commenced an at-the-market offering of its common stock with proceeds of $2.0 million, after deducting underwriting discounts and commissions and offering expenses, in the three months ended December 31, 2019. Management believes that these proceeds combined with existing cash balances on hand will be sufficient to fund operations for at least one year from the issuance of these consolidated financial statements. However, the Company may need to obtain additional financing to fund operations beyond this period, and there can be no assurance that it will be successful in raising additional financing on terms which are acceptable to the Company.

If the Company requires but is unable to obtain additional funding, the Company could be forced to delay, reduce or eliminate some or all of its research and development programs, product portfolio expansion or commercialization efforts, which could adversely affect its business prospects, or the Company may be unable to continue operations.

2. Summary of significant accounting policies

Basis of presentation and use of estimates

The accompanying unaudited condensed consolidated financial statements were prepared in accordance with accounting principles generally accepted in the United States of America (GAAP) for interim financial information. Certain information and disclosures normally included in the consolidated financial statements prepared in accordance with GAAP have been condensed or omitted. Accordingly, these unaudited condensed consolidated financial statements should be read in conjunction with the audited consolidated financial statements and the related notes included in the Annual Report on Form 10-K for the fiscal year ended September 30, 2019 (the Annual Report on Form 10-K) filed with the Securities and Exchange Commission on December 12, 2019. The condensed consolidated financial statements are unaudited and have been prepared on a basis consistent with that used to prepare the audited annual consolidated financial statements and include, in the opinion of management, all adjustments, consisting of normal and recurring items, necessary for the fair statement of the condensed consolidated financial statements. The condensed consolidated balance sheet at September 30, 2019 is derived from audited consolidated financial statements but does not include all disclosures required by GAAP. The operating results for the three months ended December 31, 2019 are not necessarily indicative of the results expected for the full year ending September 30, 2020.

The presentation of unaudited condensed consolidated financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities as of the date of the condensed consolidated financial statements and the reported amounts of revenue and expenses during the reporting period. Actual results could differ from those estimates. The Company's unaudited condensed consolidated financial statements include its wholly-owned subsidiaries. All intercompany balances and accounts are eliminated in consolidation.

Significant accounting policies

There have been no material changes in the accounting policies from those disclosed in the audited consolidated financial statements and the related notes included in the Annual Report on Form 10-K except as disclosed in *"Recently adopted accounting pronouncements – Leases"* section below.

Recent accounting pronouncements

Recently adopted accounting pronouncements – Leases

In February 2016, the Financial Accounting Standards Board (FASB) issued new lease accounting guidance in Accounting Standard Update (ASU) 2016-02, *Leases*, and in July 2018 issued ASU 2018-10, *Codification Improvements to Topic 842, Leases*, and ASU 2018-11, *Leases (Topic 842): Targeted Improvements* (the foregoing ASUs collectively referred to as "Topic 842"). Under the new guidance, lessees are required to recognize for all leases (with the exception of short-term leases) at the commencement date: (1) a lease liability, which is a lessee's obligation to make lease payments arising from a lease, measured on a discounted basis; and (2) a right-of-use asset, which is an asset that represents the lessee's right to use, or control the use of, a specified asset for the lease term.

On October 1, 2019, the Company adopted Topic 842 using the modified retrospective approach. The adoption had a material effect on the condensed consolidated balance sheets, but did not have a material effect on the condensed consolidated statements of operations and comprehensive loss. Prior period amounts were not adjusted and continue to be reported in accordance with the previous accounting under ASC 840, *Leases*. The Company elected the package of practical expedients permitted under the transition guidance which, among other things, allows carrying forward the historical classification of existing leases as of October 1, 2019.

As a result of electing the transition guidance as described above, on October 1, 2019, the Company recorded operating lease right-of-use assets of $35.8 million, including the derecognition of deferred rent of $0.1 million and prepaid rent of $1.6 million, with the corresponding lease liabilities totaling $34.3 million. There was no material effect to the Company's statements of operations and comprehensive loss upon adoption.

Under Topic 842, the Company determines if an arrangement is a lease at inception primarily based on the determination of the party responsible for directing the use of an underlying asset within a contract. Operating lease right-of-use assets represent the Company's right to use an underlying asset for the lease term and lease liabilities represent the Company's obligation to make lease payments arising from the lease. Operating lease right-of-use assets and liabilities are recognized at the lease commencement date based on the present value of lease payments over the lease term. In determining the present value of committed lease payments, the Company uses its incremental borrowing rate based on the information available at the lease commencement date which includes significant assumptions made including the Company's estimated credit rating, annual percentage yields from corporate debt financings of companies of similar size and credit rating over a loan term approximating the remaining term of each lease, and government bond yields for terms approximating the remaining term of each lease in countries where the leased assets are located. Certain leases include payments of operating expenses that are dependent and may be revised based on the landlord's estimate, and these variable payments are therefore excluded from the lease payments used to determine the operating lease right-of-use asset and lease liability. Lease terms may include options to extend or terminate the lease when it is reasonably certain that the Company will exercise any such options. Lease expense is recognized on a straight-line basis over the expected lease term.

The Company elected to not apply the recognition requirements of Topic 842 to short-term leases with terms of 12 months or less which do not include an option to purchase the underlying asset that the Company is reasonably certain to exercise. For short-term leases, lease payments are recognized as operating expenses on a straight-line basis over the lease term. The Company elected to account for lease and non-lease components as a single lease component.

Additional information and disclosures required by Topic 842 are contained in Note 6.

Recently issued accounting pronouncements not yet adopted

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments—Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*. The new standard requires entities to use the new "expected credit loss" impairment model for most financial assets measured at amortized cost, including trade and other receivables and held-to-maturity debt securities, and modifies the impairment model for available-for-sale debt securities. The standard is effective for fiscal years beginning after December 15, 2020, including interim periods within those fiscal years. Early application is permitted. The Company is currently evaluating the impact that the adoption of this standard will have on its consolidated financial statements.

In January 2017, the FASB issued ASU 2017-04, *Intangibles—Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment.* This ASU simplifies the subsequent measurement of goodwill. The ASU eliminates step 2 from the goodwill impairment test, including for reporting units with a zero or negative carrying amount that fail a qualitative test. An entity still has the option to perform the qualitative assessment for a reporting unit to determine if the quantitative impairment test is necessary. This ASU should be applied on a prospective basis. This ASU is effective for annual or any interim goodwill impairment tests in fiscal years beginning after December 15, 2020. Early adoption is permitted for interim or annual goodwill impairment tests performed on testing dates after January 1, 2017. The Company has not yet determined whether it will early adopt this ASU.

In August 2018, the FASB issued ASU 2018-13, *Fair Value Measurement (Subtopic 820): Disclosure Framework—Changes to the Disclosure Requirements for Fair Value Measurement*, which modifies the disclosure requirements on fair value measurements. The amendments on changes in unrealized gains and losses, the range and weighted average of significant unobservable inputs used to develop Level 3 fair value measurements, and the narrative description of measurement uncertainty should be applied prospectively

for only the most recent interim or annual period presented in the initial year of adoption. All other amendments should be applied retrospectively to all periods presented upon their effective date. ASU 2018-13 will be effective for the Company for the quarter ending December 31, 2020, with early adoption permitted. The Company is currently assessing the impact of adoption on its disclosures.

In December 2019, the FASB issued ASU 2019-12, *Simplifying the Accounting for Income Taxes*. The ASU simplifies the accounting for income taxes by eliminating certain exceptions to the guidance in ASC 740, *Income Taxes*, related to the approach for allocating income tax expense or benefit for the year to continuing operations, discontinued operations, other comprehensive income, and other charges or credits recorded directly to shareholders' equity; the methodology for calculating income taxes in an interim period; and the recognition of deferred tax liabilities for outside basis differences. The ASU is effective for fiscal years beginning after December 15, 2020 and interim periods within those fiscal years, with early adoption permitted. The Company is currently assessing the impact of adoption on its disclosures.

3. Fair value measurement

The Company assesses the fair value of financial instruments based on the provisions of ASC 820, *Fair Value Measurements*. ASC 820 defines fair value as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. ASC 820 also establishes a fair value hierarchy which requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value. The standard describes three levels of inputs that may be used to measure fair value:

Level 1—Quoted prices in active markets for identical assets or liabilities.

Level 2—Observable inputs other than Level 1 prices such as quoted prices for similar assets or liabilities, quoted prices in markets that are not active, or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities. The Company short-term investments primarily utilize broker quotes in a non-active market for valuation of its short-term investments.

Level 3—Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

In determining fair value, the Company utilizes valuation techniques that maximize the use of observable inputs and minimize the use of unobservable inputs to the extent possible as well as considers counterparty credit risk in its assessment of fair value.

The following tables summarize the Company's financial assets and liabilities measured at fair value on a recurring basis as of December 31, 2019 and September 30, 2019 and indicate the fair value hierarchy of the valuation inputs utilized to determine such fair value.

	December 31, 2019			
(in thousands)	Level 1	Level 2	Level 3	Fair value
Assets				
Cash	$16,444	$ —	$ —	$ 16,444
Money market funds	9,588	—	—	9,588
Corporate bonds	—	8,523	—	8,523
Commercial paper	—	21,515	—	21,515
U.S. government treasury bills	47,037	—	—	47,037
Totals	$73,069	$30,038	$ —	$103,107

	September 30, 2019			
(in thousands)	Level 1	Level 2	Level 3	Fair value
Assets				
Cash	$ 19,344	$ —	$ —	$ 19,344
Money market funds	27,390	—	—	27,390
Corporate bonds	—	8,530	—	8,530
Commercial paper	—	28,361	—	28,361
U.S. government treasury bills	54,482	—	—	54,482
Totals	$101,216	$36,891	$ —	$138,107

As of December 31, 2019 and September 30, 2019, gross unrealized gains and unrealized losses for cash equivalents and short-term investments were not material, and the contractual maturities of all marketable securities were less than one year.

4. Balance sheet components

The Company's accounts receivable, net balance consists of the following:

(in thousands)	December 31, 2019	September 30, 2019
Trade Receivables	$ 12,475	$ 11,085
Other Receivables	920	1,313
Allowance for Doubtful Accounts	(341)	(294)
Accounts Receivable, net	$ 13,054	$ 12,104

Inventory amounts consist of the following:

(in thousands)	December 31, 2019	September 30, 2019
Raw Materials	$ 5,248	$ 4,900
Work-in-process	1,300	1,157
Finished Goods	868	1,273
	$ 7,416	$ 7,330

5. Goodwill and intangible assets

There were no changes to the carrying value of goodwill as of December 31, 2019 and September 30, 2019. Total amortization expense related to intangible assets was less than $0.1 million for the three months ended December 31, 2019 and 2018.

The intangible assets balances are presented below:

	December 31, 2019			
(in thousands, except for years)	Useful life in years	Gross carrying amount	Accumulated amortization	Net book value
Developed Technology	6	$ 1,220	$ (762)	$ 458
Tradenames & Trademarks	2	20	(20)	—
Total indefinite-lived intangible assets		$ 1,240	$ (782)	$ 458

	September 30, 2019			
(in thousands, except for years)	Useful life in years	Gross carrying amount	Accumulated amortization	Net book value
Developed Technology	6	$ 1,220	$ (712)	$ 508
Tradenames & Trademarks	2	20	(20)	—
Total indefinite-lived intangible assets		$ 1,240	$ (732)	$ 508

6. Commitments and contingencies

Litigation

On February 3, 2016, Agilent filed a lawsuit against the Company and its Chief Executive Officer, Dr. Emily Leproust (the Complaint), in the Superior Court of California, Santa Clara County, or the Court. The Complaint also named Does 1 through 20, which are fictitious placeholder defendants. Agilent's complaint alleged three claims against Twist and Dr. Leproust: (1) alleged breach of contract, related to the use of confidential information and alleged breach of non-solicitation obligations against Dr. Leproust; (2) alleged breach of a duty of loyalty against Dr. Leproust; and (3) alleged misappropriation of trade secrets under the California Uniform Trade Secrets Act, or CUTSA, against all defendants.

On December 7, 2018, the Court granted Agilent's motion to amend its complaint, permitting Agilent to file its Second Amended Complaint. This new complaint added amended allegations against the Company and Dr. Leproust, and also new claims for breach of contract and trade secret misappropriation against two individuals: Dr. Siyuan Chen, a current Company employee and Solange Glaize, a former Company employee. The Court also set trial to begin on February 24, 2020.

On February 6, 2020, the Company, Dr. Leproust, Dr. Chen, Ms. Glaize (together, the Twist Group) and Agilent agreed to the terms of a settlement agreement (the Settlement Agreement) pursuant to which the Twist Group and Agilent each agreed to request dismissal of all claims against each other. The Settlement Agreement resolves the litigation initially commenced by the Complaint and contains no admission of liability or wrongdoing. Pursuant to the Settlement Agreement, the Company agreed to pay Agilent $22.5 million in cash within 14 days of the Settlement Agreement. This amount has been accrued in the consolidated financial statements in the three months ended December 31, 2019. In addition, the Twist Group and Agilent each agreed to release the other party from all known and unknown claims related to the claims and counterclaims alleged or that could have been alleged in such litigation or that arise from the facts and events that gave rise to such litigation. Further, Agilent agreed to grant the Company a limited non-exclusive license to use the trade secrets asserted by Agilent in the litigation, which extends to the Company's supply chain, including its customers, suppliers, distributors and resellers. Agilent also agreed not to sue the Company for the infringement of any Agilent patent issued or pending as of the date of the Settlement Agreement or claim priority thereto, solely to the extent such patents claim a trade secret alleged in the litigation. There is no other covenant or release of claims for patent infringement.

Dismissal of the case with the court is expected in February 2020.

Indemnifications

In the ordinary course of business, the Company enters into agreements that may include indemnification provisions. Pursuant to such agreements, the Company may indemnify, hold harmless and defend the indemnified parties for losses suffered or incurred by the indemnified party. Some of the provisions will limit losses to those arising from third-party actions. In some cases, the indemnification will continue after the termination of the agreement. The maximum potential amount of future payments the Company could be required to make under these provisions is not determinable. To date, the Company has not incurred material costs to defend lawsuits or settle claims related to these indemnification provisions. The Company has also entered into indemnification agreements with its directors and officers that may require it to indemnify its directors and officers against liabilities that may arise by reason of their status or service as directors or officers to the fullest extent permitted by corporate law. The Company also has directors' and officers' insurance.

Leases

The Company leases certain of its facilities under non-cancellable operating leases expiring at various dates through 2026. The Company is also responsible for utilities, maintenance, insurance, and property taxes under these leases.

Future minimum lease payments under all non-cancelable operating leases as of December 31, 2019 are as follows:

(in thousands)	Operating leases
Years ending September 30:	
Remainder of 2020	$ 6,757
2021	6,687
2022	6,762
2023	6,429
2024	6,388
Thereafter	11,291
Total minimum lease payments	$ 44,314
Less: imputed interest	(8,404)
Total operating lease liabilities	$ 35,910
Less: current portion	(8,371)
Operating lease obligations, net of current portion	$ 27,539

Operating lease expense was $2.0 million for the three months ended December 31, 2019. Cash payments for amounts included in the measurement of operating lease liabilities were $1.9 million for the three months ended December 31, 2019. As of December 31, 2019, the weighted-average remaining lease term was 6.21 years and the weighted-average discount rate was 6.97%.

7. Related party transactions

During the three months ended December 31, 2019 and 2018, the Company purchased raw materials from a related party investor in the amount of $0.7 million and $1.2 million, respectively. Payable balances and cash receipts and receivable balances with the related parties were immaterial as of December 31, 2019 and September 30, 2019.

8. Income taxes

In determining quarterly provisions for income taxes, the Company uses the annual estimated effective tax rate applied to the actual year-to-date profit or loss, adjusted for discrete items arising in that quarter. The Company's annual estimated effective tax rate differs from the U.S. federal statutory rate primarily as a result of state taxes, foreign taxes, and changes in the Company's valuation allowance against its deferred tax assets. For each of the three months ended December 31, 2019 and 2018, the Company recorded an immaterial provision for income taxes.

9. Warrants

Outstanding warrants for the Company's common stock, issued in connection with its long-term debt agreements, were as follows:

(in thousands, except share and per share data)	Number of shares underlying warrants December 31, 2019	Issuance date	Expiration date	Exercise price per share
Warrant class/series:				
Common stock warrants	18,854	December 22, 2015	December 22, 2025	$ 14.85
Common stock warrants	7,531	March 28, 2016	March 28, 2026	$ 21.24
Total common stock warrants	26,385			

(in thousands, except share and per share data)	Number of shares underlying warrants September 30, 2019	Issuance date	Expiration date	Exercise price per share
Warrant class/series:				
Common stock warrants	18,854	December 22, 2015	December 22, 2025	$ 14.85
Common stock warrants	7,531	March 28, 2016	March 28, 2026	$ 21.24
Total common stock warrants	26,385			

10. Common stock

At-the-Market Offering (the "ATM")

In December 2019, the Company entered into a sales agreement with Cowen and Company, LLC for the ATM to offer and sell shares of its common stock having an aggregate offering price of up to $50.0 million from time to time. During the three months ended December 31, 2019, the Company sold a total of 96,827 shares of its common stock at a weighted-average price of $23.76 per share and total net proceeds of $2.0 million under the ATM.

11. Stock-based compensation

2018 Equity Incentive Plan

On September 26, 2018, the board of directors adopted the 2018 Equity Incentive Plan (the 2018 Plan) as a successor to the 2013 Stock Plan (the 2013 Plan). The number of shares reserved for issuance under the 2018 Plan upon approval of the plan was 5,856,505 shares of the Company's common stock, and it increases automatically on the first day of each fiscal year, following the fiscal year in which the 2018 Plan became effective, by a number equal to the least of 999,900 shares, 4% of the shares of common stock outstanding at that time, or such number of shares determined by the Company's board of directors. As of February 10, 2020, all common shares issuable under the 2018 Plan have been registered pursuant to registration statements on Form S-8.

Any shares subject to outstanding awards under the 2013 Equity Incentive Plan that are canceled or repurchased subsequent to the 2018 Plan's effective date are returned to the pool of shares reserved for issuance under the 2018 Plan. Awards granted under the 2018 Plan may be nonstatutory stock options, stock appreciation rights, restricted stock, restricted stock units, performance shares, and performance units.

Activity under the equity incentive plans during the three months ended December 31, 2019 is summarized below:

	Shares available	Options outstanding	Weighted average exercise price per share	Weighted average remaining contractual term (years)	Aggregate intrinsic value
Outstanding at September 30, 2019	1,520,875	3,550,445	$ 15.99	8.25	$31,997,934
Additional shares authorized	999,900	—			
Stock options granted	(935,273)	935,273	$ 24.08		
Stock options exercised	—	(242,382)	$ 6.95		
Stock options forfeited	33,139	(33,139)	$ 25.94		
Restricted stock units granted	(190,786)	—	—		
Forfeiture of restricted stock units	3,483	—	—		
Shares withheld for payment of taxes	34,792	—	—		
Early exercised options repurchased	896	—			
Outstanding at December 31, 2019	1,467,026	4,210,197	$ 18.23	8.51	$22,020,849
Vested or expected to vest at December 31, 2019		4,210,197	$ 18.23	8.51	$22,020,849
Vested and exercisable at December 31, 2019		1,349,270	$ 11.32	7.32	$14,339,780

Total stock-based compensation expense recognized was as follows:

	Three months ended December 31,	
(in thousands)	2019	2018
Cost of revenues	$ 360	$ 251
Research and development	728	300
Selling, general and administrative	2,609	1,313
Total stock-based compensation	$ 3,697	$ 1,864

As of December 31, 2019, there was $36.6 million of total unrecognized compensation cost related to non-vested stock options under the equity incentive plans that are expected to be recognized over a weighted average period of 3.43 years.

Restricted Stock Units

Restricted stock primarily consists of restricted stock unit awards (RSUs) which have been granted to employees. The value of an RSU award is based on the Company's stock price on the date of grant. The shares underlying the RSU awards are not issued until the RSUs vest. Upon vesting, each RSU converts into one share of the Company's common stock.

Activity with respect to the Company's restricted stock units during the three months ended December 31, 2019 was as follows:

(in thousands, except share and per share data)	Number of Shares	Weighted average grant date fair value per share	Weighted average remaining contractual term (years)	Aggregate Intrinsic Value
Outstanding at September 30, 2019	462,370	$ 26.16	3.91	$ 8,959,223
Restricted stock units granted	190,786	$ 24.11		
Restricted stock units vested	(83,956)	$ 26.36		
Restricted stock units forfeited	(3,483)	$ 29.17		
Outstanding at December 31, 2019	565,717	$ 25.42	3.77	$14,383,146
Expected to vest at December 31, 2019	565,717	$ 25.42	3.77	$14,383,146

As of December 31, 2019, there was $15.1 million of total unrecognized compensation cost related to these issuances that is expected to be recognized over a weighted average period of 3.78 years.

2018 Employee Stock Purchase Plan

On September 26, 2018, the board of directors adopted the 2018 Employee Stock Purchase Plan (the 2018 ESPP). The number of shares reserved for issuance under the 2018 ESPP upon approval was 275,225 shares of the Company's common stock, and it increases automatically on the first day of each fiscal year, following the fiscal year in which the 2018 ESPP becomes effective, by a number equal to the least of 249,470 shares, 1% of the shares of common stock outstanding at that time, or such number of shares determined by the Company's board of directors. The number of shares reserved for issuance as at December 31, 2019 is as follows:

	Shares available
Outstanding at September 30, 2019	56,081
Additional shares authorized	249,470
Outstanding at December 31, 2019	305,551

Subject to any plan limitations, the 2018 ESPP allows eligible service providers (through qualified and non-qualified offerings) to contribute, normally through payroll deductions, up to 15% of their earnings for the purchase of the Company's common stock at a discounted price per share. The offering periods begin in February and August of each year. As of February 10, 2020, all common shares issuable under the 2018 ESPP have been registered pursuant to registration statements on Form S-8.

Unless otherwise determined by the board of directors, the Company's common stock will be purchased for the accounts of employees participating in the 2018 ESPP at a price per share that is the lesser of 85% of the fair market value of the Company's common stock on the first trading day of the offering period, or 85% of the fair market value of the Company's common stock on the last trading day of the offering period. During the three months ended December 31, 2019 and 2018, activity under the 2018 ESPP was immaterial.

12. Net loss per share attributable to common stockholders

The following table sets forth the computation of the Company's basic and diluted net loss per share attributable to common stockholders:

	Three months ended December 31,	
(in thousands, except share and per share data)	2019	2018
Numerator:		
Net loss attributable to common stockholders	$ (55,638)	$ (22,639)
Denominator:		
Weighted average shares used in computing net loss per share, basic and diluted	32,976,145	19,187,533
Net loss per share attributable to common stockholders, basic and diluted	$ (1.69)	$ (1.18)

The potentially dilutive common shares that were excluded from the calculation of diluted net loss per share because their effect would have been anti-dilutive for the periods presented are as follows:

	Three months ended December 31,	
(in thousands, except share and per share data)	2019	2018
Shares subject to options to purchase common stock	4,210,197	3,500,040
Unvested restricted shares of common stock	13,635	81,473
Unvested restricted stock units	565,717	395,698
Unvested shares of common stock issued upon early exercise of stock options	32,614	59,548
Shares subject to employee stock purchase plan	79,708	—
Shares subject to warrants to purchase common stock	26,385	74,670
Total	4,928,256	4,111,429

13. Geographic, product and industry information

The table below sets forth revenues by geographic region, based on ship-to destinations. North America consists of Canada, Mexico, and South America; EMEA consists of Europe, the Middle East, and Africa; and APAC consists of Japan, China, South Korea, Singapore, Malaysia, and Australia.

	Three months ended December 31,	
(in thousands)	2019	2018
United States	$ 9,827	$ 8,569
EMEA	5,941	2,435
APAC	1,241	420
North America	155	68
Total	$17,164	$11,492

The table below sets forth revenues by products.

	Three months ended December 31,	
(in thousands)	2019	2018
Synthetic genes	$ 7,836	$ 6,511
Oligo pools	1,242	810
DNA libraries	1,057	413
NGS tools	7,029	3,758
Total	$17,164	$11,492

The table below sets forth revenues by industry.

	Three months ended December 31,	
(in thousands)	2019	2018
Industrial chemicals	$ 6,137	$ 5,346
Academic research	4,951	1,972
Healthcare	5,835	3,981
Agricultural	241	193
Total	$17,164	$11,492

14. Subsequent events

In January 2020, the Company sold 2,142,853 shares of common stock under the ATM for gross proceeds of $47.7 million and net proceeds of $46.0 million after deducting the underwriting discounts and commissions and offering expenses.

* * * * *

Item 2. Management's discussion and analysis of financial condition and results of operations

You should read the following discussion and analysis of our financial condition and results of operations together with the unaudited condensed consolidated financial statements and related notes that are included elsewhere in this Quarterly Report on Form 10-Q and our Annual Report on Form 10-K for the fiscal year ended September 30, 2019 filed with the U.S. Securities and Exchange Commission, or the SEC, on December 12, 2019, or our Annual Report on Form 10-K. This discussion contains forward-looking statements based upon current plans, expectations and beliefs that involve risks and uncertainties. Our actual results may differ materially from those anticipated in these forward-looking statements as a result of various factors, including, but not limited to, those discussed in the section entitled "Risk Factors" and elsewhere in this Quarterly Report on Form 10-Q. In preparing this MD&A, we presume that readers have access to and have read the MD&A in our Annual Report on Form 10-K, pursuant to Instruction 2 to paragraph (b) of Item 303 of Regulation S-K.

Overview

We are a leading and rapidly growing synthetic biology and genomics company that has developed a disruptive DNA synthesis platform to industrialize the engineering of biology. The core of our platform is a proprietary technology that pioneers a new method of manufacturing synthetic DNA by "writing" DNA on a silicon chip. We have combined this technology with proprietary software, scalable commercial infrastructure, and an e-commerce platform to create an integrated technology platform that enables us to achieve high levels of quality, precision, automation, and manufacturing throughput at a significantly lower cost than our competitors. We are leveraging our unique technology to manufacture a broad range of synthetic DNA-based products, including synthetic genes, tools for next-generation sample preparation, and antibody libraries for drug discovery and development.

Additionally, we believe our platform will enable new value-add opportunities, such as discovery partnerships for biologic drugs, and will enable new applications for synthetic DNA, such as digital data storage. We sell our synthetic DNA and synthetic DNA-based products to a customer base of over 1,000 customers across a broad range of industries. We launched the first application of our platform, synthetic genes and oligo pools, in April 2016 to disrupt the gene synthesis market and make legacy DNA synthesis methods obsolete.

We have leveraged the versatility of our platform to expand our product portfolio into other markets in which we believe we have a competitive advantage. In February 2018, we launched an innovative and comprehensive preparation kit for next generation sequencing, or NGS, at the Advances in Genome Biology and Technology conference. In February 2019, we announced an expansion of NGS product offerings including Twist Fast Hybridization and wash kits. Our kit leverages our platform to precisely synthesize oligo pools and uniformly amplify the desired target DNA segments, accelerating the hybridization process and considerably improving the accuracy of the downstream sequencing analysis. We have also commercialized a custom DNA library solution which enables more effective biologic drug discovery and development for our customers. We believe we can further leverage our platform to develop other proprietary tools, such as our GPCR library and antibody optimization solution, to provide services in biologics drug discovery and early development, from target to Investigational New Drug (IND) application, adding value as a partner to biotech and pharmaceutical companies. We also aim to explore the development of DNA as a digital data storage medium via internal research and industry partnerships. In July 2019, we announced the launch of our 300 nucleotide length oligo pools. These longer oligos are suited for many applications including drug discovery and development, data storage, CRISPR gene editing and protein engineering.

We have built a scalable commercial platform that enables us to reach a diverse customer base that we believe includes over 100,000 synthetic DNA users today. To address this diverse customer base, we have employed a multi-channel strategy comprised of a direct sales force targeting synthetic DNA customers, international distributors, and an e-commerce platform. We launched our proprietary, innovative, and easy-to-use e-commerce platform in October 2017 to existing customers and expanded access to the general public in January 2018. Our platform allows customers to design, validate and place on-demand orders of customized DNA online. This is a key component of our strategy to address and support our diverse and growing customer base, as well as support commercial productivity, enhance the customer experience, and promote loyalty.

In the three months ended December 31, 2019, our net revenues increased sequentially to $17.2 million from net revenues of $15.7 million in the three months ended September 30, 2019. Our net revenues from NGS tools grew to $7.0 million in the three months ended December 31, 2019, from $6.2 million in the three months ended September 30, 2019, due to customers adopting our NGS tools and ramping up of production volume. Our synthetic gene revenue attributable to Ginkgo Bioworks, our largest customer, was $2.1 million in the three months ended December 31, 2019, versus $2.1 million in the three months ended September 30, 2019. Our non-Ginkgo synthetic gene revenue of $5.6 million in the three months ended December 31, 2019 was substantially the same as our non-Gingko synthetic gene revenue of $5.6 million in the three months ended September 30, 2019. Our selling, general and administrative expenses, or SG&A, increased to $26.4 million in the three months ended December 31, 2019 from $24.4 million in the prior three months ended September 30, 2019, due to increases in salary and compensation, stock compensation, and legal costs. Our R&D expenses decreased nominally from $10.5 million in the three months ended September 30, 2019 to $10.3 million in the three months ended December 31, 2019.

As of December 31, 2019, and September 30, 2019, we had $103.1 million and $138.1 million in cash, cash equivalents and short-term investments, respectively.

On February 6, 2020, we, Dr. Leproust, Siyuan Chen, Ph.D., Solange Glaize (together, the “Twist Group”) and Agilent agreed to the terms of a settlement agreement (the “Settlement Agreement”) to resolve all claims and counterclaims initiated with the complaint filed by Agilent in February 2016 (the “Complaint”). Under the terms of the Settlement Agreement, we will pay Agilent $22.5 million within 14 days of the Settlement Agreement. The Settlement Agreement contains no admission of liability or wrongdoing and includes a full release of the claims made against the Twist Group. Each party will bear their own costs and fees. The case is expected to be formally dismissed this month.

Financial overview

The following table summarizes certain selected historical financial results:

	Three months ended December 31,	
(in thousands)	2019	2018
Revenues	$ 17,164	$ 11,492
Loss from operations	(55,830)	(22,897)
Net loss attributable to common stockholders	(55,638)	(22,639)

Revenues

We generate revenue from sales of synthetic genes, oligo pools, NGS tools, and DNA libraries. Our ability to increase our revenues will depend on our ability to further penetrate the domestic and international markets, launch new products, generate sales through our direct sales force, and over time from our e-commerce platform.

Revenues by geography

We have one reportable segment from the sale of synthetic DNA products. The following table shows our revenues by geography, based on our customers’ shipping addresses. North America consists of Canada, Mexico, and South America; EMEA consists of Europe, the Middle East, and Africa; and APAC consists of Japan, China, South Korea, Singapore, Malaysia, and Australia.

	Three months ended December 31,			
(in thousands, except percentages)	2019	%	2018	%
United States	$ 9,827	57%	$ 8,569	74%
EMEA	5,941	35%	2,435	21%
APAC	1,241	7%	420	4%
North America	155	1%	68	1%
Total revenues	$17,164	100%	$11,492	100%

Revenues by product

The table below sets forth revenues by product:

(in thousands, except percentages)	Three months ended December 31, 2019	%	2018	%
Synthetic genes	$ 7,836	46%	$ 6,511	56%
Oligo pools	1,242	7%	810	7%
DNA libraries	1,057	6%	413	4%
NGS tools	7,029	41%	3,758	33%
Total revenues	$17,164	100%	$11,492	100%

Revenues by industry

The table below sets forth revenues by industry:

(in thousands, except percentages)	Three months ended December 31, 2019	%	2018	%
Industrial chemicals	$ 6,137	36%	5,346	46%
Academic research	4,951	29%	1,972	17%
Healthcare	5,835	34%	3,981	35%
Agriculture	241	1%	193	2%
Total revenues	$17,164	100%	$11,492	100%

Product shipments including synthetic genes

Shipments of all products and number of genes shipped in the three months ended December 31, 2019, September 30, 2019, June 30, 2019, March 31, 2019, December 31, 2018, September 30, 2018, June 30, 2018, and March 31, 2018 were as follows:

(in thousands, except shipments)	Three months ended December 31, 2019	September 30, 2019	June 30, 2019	March 31, 2019	December 31, 2018	September 30, 2018	June 30, 2018	March 31, 2018
Number of genes shipped	79,851	80,022	68,069	69,087	71,246	70,820	60,252	71,246
Number of shipments	6,154	5,631	5,151	3,909	2,943	2,229	1,694	1,251

Comparison of the three months ended December 31, 2019 and 2018

Revenues

(in thousands, except percentages)	Three months ended December 31, 2019	2018	Change	%
Revenues	$17,164	$11,492	$5,672	49%

Revenues increased from $11.5 million to $17.2 million in the three months ended December 31, 2019, which was an increase of $5.7 million, or 49%, over the three months ended December 31, 2018. The revenue increase reflects growth in synthetic genes revenue of $1.3 million and NGS tools revenue of $3.3 million. The primary increase in synthetic genes revenue is due to the introduction of our new 5.0KB gene product and customers purchasing our 3.0KB genes. In the three months ended December 31, 2019, we shipped 79,851 genes compared to 71,246 genes in the three months ended December 31, 2018, an increase of 12%. Synthetic gene pricing to our customers was relatively constant period-over-period, but the product mix changed with the introduction of our 5.0KB gene product and customers purchasing our 3.0KB genes. The primary reason for NGS tools revenue growth was the adoption of our product by a larger customer base. We do not believe that pricing changes had a meaningful impact on the revenue changes for NGS tools period-over-period.

Cost of revenues

(in thousands, except percentages)	Three months ended December 31, 2019	2018	Change	%
Cost of revenues	$13,792	$11,857	$1,935	16%

In the three months ended December 31, 2019, cost of revenue increased to $13.8 million from $11.9 million in the three months ended December 31, 2018. The increase was primarily due to payroll and stock compensation related expense increase of $0.7 million, increase of consumption of reagents and production materials of $0.5 million, and facilities and information technology cost increase of $0.6 million.

Research and development expenses

(in thousands, except percentages)	Three months ended December 31, 2019	2018	Change	%
Research and development	$10,297	$7,273	$3,024	42%

In the three months ended December 31, 2019, research and development expenses increased to $10.3 million from $7.3 million in the three months ended December 31, 2018. The increase was primarily due to expanding our DNA synthesis R&D capabilities which includes increase in payroll and stock compensation expense of $1.9 million, outside services of $0.8 million and facilities and information technology cost increase of $0.6 million.

Selling, general and administrative

(in thousands, except percentages)	Three months ended December 31, 2019	2018	Change	%
Selling, general and administrative	$26,405	$15,259	$11,146	73%

In the three months ended December 31, 2019, selling, general and administrative expenses increased to $26.4 million from $15.3 million in the three months ended December 31, 2018, primarily due to increases in payroll expenses related to increased headcount, professional and legal expenses, stock compensation expenses and rent expense. Salaries and related costs increased by $4.4 million due to a $3 million increase in salaries and benefits mainly associated with expanding our commercial organization, and increased stock-based compensation by $1.3 million. Rent expense increased by $1.7 million. Professional services expenses increased by $4.7 million, which includes legal fees increase of $5 million offset by decrease of consulting fees by $0.3 million.

Litigation settlement

(in thousands, except percentages)	Three months ended December 31, 2019	2018	Change	%
Litigation settlement	$22,500	$—	$22,500	100%

On February 6, 2020, we, Dr. Leproust, Dr. Chen, Ms. Glaize, and Agilent agreed to the terms of the Settlement Agreement in which we will pay Agilent $22.5 million within 14 days of the Settlement Agreement to resolve all claims and counterclaims initiated with the Complaint. This expense has been accrued in the consolidated financial statements in the three months ended December 31, 2019.

Interest, and other income (expense), net

(in thousands, except percentages)	Three months ended December 31, 2019	2018	Change	%
Interest income	$ 564	$ 664	$ (100)	(15)%
Interest expense	(248)	(348)	100	(29)%
Other income (expense)	(87)	(15)	(72)	480%
Total interest and other income (expense), net	$ 229	$ 301	$ (72)	(24)%

Interest income was $0.6 million in the three months ended December 31, 2019 and $0.7 million in the three months ended December 31, 2018, resulting from our short-term investments. Interest expense was $0.2 million in the three months ended December 31, 2019 and $0.3 million in the three months ended December 31, 2018 related to our outstanding debt.

Provision for income taxes

(in thousands, except percentages)	Three months ended December 31, 2019	2018	Change	%
Provision for income taxes	$37	$43	$ (6)	14%

We recorded income tax expense of less than $0.1 million in the three months ended December 31, 2019.

Liquidity and capital resources

As of December 31, 2019, our principal sources of liquidity were $103.1 million of cash, cash equivalents and short-term investments, which primarily consist of short-term, investment-grade commercial paper and U.S. government treasury bills.

We believe that our existing cash and cash equivalents are sufficient to fund our operating expenses, capital expenditure requirements and debt service payments for at least one year from the issuance of these consolidated financial statements. In the future, we may still need to obtain additional financing to fund operations beyond this period, and there can be no assurance that we will be successful in raising additional financing on terms which are acceptable to us. In addition, our operating plan may change as a result of factors currently unknown to us, and we may need to seek additional funds sooner than planned. Such financing may result in dilution to stockholders, imposition of debt covenants and repayment obligations, or other restrictions that may adversely affect our business. In addition, we may seek additional capital due to favorable market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. Our future capital requirements will depend on many factors. See “Risk factors—We will require additional financing to achieve our goals, and a failure to obtain this necessary capital when needed on acceptable terms, or at all, could force us to delay, limit, reduce or terminate our product manufacturing and development and other operations.”

Operating capital requirements

Our primary uses of capital are, and we expect will continue to be for the near future, working capital, compensation and related expenses, manufacturing costs, laboratory and related supplies, legal and other regulatory expenses and general overhead costs. As of December 31, 2019, we had $2.3 million in commitments for capital expenditures.

Cash flows

The following table summarizes our sources and uses of cash and cash equivalents:

(in thousands)	Three months ended December 31, 2019	2018
Net cash used in operating activities	$(34,914)	$(21,684)
Net cash provided by (used in) investing activities	12,405	(65,757)
Net cash provided by financing activities	2,057	72,999

Operating activities

Net cash used in operating activities was $34.9 million in the three months ended December 31, 2019, and consisted primarily of a net loss of $55.6 million adjusted for non-cash items including depreciation and amortization expenses of $1.5 million, stock-based compensation expense of $3.7 million, litigation settlement of $22.5 million, and a change in operating assets and liabilities of $7.2 million.

Net cash used in operating activities was $21.7 million in the three months ended December 31, 2018, and consisted primarily of a net loss of $22.6 million adjusted for non-cash items including depreciation and amortization expenses of $1.6 million, stock-based compensation expense of $1.9 million, a change in operating assets and liabilities of $2.6 million.

Investing activities

In the three months ended December 31, 2019, our investing activities provided net cash of $12.4 million. The net cash provided resulted primarily from the net impact of purchases and maturity of investments, and purchases of laboratory property, equipment, and computers.

In the three months ended December 31, 2018, our investing activities used net cash of approximately $65.8 million. The use of net cash resulted primarily from the net impact of purchases and maturity of investments, and purchases of laboratory property, equipment and computers.

Financing activities

Net cash provided by financing activities was $2.1 million in the three months ended December 31, 2019, which consisted of $2.0 million in proceeds from ATM offering, net of underwriting discounts and commissions and offering expenses, and $1.7 million from the exercise of stock options, offset by $0.8 million in principal payments on long term debt and $0.8 million in repurchases of common stock for income tax withholdings.

Net cash provided by financing activities was $73.0 million in the three months ended December 31, 2018, which consisted of $72.8 million in proceeds from initial public offering, net of underwriting discounts and commissions and offering expenses, and $0.2 million from the issuance of common stock and exercise of stock options.

Off-balance sheet arrangements

We do not have any off-balance sheet arrangements.

Contractual obligations and other commitments

Our contractual obligations have not materially changed from those reported in our Annual Report on Form 10-K.

Critical accounting policies and significant management estimates

Our condensed consolidated financial statements are prepared in accordance with accounting principles generally accepted in the United States. The preparation of these condensed consolidated financial statements requires us to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenue, costs, and expenses, and related disclosures. On an ongoing basis, we evaluate our estimates and assumptions. Changes in these estimates and assumptions or conditions could significantly affect our financial condition and results of operations.

We believe the following critical accounting policies require that we make significant judgments and estimates in preparing our consolidated financial statements.

Revenue recognition

Effective October 1, 2017, we elected to early adopt the requirements of ASC 606 – Revenue from Contracts with Customers using the full retrospective method. We evaluated the impact on revenues, loss from operations, net loss attributable to common stockholders and basic and diluted earnings per share for all periods presented and concluded that there was no material impact on our consolidated financial statements for all periods presented.

Our revenue is generated through the sale of synthetic biology tools, such as synthetic genes, or clonal genes and fragments, oligonucleotide pools, or oligo pools, NGS tools and DNA libraries. We account for a contract when it has approval and commitment from both parties, the rights of the parties are identified, payment terms are identified, the contract has commercial substance and collectability of consideration is probable.

Contracts with customers are generally in the written form of a purchase order or a quotation, which outline the promised goods and the agreed upon price. Such orders are often accompanied by a Master Supply or Distribution Agreement that establishes the terms and conditions, rights of the parties, delivery terms, and pricing. We assess collectability based on a number of factors, including past transaction history and creditworthiness of the customer.

For all of our contracts to date, the customer orders a specified quantity of a synthetic DNA sequence; therefore, the delivery of the ordered quantity per the purchase order is accounted for as one performance obligation. Some contracts may contain prospective discounts when certain order quantities are exceeded; however, these future discounts are either not significant, not deemed to be incremental to the pricing offered to other customers, or not enforceable options to acquire additional goods. As a result, these discounts do not constitute a material right and do not meet the definition of a separate performance obligation. We do not offer retrospective discounts or rebates.

The transaction price is determined based on the agreed upon rates in the purchase order or master supply agreements applied to the quantity of synthetic DNA that was manufactured and shipped to the customer. Our contracts include only one performance obligation—the delivery of the product to the customer. Accordingly, all of the transaction price, net of any discounts, is allocated to the one performance obligation. Therefore, upon delivery of the product, there are no remaining performance obligations. Our shipping and handling activities are performed before the customer obtains control of the goods and therefore are considered a fulfillment cost. We have elected to exclude all sales and value added taxes from the measurement of the transaction price. We have not adjusted the transaction price for significant financing since the time period between the transfer of goods and payment is less than one year.

We recognize revenue at a point in time when control of the products is transferred to the customer. Management applies judgment in evaluating when a customer obtains control of the promised good which is generally when the product is delivered to the customer. Our customer contracts generally include a standard assurance warranty to guarantee that our products comply with agreed specifications. We reduce revenue by the amount of expected returns which have been insignificant.

We have elected the practical expedient of not disclosing the consideration allocated to remaining performance obligations and an explanation of when those amounts are expected to be recognized as revenue since the duration of our contracts is less than one year.

We do not have any contract assets or contract liabilities as of September 30, 2019 and September 30, 2018. For all periods presented, we did not recognize revenue from amounts that were included in the contract liability balance at the beginning of each period. In addition, for all periods presented, there was no revenue recognized in a reporting period from performance obligations satisfied in previous periods.

Based on the nature of our contracts with customers which are recognized over a term of less than 12 months, we have elected to use the practical expedient whereby costs to obtain a contract are expensed as they are incurred.

We state our revenues net of any taxes collected from customers that are required to be remitted to various government agencies. The amount of taxes collected from customers and payable to governmental entities is included on the balance sheet as part of “Accrued expenses and other current liabilities.”

Leases

We determine if an arrangement is a lease at inception primarily based on the determination of the party responsible for directing the use of an underlying asset within a contract. Operating leases are included in operating lease right-of-use assets and operating lease liabilities in our consolidated balance sheets. Lease assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments arising from the lease.

Operating lease right-of-use assets and liabilities are recognized at the lease commencement date based on the present value of lease payments over the lease term. In determining the present value of lease payments, we use our incremental borrowing rate based on the information available at the lease commencement date which includes significant assumptions made by us including our estimated credit rating, annual percentage yields from corporate debt financings of companies of similar size and credit rating over a loan term approximating the remaining term of each lease, and government bond yields for terms approximating the remaining term of each lease in countries where the leased assets are located. Operating lease right-of-use assets also include any lease payments made prior to the lease commencement date and exclude any lease incentives paid or payable at the lease commencement date. Lease terms may include options to extend or terminate the lease when it is reasonably certain that we will exercise any such options. Lease expense is recognized on a straight-line basis over the expected lease term.

Income tax

In preparing our consolidated financial statements, we are required to estimate our income taxes in each of the jurisdictions in which we operate. This process involves estimating our actual current tax exposure together with assessing temporary differences resulting from differing treatment of items for tax and accounting purposes. These differences result in deferred tax assets and liabilities, which are included within our audited consolidated balance sheets. We then assess the likelihood that our deferred tax assets will be

recovered from future taxable income and, to the extent we believe that recovery is not likely, we establish a valuation allowance. A valuation allowance reduces our deferred tax assets to the amount that management estimates is more likely than not to be realized. In determining the amount of the valuation allowance, we consider income over recent years, estimated future taxable income, feasible tax planning strategies and other factors in each taxing jurisdiction in which we operate. If we determine that it is more likely than not that we will not realize all or a portion of our remaining deferred tax assets, then we will increase our valuation allowance with a charge to income tax expense. Conversely, if we determine that it is likely that we will ultimately be able to utilize all or a portion of the deferred tax assets for which a valuation allowance has been provided, then the related portion of the valuation allowance will reduce income tax expense. Significant management judgment is required in determining our provision for income taxes and potential tax exposures, our deferred tax assets and liabilities and any valuation allowance recorded against our net deferred tax assets. In the event that actual results differ from these estimates or we adjust these estimates in future periods, we may need to establish a valuation allowance, which could materially impact our financial position and results of operations. Our ability to utilize our deferred tax assets and the need for a related valuation allowance are monitored on an ongoing basis.

Furthermore, computation of our tax liabilities involves examining uncertainties in the application of complex tax regulations. We recognize liabilities for uncertain tax positions based on the two-step process as prescribed by the authoritative guidance provided by FASB. The first step is to evaluate the tax position to determine whether there is sufficient available evidence to indicate if it is more likely than not that the position will be sustained on audit, including resolution of any related appeals or litigation processes. The second step requires us to measure and determine the approximate amount of the tax benefit at the largest amount that is more than 50% likely of being realized upon ultimate settlement with the tax authorities. It is inherently difficult and requires significant judgment to estimate such amounts, as this requires us to determine the probability of various possible outcomes. We reexamine these uncertain tax positions on a quarterly basis. This reassessment is based on various factors during the period including, but not limited to, changes in worldwide tax laws and treaties, changes in facts or circumstances, effectively settled issues under audit and any new audit activity. A change in recognition or measurement would result in the recognition of a tax benefit or an additional charge to the tax provision in the period.

Stock-based compensation

We have granted stock-based awards, consisting of stock options and restricted stock, to our employees, certain non-employee consultants and certain members of our board of directors. We measure stock-based compensation expense for restricted stock and stock options granted to our employees and directors on the date of grant and recognize the corresponding compensation expense of those awards over the requisite service period, which is generally the vesting period of the respective award. We account for stock-based compensation arrangements with non-employee consultants using a fair value approach. The estimated fair value of unvested options granted to non-employee consultants is remeasured at each reporting date through the date of final vesting. As a result, the noncash charge to operations for nonemployee options with vesting conditions is affected in each reporting period by changes in the estimated fair value of our common stock. We adjust for actual forfeitures as they occur.

Recently issued accounting pronouncements

For a description of accounting changes and recent accounting pronouncements, including the expected dates of adoption and estimated effects, if any, on our condensed consolidated financial statements, see Note 2, “Summary of Significant Accounting Policies” in Item 1 of Part I of this Quarterly Report on Form 10-Q for a full description of the recent accounting pronouncements and our expectation of their impact, if any, on our results of operations and financial condition.

Item 3. *Quantitative and qualitative disclosures about market risk*

Interest rates risk

We had cash and cash equivalents totaling $26.0 million and $46.7 million as of December 31, 2019 and September 30, 2019, respectively. We had short-term investments of $77.1 million and $91.4 million as of December 31, 2019 and September 30, 2019, 2019, respectively. Our cash and cash equivalents consist of cash in bank accounts and money market funds, and short-term investments consist of U.S. government agency bonds, corporate bonds, and commercial paper. The primary objectives of our investment activities are to preserve principal and provide liquidity without significantly increasing risk. We do not enter into investments for trading or speculative purposes. Due to the relatively short-term nature of our investment portfolio, a hypothetical 100 basis point change in interest rates would not have a material effect on the fair value of our portfolio. Therefore, we do not expect our operating results or cash flows to be materially affected by a sudden change in market interest rates.

Foreign currency exchange rate risk

Substantially all of our revenues and operating expenses are denominated in U.S. dollars. Therefore, we do not believe that our exposure to foreign currency exchange risk is material to our business, financial condition or results of operations. However, we expect an increasing portion of our future revenues to be denominated in currencies other than the U.S. Dollar. If a significant portion of our revenue or operating expenses were to become denominated in currencies other than U.S. dollars, we might not be able to effectively manage this risk, and our business, financial condition and results of operations could be adversely affected by translation to U.S. dollars and by transactional foreign currency conversions.

Item 4. ***Controls and procedures***

(a) Evaluation of disclosure controls and procedures

Our management, with the participation of our chief executive officer and our chief financial officer, has evaluated the effectiveness of our disclosure controls and procedures as of December 31, 2019 as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, as of the end of the period covered by the Quarterly Report on Form 10-Q. Based on the evaluation of our disclosure controls and procedures as of December 31, 2019, our chief executive officer and chief financial officer concluded that, as of such date, our disclosure controls and procedures were effective at the reasonable assurance level.

(b) Changes in internal control over financial reporting

There were no changes in our internal control over financial reporting identified in connection with the evaluation required by Rule 13a-15(d) and 15d-15(d) of the Exchange Act that occurred during the quarter ended December 31, 2019 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

(c) Inherent limitations on effectiveness of controls

Our management, including our chief executive officer and our chief financial officer, does not expect that our disclosure controls or our internal control over financial reporting will prevent all errors and all fraud. A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Further, the design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their cost. Because of the inherent limitations in all control systems, no evaluation of control can provide absolute assurance that all issues and instances of fraud, if any, have been detected. These inherent limitations include the realities that judgments in decision-making can be faulty, and that breakdowns can occur because of a simple error or mistake. Additionally, controls can be circumvented by individual acts of some persons, by collusion of two or more people or by management override of the controls. The design of any system of controls is also based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions; over time, controls may become inadequate because of changes in conditions, or the degree of compliance with policies or procedures may deteriorate. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and not be detected.

PART II. Other information

Item 1. ***Legal proceedings***

On February 3, 2016, Agilent filed a lawsuit against us and our Chief Executive Officer, Dr. Emily Leproust (the Complaint), in the Superior Court of California, Santa Clara County, or the Court. The Complaint also named Does 1 through 20, which are fictitious placeholder defendants. Agilent's complaint alleged three claims against Twist and Dr. Leproust: (1) alleged breach of contract, related to the use of confidential information and alleged breach of non-solicitation obligations against Dr. Leproust; (2) alleged breach of a duty of loyalty against Dr. Leproust; and (3) alleged misappropriation of trade secrets under the California Uniform Trade Secrets Act, or CUTSA, against all defendants.

On December 7, 2018, the Court granted Agilent's motion to amend its complaint, permitting Agilent to file its Second Amended Complaint. This new complaint added amended allegations against us and Dr. Leproust, and also new claims for breach of contract and trade secret misappropriation against two individuals: Dr. Siyuan Chen, a current Company employee and Solange Glaize, a former Company employee. The Court also set trial to begin on February 24, 2020.

On February 6, 2020, we, Dr. Leproust, Dr. Chen, Ms. Glaize (together, the Twist Group) and Agilent agreed to the terms of a settlement agreement (the Settlement Agreement) pursuant to which the Twist Group and Agilent each agreed to request dismissal of all claims against each other. The Settlement Agreement resolves the litigation initially commenced by the Complaint and contains no admission of liability or wrongdoing. Pursuant to the Settlement Agreement, we agreed to pay Agilent $22.5 million in cash within 14 days of the Settlement Agreement. This amount has been accrued in the consolidated financial statements in the three months ended December 31, 2019. In addition, the Twist Group and Agilent each agreed to release the other party from all known and unknown claims related to the claims and counterclaims alleged or that could have been alleged in such litigation or that arise from the facts and events that gave rise to such litigation. Further, Agilent agreed to grant us a limited non-exclusive license to use the trade secrets asserted by Agilent in the litigation, which extends to the our supply chain, including its customers, suppliers, distributors and resellers. Agilent also agreed not to sue us for the infringement of any Agilent patent issued or pending as of the date of the Settlement Agreement or claim priority thereto, solely to the extent such patents claim a trade secret alleged in the litigation. There is no other covenant or release of claims for patent infringement.

Dismissal of the case with the court is expected in February 2020.

We may also be subject to various other legal proceedings and claims arising in the ordinary course of business. Although occasional adverse decisions or settlements may occur, management believes that the final disposition of such matters will not have a material adverse effect on our business, financial position, results of operations or cash flows.

Item 1A. ***Risk factors***

The following discussion of risk factors contains forward-looking statements. These risk factors may be important to understanding other statements in this Quarterly Report Form 10-Q, including "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our unaudited condensed consolidated financial statements and related notes, before making a decision to invest in our common stock. The risks and uncertainties described below are not the only ones we face. Additional risk and uncertainties not presently known to us or that we presently deem less significant may also impair our business operations. If any of the events or circumstances described in the following risk factors actually occur, our business, operating results, financial condition, cash flows, and prospects could be materially and adversely affected. In that event, the market price of our common stock could decline, and you could lose part or all of your investment.

The business, financial condition and operating results of the Company can be affected by a number of factors, whether currently known or unknown, including but not limited to those described below, any one or more of which could, directly or indirectly, cause the Company's actual financial condition and operating results to vary materially from past, or from anticipated future, financial condition and operating results. Any of these factors, in whole or in part, could materially and adversely affect the Company's business, financial condition, operating results, and stock price.

Because of the following factors, as well as other factors affecting the Company's financial condition and operating results, past financial performance should not be considered to be a reliable indicator of future performance, and investors should not use historical trends to anticipate results or trends in future periods.

Risks related to our business

We are an early stage company with a limited operating history, which may make it difficult to evaluate our current business and predict our future performance.

We were incorporated in February 2013 and began commercial operations in April 2016. Prior to engaging in commercial operations, we focused on research and development of DNA synthesis. Our revenues for the fiscal years ended September 30, 2019, 2018 and 2017, were $54.4 million, $25.4 million and $10.8 million, respectively. We may never achieve commercial success, and we have limited historical financial data upon which we may base our projected revenue. We also have limited historical financial data upon which we may base our planned operating expense or upon which you may evaluate our business and our prospects. Based on our limited experience in developing and marketing new products, we may not be able to effectively:

- drive adoption of our products;

- attract and retain customers for our products;
- anticipate and adapt to changes in the existing and emerging markets in which we operate;
- focus our research and development efforts in areas that generate returns on these efforts;
- maintain and develop strategic relationships with suppliers to acquire necessary materials and equipment for the production of our products on appropriate timelines, or at all;
- implement an effective marketing strategy to promote awareness of our products with potential customers;
- scale our manufacturing activities to meet potential demand at a reasonable cost;
- avoid infringement of third-party intellectual property;
- obtain licenses on commercially reasonable terms to third-party intellectual property, as needed;
- obtain valid and enforceable patents that give us a competitive advantage;
- protect our proprietary technology;
- provide appropriate levels of customer training and support for our products; and
- attract, retain and motivate qualified personnel.

In addition, a high percentage of our expenses have been, and will continue to be, fixed. Accordingly, if we do not generate revenue as and when anticipated, our losses may be greater than expected, and our operating results will suffer. You should consider the risks and difficulties frequently encountered by companies like ours in new and rapidly evolving markets when making a decision to invest in our common stock.

We have incurred net losses in every period to date, and we expect to continue to incur significant losses as we develop our business and may never achieve profitability.

We have incurred net losses each year since inception and have generated limited revenue from product sales to date. We expect to incur increasing costs as we grow our business. We cannot be certain if or when we will produce sufficient revenue from our operations to support our costs. Even if profitability is achieved, we may not be able to sustain profitability. We incurred net losses of $107.7 million, $71.2 million and $59.3 million for the years ended September 30, 2019, 2018 and 2017, respectively. As of December 31, 2019, we had an accumulated deficit of $374.2 million. We expect to incur substantial losses and negative cash flow for the foreseeable future. We may incur significant losses in the future for a number of reasons, many of which are beyond our control, including the other risks described in this Form 10-Q, the market acceptance of our products, future product development, and our market penetration and margins.

We will require additional financing to achieve our goals, and a failure to obtain this necessary capital when needed on acceptable terms, or at all, could force us to delay, limit, reduce or terminate our product manufacturing and development and other operations.

Since our inception, substantially all of our resources have been dedicated to the development of our DNA synthesis platform and our sample preparation kit for next generation sequencing, or NGS. We believe that we will continue to expend substantial resources for the foreseeable future as we expand into additional markets we may choose to pursue, including pharmaceutical biologics drug discovery and digital data storage in DNA. These expenditures are expected to include costs associated with research and development, manufacturing and supply as well as marketing and selling existing and new products. In addition, other unanticipated costs may arise.

We expect that our existing cash and cash equivalents will be sufficient to fund our planned operating expenses, capital expenditure requirements and debt service payments through at least the next 12 months. However, our operating plan may change as a result of factors currently unknown to us, and we may need to seek additional funds sooner than planned, through public or private equity or debt financings or other sources, such as strategic collaborations. Such financing may result in dilution to stockholders, imposition of debt covenants and repayment obligations, or other restrictions that may adversely affect our business. In addition, we may seek additional capital due to favorable market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans.

Our future capital requirements depend on many factors, including:

- the number and characteristics of any additional products or manufacturing processes we develop or acquire to serve new or existing markets;
- the scope, progress, results and costs of researching and developing future products or improvements to existing products or manufacturing processes;
- the cost of manufacturing our DNA synthesis equipment and tools, our NGS sample preparation kits, and any future products we successfully commercialize;
- our ability to establish and maintain strategic collaborations, licensing or other arrangements and the financial terms of such agreements;
- the costs of expanding our sales and marketing capabilities in the United States and in other geographies, including China;
- any lawsuits related to our products or commenced against us, including the costs associated with our current litigation with Agilent Technologies, Inc. (Agilent);
- the expenses needed to attract and retain skilled personnel;
- the costs associated with being a public company;
- the costs involved in preparing, filing, prosecuting, maintaining, defending and enforcing patent claims, including litigation costs and the outcome of such litigation; and
- the timing, receipt and amount of sales of, or royalties on, any future approved products, if any.

Additional funds may not be available when we need them, on terms that are acceptable to us, or at all. If adequate funds are not available to us on a timely basis, we may be required to:

- delay, limit, reduce or terminate our manufacturing, research and development activities; or
- delay, limit, reduce or terminate our establishment of sales and marketing capabilities or other activities that may be necessary to generate revenue and achieve profitability.

If we are unable to maintain adequate revenue growth or do not successfully manage such growth, our business and growth prospects will be harmed.

We have experienced significant revenue growth in a short period of time. We may not achieve similar growth rates in future periods. Investors should not rely on our operating results for any prior periods as an indication of our future operating performance. To effectively manage our anticipated future growth, we must continue to maintain and enhance our manufacturing, sales, financial and customer support administration systems, processes and controls. Failure to effectively manage our anticipated growth could lead us to over-invest or under-invest in development, operational, and administrative infrastructure; result in weaknesses in our infrastructure, systems, or controls; give rise to operational mistakes, losses, loss of customers, productivity or business opportunities; and result in loss of employees and reduced productivity of remaining employees.

Our continued growth could require significant capital expenditures and might divert financial resources from other projects such as the development of new products and services. As additional products are commercialized, we may need to incorporate new equipment, implement new technology systems, or hire new personnel with different qualifications. Failure to manage this growth or transition could result in turnaround time delays, higher manufacturing costs, declining product quality, deteriorating customer service, and slower responses to competitive challenges. A failure in any one of these areas could make it difficult for us to meet market expectations for our products and could damage our reputation and the prospects for our business.

If our management is unable to effectively manage our anticipated growth, our expenses may increase more than expected, our revenue could decline or grow more slowly than expected and we may be unable to implement our business strategy. The quality of our products may suffer, which could negatively affect our reputation and harm our ability to retain and attract customers.

The estimates of market opportunity and forecasts of market growth included in this Form 10-Q may prove to be inaccurate, and even if the market in which we compete achieves the forecasted growth, our business could fail to grow at similar rates, if at all.

Market opportunity estimates and growth forecasts are subject to significant uncertainty and are based on assumptions and estimates that may not prove to be accurate. For example, several of the reports rely on discussions with industry thought leaders, employ projections of future applications of synthetic biology and next generation sequencing technology in major end-user market segments and by technology type, and incorporate data from secondary sources such as company websites as well as industry, trade and government publications. The estimates and forecasts in this Form 10-Q relating to the size and expected growth of our market may prove to be inaccurate. Even if the market in which we compete meets the size estimates and growth forecasted in this Form 10-Q, our business could fail to grow at the rate we anticipate, if at all.

Our quarterly and annual operating results and cash flows have fluctuated in the past and might continue to fluctuate, causing the value of our common stock to decline substantially.

Numerous factors, many of which are outside our control, may cause or contribute to significant fluctuations in our quarterly and annual operating results. These fluctuations may make financial planning and forecasting difficult. In addition, these fluctuations may result in unanticipated decreases in our available cash, which could negatively affect our business and prospects. In addition, one or more of such factors may cause our revenue or operating expenses in one period to be disproportionately higher or lower relative to the others. As a result, comparing our operating results on a period-to-period basis might not be meaningful. You should not rely on our past results as indicative of our future performance. Moreover, our stock price might be based on expectations of future performance that are unrealistic or that we might not meet and, if our revenue or operating results fall below the expectations of investors or securities analysts, the price of our common stock could decline substantially.

Our operating results have varied in the past. As a result, our operating results could be unpredictable, particularly on a quarterly basis. In addition to other risk factors listed in this section, some of the important factors that may cause fluctuations in our quarterly and annual operating results are further described in “Risk factors—Risks relating to owning our stock.”

In addition, a significant portion of our operating expense is relatively fixed in nature, and planned expenditures are based in part on expectations regarding future revenue. Accordingly, unexpected revenue shortfalls might decrease our gross margins and could cause significant changes in our operating results from quarter to quarter. If this occurs, the trading price of our common stock could fall substantially.

If we are unable to attract new customers and retain and grow sales from our existing customers, our business will be materially and adversely affected.

In order to grow our business, we must continue to attract new customers and retain and grow sales from our existing customers on a cost-effective basis. To do this, we aim to attract new and existing buyers of synthetic DNA and NGS tool kits, convert makers of synthetic DNA into buyers of synthetic DNA, and achieve widespread market acceptance by delivering both our current product offerings and new products and technologies at low-cost, with high-quality, reliable turn-around times and throughput, superior e-commerce services and effective technical support. We cannot guarantee that our efforts to provide these key requirements will be consistently acceptable to, and meet the performance expectations of, our customers and potential customers. If we are unable to successfully attract and retain customers, our business, financial position and results of operations would be negatively impacted.

Internet security poses a risk to our e-commerce sales.

We currently generate a growing portion of our revenue through sales on our e-commerce platform. As part of our growth strategy, we intend to increase the level of customer traffic and volume of customer purchases through our e-commerce platform which we formally launched to the general public in January 2018. We manage our website and e-commerce platform internally and as a result any compromise of our security or misappropriation of proprietary information could have a material adverse effect on our business, financial condition and results of operations. We rely on encryption and authentication technology licensed from third parties to provide the security and authentication necessary to effect secure Internet transmission of confidential information, such as credit and other proprietary information. Advances in computer capabilities, new discoveries in the field of cryptography or other events or developments may result in a compromise or breach of the technology used by us to protect customer transaction data. Anyone who is able to circumvent our security measures could misappropriate proprietary information or cause material interruptions in our operations. We may be required to expend significant capital and other resources to protect against security breaches or to minimize problems caused by security breaches. To the extent that our activities or the activities of others involve the storage and transmission of proprietary information, security breaches could damage our reputation and expose us to a risk of loss and/or litigation. Our security measures may not prevent security breaches. Our failure to prevent these security breaches may result in consumer distrust and may adversely affect our business, results of operations and financial condition.

Our actual operating results may differ significantly from our guidance.

From time to time, we may release guidance in our quarterly earnings conference calls, quarterly earnings releases, or otherwise, regarding our future performance that represents our management’s estimates as of the date of release. This guidance, which includes forward-looking statements, is based on projections prepared by our management. This guidance is not prepared with a view toward compliance with published guidelines of the American Institute of Certified Public Accountants (AICPA) regarding projections or the SEC regarding forward-looking statements, and neither our independent registered public accounting firm nor any other independent expert or outside party compiles or examines the projections. Accordingly, no such person will express any opinion or any other form of assurance with respect to the projections.

Projections are based upon a number of assumptions and estimates that, while presented with numerical specificity, are inherently subject to significant business, economic and competitive uncertainties and contingencies, many of which are beyond our control and are based upon specific assumptions with respect to future business decisions, some of which will change. Our aim is to state possible outcomes as high and low ranges to provide a sensitivity analysis as variables are changed but are not intended to imply that actual results could not fall outside of the suggested ranges. The principal reason that we release guidance is to provide a basis for our management to discuss our business outlook with analysts and investors. We do not accept any responsibility for any projections or reports published by any such third parties.

Guidance is necessarily speculative in nature, and it can be expected that some or all of the assumptions underlying the guidance furnished by us will not materialize or will vary significantly from actual results. Accordingly, our guidance is only an estimate of what management believes is realizable as of the date of release. Actual results may vary from our guidance and the variations may be material. In light of the foregoing, investors are urged not to rely upon our guidance in making an investment decision regarding our common stock.

Any failure to successfully implement our operating strategy or the occurrence of any of the events or circumstances set forth in this “Risk factors” section in this Form 10-Q could result in the actual operating results being different from our guidance, and the differences may be adverse and material.

Rapidly changing technology and extensive competition in synthetic biology could make the products we are developing and producing obsolete or non-competitive unless we continue to develop and manufacture new and improved products and pursue new market opportunities.

The synthetic biology industry is characterized by rapid and significant technological changes, frequent new product introductions and enhancements and evolving industry demands and standards. Our future success will depend on our ability to continually improve the products we are developing and producing, to develop and introduce new products that address the evolving needs of our customers on a timely and cost-effective basis and to pursue new market opportunities that develop as a result of technological and scientific advances. These new market opportunities may be outside the scope of our proven expertise or in areas which have unproven market demand, and the utility and value of new products and services developed by us may not be accepted in the markets served by the new products. Our inability to gain market acceptance of existing products in new markets or market acceptance of new products could harm our future operating results. Our future success also depends on our ability to manufacture these new and improved products to meet customer demand in a timely and cost-effective manner, including our ability to resolve manufacturing issues that may arise as we commence production of any new products we develop. Unanticipated difficulties or delays in replacing existing products with new products we introduce or in manufacturing improved or new products in sufficient quantities to meet customer demand could diminish future demand for our products and harm our future operating results.

In addition, there is extensive competition in the synthetic biology industry, and our future success will depend on our ability to maintain a competitive position with respect to technological advances. Technological development by others may result in our technologies, as well as products developed using our technologies, becoming obsolete. Our ability to compete successfully will depend on our ability to develop proprietary technologies and products that are technologically superior to and/or are less expensive than our competitors’ technologies and products. Our competitors may be able to develop competing and/or superior technologies and processes and compete more aggressively and sustain that competition over a longer period of time.

The continued success of our business relies heavily on our disruptive technologies and products and our position in the market as a leading provider or synthetic DNA using a silicon chip.

Our future profitability will depend on our ability to successfully execute and maintain a sustainable business model and generate continuous streams of revenue. Our business model is premised on the fact that we are the only DNA synthesis provider to synthesize DNA on a silicon chip and the competitive advantages this creates. Our DNA synthesis methods, among other things, reduce the amount of raw materials required, speed up the synthesis process and deliver large volumes of high-quality synthetic DNA at low unit cost. However, if other competitors develop and commercialize a manufacturing process using a silicon chip or other similar technologies providing for the development of competitive synthetic DNA products at scale, this could be disruptive to our business model and could adversely affect our business prospects, financial condition and results of operations. If we are unable to convert sufficient number of current manufacturers of synthetic DNA to buyers of our synthetic DNA, surpass our competitors regarding certain industry-related data points, and effectively implement our e-commerce platform which facilitates efficient order entry and fulfillment for our customers, our business, prospects, financial condition and results of operation will be adversely affected.

If we are unable to expand into adjacent addressable markets, our business may be materially and adversely affected.

Our future revenue growth and market potential may depend on our ability to leverage our DNA synthesis platform together with our custom libraries and other proprietary tools, such as our anti-GPCR library and antibody optimization solution, in adjacent businesses such as pharmaceutical biologics drug discovery and digital data storage in DNA. There can be no assurance that we can continue to utilize our antibody libraries to accelerate the lead identification and lead optimization steps of antibody discovery or to discover more effective antibody drugs. In addition, our technology may not develop in a way that allows data storage in DNA to become cost competitive with traditional data storage media or in a way that otherwise enables us to address the markets opportunities that we believe exist. If we are unable to expand into adjacent addressable markets, our business, financial position and results of operations could be negatively impacted.

A significant portion of our sales depends on customers' budgets that may be subject to significant and unexpected variation, including seasonality.

Our customers' spending on research and development impacts our sales and profitability. Our customers and potential customers include healthcare, agriculture, industrial chemicals and academic research sectors, and their budgets can have a significant effect on the demand for our products. Their research and development budgets are based on a wide variety of factors, including factors beyond our control, such as:

- the allocation of available resources to make purchases;
- funding from government sources;
- changes in government programs that provide funding to research institutions and companies;
- the spending priorities among various types of research equipment;
- policies regarding capital expenditures during recessionary periods;
- macroeconomic conditions and the political climate;
- changes in the regulatory environment;
- differences in budgetary cycles; and
- market acceptance of relatively new technologies, such as ours.

Any decrease in spending or change in spending priorities of our customers and potential customers could significantly reduce the demand for our products. As we expand into new geographic markets, our revenue may be impacted by seasonal trends in the different regions, the seasonality of customer budgets in those regions and the mix of domestic versus international sales. Moreover, we have no control over the timing and amount of purchases by these customers and potential customers, and as a result, revenue from these sources may vary significantly due to factors that can be difficult to forecast. Any delay or reduction in purchases by customers and potential customers or our inability to forecast fluctuations in demand could harm our future operating results.

We generally do not have long-term contracts with our customers requiring them to purchase any specified quantities from us.

We generally do not have long-term contracts with our customers requiring them to purchase any specified quantities from us and without such contracts our customers are not obligated to order or reorder our products. As a result, we cannot accurately predict our customers' decisions to reduce or cease purchasing our products. Additionally, even where we enter into contracts with our customers, there is no guarantee that such agreements will be negotiated on terms that are commercially favorable to us in the long-term. Therefore, if many of our customers were to substantially reduce their transaction volume or cease ordering products from us, this could materially and adversely affect our financial performance.

We have limited experience in sales and marketing of our products and, as a result, may be unable to successfully increase our market share and expand our customer base.

We have limited experience in sales and the marketing of our products. Our ability to achieve profitability depends on our being able to increase our market share and expand our customer base. Although members of our sales and marketing teams have considerable industry experience and have engaged in marketing activities for our products, in the future we must expand our sales, marketing, distribution and customer support capabilities with the appropriate technical expertise to effectively market our products. Furthermore, it takes six to nine months to recruit, onboard and ramp sales personnel to full capability. To perform sales, marketing, distribution and customer support successfully, we will face a number of risks, including that:

- we may not be able to attract, retain and manage the sales, marketing and service force necessary to publicize and gain broader market acceptance of our technology;

- the time and cost of establishing a specialized sales, marketing and service force for a particular product or service, which may be difficult to justify in light of the revenue generated; and
- our sales, marketing and service force may be unable to initiate and execute successful commercialization activities with respect to new products or markets we may seek to enter.

If our sales and marketing efforts, or those of any third-party sales and distribution partners, are not successful, our new technologies and products may not gain market acceptance, which could materially impact our business operations.

If we are unable to expand our DNA synthesis manufacturing capacity, we could lose revenue and our business could be harmed.

In order to expand our manufacturing capacity of new and existing products, we need to either build additional internal manufacturing capacity, contract with one or more partners, or both. Our technology and the production process for our DNA synthesis equipment and tools are complex, involving specialized parts, and we may encounter unexpected difficulties in the manufacture, improvement or increasing the capacity of our DNA synthesis equipment and tools. There is no assurance that we will be able to continue to increase manufacturing capacity internally or that we will find one or more suitable partners to help us towards this objective, in order to meet the volume and quality requirements necessary for success in our existing and potential markets. Manufacturing and product quality issues may arise as we continue to increase the scale of our production. If our DNA synthesis equipment and tools do not consistently produce DNA products that meet our customers' performance expectations, our reputation may be harmed, and we may be unable to generate sufficient revenue to become profitable. Any delay or inability in expanding our manufacturing capacity could diminish our ability to develop or sell our products, which could result in lost revenue and materially harm our business, financial condition and results of operations.

We are substantially dependent on the success of our synthetic DNA products.

To date, we have invested a substantial portion of our efforts and financial resources towards the research and development and commercialization of our synthetic DNA products. The DNA synthesis business is very capital intensive, particularly for early stage companies that do not have significant off-setting revenues and which are making significant investments in the commercialization and marketing of their products.

Our financial results are dependent on strengthening our core business while diversifying into other developing sectors such as pharmaceutical biologics drug discovery, creating useful DNA libraries and data storage. Substantially all of our revenue generated to date is from our synthetic DNA products.

Our near-term prospects, including our ability to finance our Company and enter into strategic collaborations, will depend heavily on the successful development and commercialization of our synthetic DNA products. These initiatives will be substantially dependent on our ability to generate revenue from our synthetic DNA products and obtain other funding necessary to support these initiatives. Our inability to continue these initiatives and initiate new research and development efforts could result in a failure to develop new products, improve upon existing products such that sectors like pharmaceutical biologics drug discovery, DNA library creation and data storage may never be fully developed, and expand our addressable market which could have a material and adverse impact on our sales, business, financial position and results of operations.

We depend on one single-source supplier for a critical component for our DNA synthesis process. The loss of this supplier or its failure to supply us with the necessary component on a timely basis, could cause delays in the future capacity of our DNA synthesis process and adversely affect our business.

We depend on one single-source supplier for a critical component for our DNA synthesis process. We do not currently have the infrastructure or capability internally to manufacture this component. Although we have a substantial reserve of supplies and although alternative suppliers exist for this critical component of our synthesis process, our existing DNA synthesis manufacturing process has been designed based on the functions, limitations, features and specifications of the components that we currently utilize. We have a supply agreement in place with this component supplier. However, there can be no assurance that our supply of this component will not be limited, interrupted, or of satisfactory quality or continue to be available at acceptable prices. Additionally, we do not have any control over the process or timing of the acquisition or manufacture of materials by our manufacturer and cannot ensure that it will deliver to us the component we order on time, or at all.

The loss of this component provided by this supplier could require us to change the design of our manufacturing process based on the functions, limitations, features and specifications of the replacement components. In addition, the lead time needed to establish a relationship with a new supplier can be lengthy, and we may experience delays in meeting demand in the event we must switch to a new supplier. The time and effort to qualify a new supplier could result in additional costs, diversion of resources or reduced manufacturing yields, any of which would negatively impact our operating results. Further, we may be unable to enter into agreements with a new supplier on commercially reasonable terms, which could have a material adverse impact on our business. Our dependence on this single-source supplier exposes us to certain risks, including the following:

- our supplier may cease or reduce production or deliveries, raise prices or renegotiate terms;
- we may be unable to locate a suitable replacement on acceptable terms or on a timely basis, if at all;
- if there is a disruption to our single-source supplier’s operations, and if we are unable to enter into arrangements with alternative suppliers, we will have no other means of completing our synthesis process until they restore the affected facilities or we or they procure alternative manufacturing facilities or sources of supply;
- delays caused by supply issues may harm our reputation, frustrate our customers and cause them to turn to our competitors for future projects; and
- our ability to progress our DNA synthesis products could be materially and adversely impacted if the single-source supplier upon which we rely were to experience a significant business challenge, disruption or failure due to issues such as financial difficulties or bankruptcy, issues relating to other customers such as regulatory or quality compliance issues, or other financial, legal, regulatory or reputational issues.

Moreover, to meet anticipated market demand, our single-source supplier may need to increase manufacturing capacity, which could involve significant challenges. This may require us and our supplier to invest substantial additional funds and hire and retain the technical personnel who have the necessary experience. Neither we nor our supplier may successfully complete any required increase to existing manufacturing capacity in a timely manner, or at all.

We must continue to secure and maintain sufficient and stable supplies of raw materials.

Although historically we have not experienced price increases due to unexpected raw material shortages and other unanticipated events, there is no assurance that our supply of raw materials will not be significantly adversely affected in the future, adversely affecting our business, prospects, financial condition and results of operation.

In addition, as we grow, our existing suppliers may not be able to meet our increasing demand, and we may need to find additional suppliers. There is no assurance that we will always be able to secure suppliers who provide raw materials at the specification, quantity and quality levels that we demand (or at all) or be able to negotiate acceptable fees and terms of services with any such

suppliers. Identifying a suitable supplier is an involved process that requires us to become satisfied with their quality control, responsiveness and service, financial stability and labor and other ethical practices. Even if we are able to expand existing sources, we may encounter delays in production and added costs as a result of the time it takes to train suppliers in our methods, products and quality control standards.

We typically do not enter into agreements with our suppliers but secure our raw materials on a purchase order basis. Our suppliers may reduce or cease their supply of raw materials and outsourced services and products to us at any time in the future. If the supply of raw materials and the outsourced services and products is interrupted, our production processes may be delayed. If any such event occurs, our operation and financial position may be adversely affected.

A deterioration of our relationship with any of our suppliers, or problems experienced by these suppliers, could lead to shortages in our production capacity for some or all of our products. In such case, we may not be able to fulfill the demand of existing customers or supply new customers. A raw material shortage or an increase in the cost of the raw materials we use could result in decreased revenue or could impair our ability to maintain or expand our business.

In the event of significant price increases for raw materials, we may have to pass the increased raw materials costs to our customers. However, we cannot assure you that we will be able to raise the prices of our products sufficiently to cover increased costs resulting from increases in the cost of our raw materials or overcome the interruption of a sufficient supply of qualified raw materials for our products. As a result, a price increase for our raw materials may negatively impact our business, financial position and results of operations.

We may encounter difficulties in managing our growth, and these difficulties could impair our profitability.

Currently, we are working simultaneously on multiple projects, expanding our capacity, consolidating our manufacturing operations into one facility in South San Francisco and reobtaining certain ISO certifications, as well as targeting several market sectors, including activities in the healthcare, agriculture, industrial chemicals and academic sectors. These diversified operations and activities place significant demands on our limited resources and require us to substantially expand the capabilities of our technical, administrative and operational resources.

If we are unable to manage this growth and consolidation and recertification of our manufacturing facilities effectively, our shipments to our customers could be impacted and our business and operating results could suffer. Our ability to manage our operations and costs, including research and development, costs of components, manufacturing, sales and marketing, requires us to continue to enhance our operational, financial and management controls, reporting systems and procedures and to attract and retain sufficient numbers of talented employees. Failure to attract and retain sufficient numbers of talented employees will further strain our human resources and could impede our growth.

Our revenue, results of operations, cash flows and reputation in the marketplace may suffer upon the loss of a significant customer.

We have derived, and believe we may continue to derive, a significant portion of our revenues from one large customer or a limited number of large customers. Our largest customer Ginkgo Bioworks accounted for 17%, 34% and 40% of our revenues for the fiscal years ended September 30, 2019, 2018 and 2017, respectively. Our customers may buy less of our products depending on their own technological developments, end-user demand for our products and internal budget cycles. In addition, existing customers may choose to produce some or all of their synthetic DNA requirements internally by using or developing manufacturing capabilities organically or by using capabilities from acquisitions of assets or entities from third parties with such capabilities. The loss of Ginkgo Bioworks as a customer, or the loss of any other significant customer or a significant reduction in the amount of product ordered by Ginkgo Bioworks or any other significant customer would adversely affect our revenue, results of operations, cash flows and reputation in the marketplace.

Our credit facility contains restrictions that limit our flexibility in operating our business.

In September 2017, we entered into an amended and restated loan and security agreement with Silicon Valley Bank (SVB). Our credit facility contains various covenants that limit our ability to engage in specified types of transactions. These covenants limit our ability to, among other things:

- sell, transfer, lease or otherwise dispose of our assets;
- create, incur or assume additional indebtedness;
- engage in certain changes in business, management, control, or business location

- encumber or permit liens on certain of our assets;
- make restricted payments, including paying dividends on, repurchasing or making distributions with respect to our common stock;
- make specified investments (including loans and advances);
- consolidate, merge, sell or otherwise dispose of all or substantially all of our assets or acquire other entities;
- make or permit any payment on any subordinated debt; and
- enter into certain transactions with our affiliates.

Our incurrence of this debt, and any future increases in our aggregate level of debt, may adversely affect our operating results and financial condition by, among other things:

- increasing our vulnerability to downturns in our business, to competitive pressures and to adverse economic and industry conditions;
- requiring the dedication of an increased portion of our expected cash flows from operations to service our indebtedness, thereby reducing the amount of expected cash flows available for other purposes, including capital expenditures, acquisitions and dividends; and
- limiting our flexibility in planning for, or reacting to, changes in our business and our industry.

A breach of any of these covenants could result in a default under our credit facility. Upon the occurrence of an event of default under our credit facility, SVB could elect to declare all amounts outstanding under our credit facility to be immediately due and payable and terminate all commitments to extend further credit. If we were unable to repay those amounts, the lenders under our credit facility could proceed against the collateral granted to them to secure such indebtedness. We have pledged substantially all of our assets, other than our intellectual property, as collateral under our credit facility.

We depend on the continuing efforts of our senior management team and other key personnel. If we lose members of our senior management team or other key personnel or are unable to successfully retain, recruit and train qualified researchers, engineering and other personnel, our ability to develop our products could be harmed, and we may be unable to achieve our goals.

Our future success depends upon the continuing services of members of our senior management team and scientific and engineering personnel. We are highly dependent on Dr. Emily Leproust, our President and Chief Executive Officer, who is employed “at will,” meaning we or she may terminate the employment relationship at any time. In particular, our researchers and engineers are critical to our future technological and product innovations, and we will need to hire additional qualified personnel. We may not be able to attract and retain qualified personnel on acceptable terms, or at all. In addition, to the extent we hire personnel from competitors, we may be subject to allegations that they have been improperly solicited or that they have divulged proprietary or other confidential information, or that their former employers own their research output. Our industry, particularly in the San Francisco Bay Area, is characterized by high demand and intense competition for talent, and the turnover rate can be high. We compete for qualified management and scientific personnel with other life science companies, academic institutions and research institutions, particularly those focusing on genomics. Many of these employees could leave our company with little or no prior notice and would be free to work for a competitor. If one or more of our senior executives or other key personnel were unable or unwilling to continue in their present positions, we might not be able to replace them easily or at all, and other senior management may be required to divert attention from other aspects of the business. In addition, we do not have “key person” life insurance policies covering members of our management team or other key personnel except Dr. Leproust. The loss of any of these individuals or our inability to attract or retain qualified personnel, including researchers, engineers and others, could prevent us from pursuing collaborations and adversely affect our product development and introductions, business growth prospects, results of operations and financial condition.

We may engage in strategic transactions, including acquisitions that could disrupt our business, cause dilution to our stockholders, reduce our financial resources, or prove not to be successful.

In the future, we may enter into transactions to acquire other businesses, products or technologies and our ability to do so successfully cannot be ensured. In April 2016, we acquired Genome Compiler Corporation, which became a wholly owned subsidiary. This acquisition allowed us to add software design capabilities for our e-commerce ordering system. However, to date, we have not successfully concluded other acquisitions, and we are pursuing opportunities in the life sciences industry that complement and expand our synthetic DNA product, products and markets both locally and internationally. If we identify suitable opportunities, we may not be able to make such acquisitions on favorable terms or at all. Any acquisitions we make may not strengthen our competitive position, and these transactions may be viewed negatively by customers or investors. We may decide to incur debt in connection with an

acquisition or issue our common stock or other equity securities to the stockholders of the acquired company, which would reduce the percentage ownership of our existing stockholders. We could incur losses resulting from undiscovered liabilities of the acquired business that are not covered by any indemnification we may obtain from the seller. In addition, we may not be able to successfully integrate the acquired personnel, technologies and operations into our existing business in an effective, timely and non-disruptive manner. Acquisitions may also divert management attention from day-to-day responsibilities, increase our expenses and reduce our cash available for operations and other uses. In addition, we cannot guarantee that we will be able to fully recover the costs of such acquisitions or that we will be successful in leveraging any such strategic transactions into increased business, revenue or profitability. We also cannot predict the number, timing or size of any future acquisitions or the effect that any such transactions might have on our operating results.

From time to time, we may consider other strategic transactions, including collaborations. The competition for collaborators is intense, and the negotiation process is time-consuming and complex. Any new collaboration may be on terms that are not optimal for us, and we may not be able to maintain any new collaboration. Any such collaboration may require us to incur non-recurring or other charges, increase our near- and long-term expenditures and pose significant integration or implementation challenges or disrupt our management or business. These transactions would entail numerous operational and financial risks, including exposure to unknown liabilities, disruption of our business and diversion of our management's time and attention to manage a collaboration, incurrence of substantial debt or dilutive issuances of equity securities to pay transaction consideration or costs, higher than expected collaboration, acquisition or integration costs, write-downs of assets or goodwill or impairment charges, increased amortization expenses, difficulty and cost in facilitating the collaboration or combining the operations and personnel of any acquired business, impairment of relationships with key suppliers, manufacturers or customers of any acquired business due to changes in management and ownership and the inability to retain key employees of any acquired business. Accordingly, although there can be no assurance that we will undertake or successfully complete any collaborations, any transactions that we do complete may be subject to the foregoing or other risks and have a material and adverse effect on our business, financial condition, results of operations and prospects. Conversely, any failure to enter any collaboration or other strategic transaction that would be beneficial to us could delay the development and potential commercialization of our products and technologies.

As we expand our development and commercialization activities outside of the United States, we will be subject to an increased risk of inadvertently conducting activities in a manner that violates the U.S. Foreign Corrupt Practices Act and similar laws. If that occurs, we may be subject to civil or criminal penalties which could have a material adverse effect on our business, financial condition, results of operations and growth prospects.

We are subject to the U.S. Foreign Corrupt Practices Act, or the FCPA, which prohibits corporations and individuals from paying, offering to pay, or authorizing the payment of anything of value to any foreign government official, government staff member, political party, or political candidate in an attempt to obtain or retain business or to otherwise influence a person working in an official capacity. We are also subject to the UK Anti-Bribery Act, which prohibits both domestic and international bribery, as well as bribery across both public and private sectors.

In the course of establishing and expanding our commercial operations and complying with non-U.S. regulatory requirements, we will need to establish and expand business relationships with various third parties and we will interact more frequently with foreign officials, including regulatory authorities. Expanded programs to maintain compliance with such laws will be costly and may not be effective. Any interactions with any such parties or individuals where compensation is provided that are found to be in violation of such laws could result in substantial fines and penalties and could materially harm our business. Furthermore, any finding of a violation under one country's laws may increase the likelihood that we will be prosecuted and be found to have violated another country's laws. If our business practices outside the United States are found to be in violation of the FCPA, UK Anti-Bribery Act or other similar laws, we may be subject to significant civil and criminal penalties which could have a material adverse effect on our financial condition and results of operations.

We could engage in exporting or related activity that contravenes international trade restraints, or regulatory authorities could promulgate more far reaching international trade restraints, which could give rise to one or more of substantial legal liability, impediments to our business and reputational damage.

Our international business activities must comport with U.S. export controls and other international trade restraints, including the U.S. Department of Commerce's Export Administration Regulations and economic sanctions regulations administered by the U.S. Treasury Department's Office of Foreign Assets Controls.

We have established an international trade compliance program that encompasses best practices for preventing, detecting and addressing noncompliance with international trade restraints. Furthermore, to date our exports have not been licensable under export controls; however, we could fail to observe the compliance program requirements in a manner that leaves us in noncompliance with export controls or other international trade restraints. In addition, authorities could promulgate international trade restraints that impinge on our ability to prosecute our business as planned. One or more of resulting legal penalties, restraints on our business or reputational damage could have material adverse effects on our business and financial condition.

Adverse conditions in the global economy and disruption of financial markets may significantly harm our revenue, profitability and results of operations.

The global economy has a significant impact on our business and volatility and disruption of financial markets could limit our customers' ability to obtain adequate financing or credit to purchase and pay for our products in a timely manner or to maintain operations, which could result in a decrease in sales volume that could harm our results of operations. General concerns about the fundamental soundness of domestic and international economies may also cause our customers to reduce their purchases. Changes in banking, monetary and fiscal policies to address liquidity and increase credit availability may not be effective. Significant government investment and allocation of resources to assist the economic recovery of sectors which do not include our customers may reduce the resources available for government grants and related funding for life sciences research and development.

Continuation or further deterioration of these financial and macroeconomic conditions could significantly harm our sales, profitability and results of operations.

We operate in a highly competitive industry and if we are not able to compete effectively, our business and operating results will likely be harmed.

We face competition from a broad range of providers of core synthetic biology products such as GenScript Biotech Corporation, GENEWIZ (owned by Brooks Automation), Integrated DNA Technologies, Inc., DNA 2.0 Inc. d/b/a/ ATUM, GeneArt (owned by Thermo Fisher Scientific Inc.), Eurofins Genomics LLC, Sigma-Aldrich Corporation (an indirect wholly owned subsidiary of Merck & Company), Promega Corporation, OriGene Technologies, Inc., Blue Heron Biotech, LLC and others. Additionally, we compete with both large and emerging providers in the life sciences tools and diagnostics industries focused on sample preparation for next generation sequencing such as Thermo Fisher Scientific Inc., Illumina, Inc., Integrated DNA Technologies, Inc., Agilent, and Roche NimbleGen, Inc. In the antibody discovery market, we compete with clinical research organizations, such as LakePharma (mouse hybridoma, llama immune libraries, XOMA phage display library) and Aldevron, LLC (genetic mouse immunization coupled with hybridoma), and antibody discovery biotechnology companies, such as Iontas (human phage display libraries, human phage display library focused on ion channels), Adimab (human synthetic yeast display libraries), and Distributed Bio (human synthetic phage display library, lead optimization libraries). In the field of DNA digital data storage, we compete with Catalog Technologies, Inc., ETH Zurich, Helixworks, Iridia, Inc., North Shore Bio and Roswell. We may not be successful in maintaining our competitive position for a number of reasons. Some of our current competitors, as well as many of our potential competitors, have significant name recognition, substantial intellectual property portfolios, longer operating histories, greater resources to invest in new technologies, substantial experience in new product development and manufacturing capabilities and more established distribution channels to deliver products to customers than we do. These competitors may be able to respond more quickly and effectively than we can to new or changing opportunities, technologies, standards or customer requirements. Our competitors may develop disruptive technologies or products that are comparable or superior to our technologies and products. In light of these advantages, even though we believe our technology is superior to the products offerings of our competitors, current or potential customers might accept competitive products in lieu of purchasing our products. Increased competition is likely to result in continued pricing pressures, which could harm our sales, profitability or market share. Our failure to continue competing effectively or wining additional business with our existing customers could materially and adversely affect our business, financial condition or results of operations.

We may be subject to significant pricing pressures.

Over time, increasing customer demand for lower prices could force us to discount our products and result in lower margins. The impact may be further exacerbated if we are unable to successfully control production costs. Alternatively, if due to rising market prices, our suppliers increase prices or reduce discounts on their supplies, we may be unable to pass on any cost increase to our customers, thereby resulting in reduced margins and profits. Furthermore, changes in our product mix may negatively affect our gross margins. Overall, these pricing pressures may adversely affect our business, financial position and results of operations.

Ethical, legal and social concerns surrounding the use of genetic information could reduce demand for our technology.

Our products may be used to create DNA sequences of humans, agricultural crops and other living organisms. Our products could be used in a variety of applications, which may have underlying ethical, legal and social concerns. Governmental authorities could, for safety, social or other purposes, impose limits on or implement regulation of the use of gene synthesis. Such concerns or governmental restrictions could limit the use of our DNA synthesis products, which could have a material adverse effect on our business, financial condition and results of operations. In addition, public perception about the safety and environmental hazards of, and ethical concerns over, genetically engineered products and processes could influence public acceptance of our technologies, products and processes. These concerns could result in increased expenses, regulatory scrutiny, delays or other impediments to our programs.

We use biological and hazardous materials that require considerable expertise and expense for handling, storage and disposal and may result in claims against us.

We work with materials, including chemicals, biological agents, and compounds and DNA samples that could be hazardous to human health and safety or the environment. Our operations also produce hazardous and biological waste products. Federal, state and local laws and regulations govern the use, generation, manufacture, storage, handling and disposal of these materials and wastes. Compliance with applicable environmental laws and regulations is expensive, and current or future environmental laws and regulations may restrict our operations. If we do not comply with applicable regulations, we may be subject to fines and penalties.

In addition, we cannot eliminate the risk of accidental injury or contamination from these materials or wastes, which could cause an interruption of our commercialization efforts, research and development programs and business operations, as well as environmental damage resulting in costly clean-up and liabilities under applicable laws and regulations. Furthermore, environmental laws and regulations are complex, change frequently and have tended to become more stringent. We cannot predict the impact of such changes and cannot be certain of our future compliance. While our property insurance policy provides limited coverage in the event of contamination from hazardous and biological products and the resulting cleanup costs, we do not currently have any additional insurance coverage for legal liability for claims arising from the handling, storage or disposal of hazardous materials.

Accordingly, in the event of contamination or injury, we could be liable for damages or penalized with fines in an amount exceeding our resources and our operations could be suspended or otherwise adversely affected.

We could develop DNA sequences or engage in other activity that contravenes biosecurity requirements, or regulatory authorities could promulgate more far reaching biosecurity requirements that our standard business practices cannot accommodate, which could give rise to substantial legal liability, impede our business and damage our reputation.

The Federal Select Agent Program, or the FSAP, involves rules administered by the Centers for Disease Control and Prevention and Toxins and the Animal and Plant Health Inspection Service that regulate possession, use and transfer of biological select agents and toxins that have the potential to pose a severe threat to public, animal or plant health or to animal or plant products.

We have established a biosecurity program under which we follow biosafety and biosecurity best practices and avoid DNA synthesis activities that implicate FSAP rules; however, we could err in our observance of compliance program requirements in a manner that leaves us in noncompliance with FSAP or other biosecurity rules. In addition, authorities could promulgate new biosecurity requirements that restrictions our operations. One or more resulting legal penalties, restraints on our business or reputational damage could have material adverse effects on our business and financial condition.

Third parties may use our products in ways that could damage our reputation.

After our customers have received our products, we do not have any control over their use and our customers may use them in ways that are harmful to our reputation as a supplier of synthetic DNA products. In addition, while we have established a biosecurity program designed to comply with biosafety and biosecurity requirements and perform export control screening in an effort to ensure that third parties do not obtain our products for malevolent purposes, we cannot guarantee that these preventative measures will eliminate or reduce the risk of the domestic and global opportunities for the misuse of our products. Accordingly, in the event of such misuse, our reputation, future revenue and operating results may suffer.

Any damage to our reputation or brand may materially and adversely affect our business, financial condition and results of operations.

We believe that developing and maintaining our brand is important to our success and that our financial success is influenced by the perception of our brand by our customers. Furthermore, the importance of our brand recognition may become even greater to the extent that competitors offer more products similar to ours. Many factors, some of which are beyond our control, are important to maintaining our reputation and brand. These factors include our ability to comply with ethical, social, product, labor and environmental standards. Any actual or perceived failure in compliance with such standards could damage our reputation and brand.

Because we are subject to existing and potential additional governmental regulation, the markets for our products may be narrowed.

We are subject, both directly and indirectly, to the adverse impact of existing and potential future government regulation of our operations and markets. For example, the export of our products is subject to strict regulatory control in a number of jurisdictions. The failure to satisfy export control criteria or obtain necessary clearances could delay or prevent the shipment of products, which could adversely affect our revenues and profitability. Moreover, the life sciences industry, which is currently the primary market for our technology, has historically been heavily regulated. There are, for example, laws in several jurisdictions restricting research in genetic engineering, which can operate to narrow our markets. Given the evolving nature of this industry, legislative bodies or regulatory authorities may adopt additional regulation that adversely affects our market opportunities. Our business is also directly affected by a wide variety of government regulations applicable to business enterprises generally and to companies operating in the life science industry in particular. Failure to comply with these regulations or obtain or maintain necessary permits and licenses could result in a variety of fines or other censures or an interruption in our business operations which may have a negative impact on our ability to generate revenues and could increase the cost of operating our business.

Our products could in the future be subject to additional regulation by the U.S. Food and Drug Administration or other domestic and international regulatory agencies, which could increase our costs and delay our commercialization efforts, thereby materially and adversely affecting our business and results of operations.

The U.S. Food and Drug Administration, or FDA, regulates medical devices, including in vitro diagnostics, or IVDs. IVDs include reagents, instruments, and systems intended for use in diagnosis of disease or other conditions, including a determination of the state of health, in order to cure, mitigate, treat, or prevent disease or its sequelae. IVDs are intended for use in the collection, preparation, and examination of specimens taken from the human body. A research use only, or RUO, IVD product is an IVD product that is in the laboratory research phase of development and is being shipped or delivered for an investigation that is not subject to FDA's investigational device exemption requirements. As such, an RUO IVD is not intended for use in clinical investigations or in clinical practice. Such RUO products do not require premarket clearance or approval from the FDA, provided that they are labeled "For Research Use Only. Not for use in diagnostic procedures" pursuant to FDA regulations. Our IVD products are not intended for clinical or diagnostic use, and we market and label them as RUO. Accordingly, we have not sought clearance or approval from the FDA to market our products. However, the FDA may disagree with our assessment that our products are properly marketed as RUO, and may determine that our products are subject to pre-market clearance, approval, or other regulatory requirements. If the FDA determines that our products are subject to such requirements, we could be subject to enforcement action, including administrative and judicial sanctions, and additional regulatory controls and submissions for our tests, all of which could be burdensome.

Further, in the future, certain of our products or related applications could be subject to additional FDA regulation. Even where a product is not subject to FDA clearance or approval requirements, the FDA may impose restrictions as to the types of customers to which we can market and sell our products. Such regulation and restrictions may materially and adversely affect our business, financial condition and results of operations. Other regulatory regimes that do not currently present material challenges but that could in the future present material challenges include export controls and biosecurity.

Similarly, even though our products and services are not currently covered and reimbursed by third-party payors, including government healthcare programs such as Medicare and Medicaid, to the extent our products or related applications become eligible for coverage and reimbursement by such payors, we could be subject to healthcare fraud and abuse laws of both the federal government and the states in which we conduct our business. Because of the breadth of these laws and the narrowness of available statutory and regulatory exceptions, it is possible that some of our business activities could be subject to challenge under one or more of such laws. If we or our operations are found to be in violation of any of the laws described above or any other governmental regulations that apply to us, we may be subject to penalties, including civil and criminal penalties, damages, fines, imprisonment, and the curtailment or restructuring of our operations, any of which could materially adversely affect our ability to operate our business and our financial results.

Many countries have laws and regulations that could affect our products. The number and scope of these requirements are increasing. Unlike many of our competitors, this is an area where we do not have expertise. We may not be able to obtain regulatory approvals in such countries or may incur significant costs in obtaining or maintaining foreign regulatory approvals.

Certain of our potential customers may require that we become certified under the Clinical Laboratory Improvement Amendments of 1988.

Although we are not currently subject to the Clinical Laboratory Improvement Amendment of 1988, or CLIA, we may in the future be required by certain customers to obtain a CLIA certification. CLIA, which extends federal oversight over clinical laboratories by requiring that they be certified by the federal government or by a federally approved accreditation agency, is designed to ensure the

quality and reliability of clinical laboratories by mandating specific standards in the areas of personnel qualifications, administration and participation in proficiency testing, patient test management, quality control, quality assurance and inspections. If our customers require a CLIA certification, we will have to continually expend time, money and effort to ensure that we meet the applicable quality and safety requirements, which may divert the attention of management and disrupt our core business operations.

If we experience a significant disruption in, or breach in security of, our information technology systems, or if we fail to implement new systems and software successfully, our business could be adversely affected.

We rely on several centralized information technology systems throughout our company to provide products, keep financial records, process orders, manage inventory, process shipments to customers and operate other critical functions. Our information technology systems may be susceptible to damage, disruptions or shutdowns due to power outages, hardware failures, computer viruses, attacks by computer hackers, telecommunication failures, user errors, catastrophes or other unforeseen events. Our information technology systems also may experience interruptions, delays or cessations of service or produce errors in connection with system integration, software upgrades or system migration work that takes place from time to time. If we were to experience a prolonged system disruption in the information technology systems that involve our interactions with customers or suppliers, including negatively impacting our order fulfillment and order entry on our e-commerce platform, it could result in the loss of sales and customers and significant incremental costs, which could adversely affect our business. In addition, security breaches of our information technology systems could result in the misappropriation or unauthorized disclosure of confidential information belonging to us or to our employees, partners, customers or suppliers, which could result in our suffering significant financial or reputational damage. Further, such a breach may require notification to governmental agencies, the media or individuals pursuant to various federal and state privacy and security laws. We would also be exposed to a risk of litigation and potential liability, which could materially adversely affect our business, results of operations and financial condition.

Our manufacturing operations in the United States depend primarily on one facility. If this facility is destroyed or we experience any manufacturing difficulties, disruptions, or delays, this could limit supply of our product or adversely affect our ability to sell products or conduct our clinical trials, and our business would be adversely impacted.

A substantial portion of our manufacturing takes place at our headquarters. If regulatory, manufacturing, or other problems require us to discontinue production at this facility, we will not be able to manufacture our synthetic genes, oligo pools or NGS tool or create our DNA libraries, which would adversely impact our business. If this facility or the equipment in it is significantly damaged or destroyed by fire, flood, power loss, or similar events, we may not be able to quickly or inexpensively replace our manufacturing capacity or replace the facility at all. In the event of a temporary or protracted loss of this facility or equipment, we might not be able to transfer manufacturing to another third party. Even if we could transfer manufacturing from one facility to another, the shift would likely be expensive and time-consuming, particularly if we were to maintain the current manufacturing standards procedures at such alternative facility.

Natural disasters, public health crises, political crises, and other catastrophic events or other events outside of our control may damage our facilities or the facilities of third parties on which we depend, and could impact our ability to sell products.

Our headquarters in South San Francisco is located near known earthquake fault zones and is vulnerable to damage from earthquakes. An earthquake or other natural disaster or power shortages or outages could disrupt operations or impair critical systems at our headquarters or at any of our other facilities throughout the world. We, our suppliers, third-party service providers and customers are vulnerable to damage from natural disasters, including fire, floods or monsoons, power loss, communications failures, public health crises, such as pandemics and epidemics, political crises, such as terrorism, war, political instability or other conflict and similar events. For example, in December 2019, a novel strain of coronavirus was reported to have surfaced in Wuhan, China. The extent to which the novel coronavirus impacts our results will depend on future developments, which are highly uncertain and cannot be predicted, including new information which may emerge concerning the severity of the novel coronavirus and the actions to contain the novel coronavirus or treat its impact, among others. If any disaster were to occur, our ability to operate our business at any of our facilities could be seriously, or potentially completely, impaired. In addition, the nature of our activities could cause significant delays in our research programs and commercial activities and make it difficult for us to recover from a disaster. The insurance we maintain may not be adequate to cover our losses resulting from disasters or other business interruptions. Accordingly, an earthquake or other disaster could materially and adversely harm our ability to conduct business.

Delivery of our products could be delayed or disrupted by factors beyond our control, and we could lose customers as a result.

We rely on third-party carriers for the timely delivery of our products. As a result, we are subject to carrier disruptions and increased costs that are beyond our control, including employee strikes, inclement weather and increased fuel costs. Any failure to deliver products to our customers in a timely and accurate manner may damage our reputation and brand and could cause us to lose customers. If our relationship with any of these third-party carriers is terminated or impaired or if any of these third parties are unable to deliver our products, the delivery and acceptance of our products by our customers may be delayed which could harm our business and financial results. The failure to deliver our products in a timely manner may harm our relationship with our customers, increase our costs and otherwise disrupt our operations.

Doing business internationally creates operational and financial risks for our business.

During our fiscal years ended September 30, 2019, 2018 and 2017, and in the three months ended December 31, 2019, 34%, 31%, 23% and 43% respectively, of our revenue was generated from customers located outside of the United States. In connection with our growth strategy, we intend to further expand in international markets. Conducting and launching operations on an international scale requires close coordination of activities across multiple jurisdictions and time zones and consumes significant management resources. If we fail to coordinate and manage these activities effectively, our business, financial condition or results of operations could be adversely affected. International sales entail a variety of risks, including longer payment cycles and difficulties in collecting accounts receivable outside of the United States, currency exchange fluctuations, challenges in staffing and managing foreign operations, tariffs and other trade barriers, unexpected changes in legislative or regulatory requirements of foreign countries into which we sell our products, difficulties in obtaining export licenses or in overcoming other trade barriers, laws and business practices favoring local companies, political and economic instability, difficulties protecting or procuring intellectual property rights, and restrictions resulting in delivery delays and significant taxes or other burdens of complying with a variety of foreign laws.

Changes in the value of the relevant currencies may affect the cost of certain items required in our operations. Changes in currency exchange rates may also affect the relative prices at which we are able to sell products in the same market. Our revenue from international customers may be negatively impacted as increases in the U.S. dollar relative to our international customers' local currency could make our products more expensive, impacting our ability to compete. Our costs of materials from international suppliers may increase if in order to continue doing business with us they raise their prices as the value of the U.S. dollar decreases relative to their local currency. Foreign policies and actions regarding currency valuation could result in actions by the United States and other countries to offset the effects of such fluctuations. The recent global financial downturn has led to a high level of volatility in foreign currency exchange rates and that level of volatility may continue, which could adversely affect our business, financial condition or results of operations.

Our ability to use our net operating loss carryforwards to offset future taxable income may be subject to certain limitations.

In general, under Section 382 of the Internal Revenue Code of 1986, as amended, or the Code, a corporation that undergoes an "ownership change" is subject to limitations on its ability to use its pre-change net operating loss carryforwards, or NOLs, to offset future taxable income. If the Internal Revenue Service challenges our analysis that our existing NOLs will not expire before utilization due to previous ownership changes, our ability to use our NOLs could be limited by Section 382 of the Code. Future changes in our stock ownership, some of which are outside of our control, could result in an ownership change under Section 382 of the Code. Furthermore, our ability to use NOLs of companies that we may acquire in the future may be subject to limitations. For these reasons, we may not be able to use a material portion of the NOLs reflected on our balance sheet, even if we attain profitability.

The enactment of legislation implementing changes in taxation of international business activities, the adoption of other corporate tax reform policies, or changes in tax legislation or policies could impact our future financial position and results of operations.

Corporate tax reform, base-erosion efforts and tax transparency continue to be high priorities in many tax jurisdictions where we intend to have business operations. As a result, policies regarding corporate income and other taxes in numerous jurisdictions are under heightened scrutiny and tax reform legislation is being proposed or enacted in a number of jurisdictions. For example, the Tax Cuts and Jobs Act of 2017, or the Tax Act, signed into law on December 22, 2017, adopting broad U.S. corporate income tax reform will, among other things, reduce the U.S. corporate income tax rate, but will impose base-erosion prevention measures on non-U.S. earnings of U.S. entities as well as a one-time mandatory deemed repatriation tax on accumulated non-U.S. earnings of U.S. entities.

In addition, many countries are beginning to implement legislation and other guidance to align their international tax rules with the Organization for Economic Co-operation's Base Erosion and Profit Shifting recommendations and action plan that aim to standardize and modernize global corporate tax policy, including changes to cross-border tax, transfer-pricing documentation rules, and nexus-based tax incentive practices.

Such legislative initiatives may materially and adversely affect our plans to expand internationally and may negatively impact our financial condition and results of operations generally.

Our inability to collect on our accounts receivable by a significant number of customers may have an adverse effect on our business, financial condition and results of operations.

Sales to our customers are generally made on open credit terms. Management maintains an allowance for potential credit losses. The average days sales outstanding of our trade receivables was 59 days, based on year-end balances and sales for the last 30 days of the year. If our customers' cash flow, working capital, financial conditions or results of operations deteriorate, they may be unable or even unwilling to pay trade receivables owed to us promptly or at all. As a result, we could be exposed to a certain level of credit risk. If a major customer experiences, or a significant number of customers experience, financial difficulties, the effect on us could be material and have an adverse effect on our business, financial condition and results of operations.

Risks related to being a public company

If we fail to maintain proper and effective internal controls, our ability to produce accurate financial statements on a timely basis could be impaired, which would adversely affect our business.

Ensuring that we have adequate internal financial and accounting controls and procedures in place to produce accurate financial statements on a timely basis is a costly and time-consuming effort that needs to be re-evaluated frequently. To ensure the level of segregation of duties customary for a U.S. public company and the requirement to produce timely financial information has created a need for additional resources within the accounting and finance functions. Consequently, we have hired additional resources in the accounting and finance function and continue to reassess the sufficiency of finance personnel in response to these increasing demands and expectations.

Our management is responsible for establishing and maintaining adequate internal control over financial reporting to provide reasonable assurance regarding the reliability of our financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. Our management does not expect that our internal control over financial reporting will prevent or detect all errors and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system's objectives will be met. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud, if any, within our company will have been detected.

Commencing with our fiscal year ending September 30, 2019, we must perform system and process evaluation and testing of our internal control over financial reporting to allow management to report on the effectiveness of our internal control over financial reporting in our Form 10-K filing for that year, as required by Section 404 of the Sarbanes Oxley Act. If we become an accelerated filer or a large accelerated filer under the rules of the SEC, our auditors will also be required by Section 404 to evaluate and test, and issue an audit report on the effectiveness of our internal control over financial reporting. We expect to expend significant resources in developing the necessary documentation and testing procedures required by Section 404. We cannot be certain that the actions we will be taking to improve our internal controls over financial reporting will be sufficient, or that we will be able to implement our planned processes and procedures in a timely manner. In addition, if we are unable to produce accurate financial statements on a timely basis, investors could lose confidence in the reliability of our financial statements, which could cause the market price of our common stock to decline and make it more difficult for us to finance our operations and growth.

We are an emerging growth company and smaller reporting company, and we cannot be certain if the reduced disclosure requirements applicable to emerging growth companies and smaller reporting companies will make our common stock less attractive to investors.

We are an "emerging growth company" as defined in the JOBS Act. Under the JOBS Act, emerging growth companies can delay adopting new or revised accounting standards until such time as those standards apply to private companies. We have irrevocably elected not to avail ourselves of this exemption from new or revised accounting standards and, therefore, we will be subject to the same new or revised accounting standards as other public companies that are not "emerging growth companies."

For as long as we continue to be an emerging growth company, we intend to take advantage of certain other exemptions from various reporting requirements that are applicable to other public companies including, but not limited to, reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements, and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved. We cannot predict if investors will find our common stock less attractive because we will rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may be more volatile.

We will remain an emerging growth company until the earliest of (i) the last day of the fiscal year in which we have total annual gross revenue of $1.07 billion or more; (ii) the last day of our fiscal year following the fifth anniversary of the date of the closing of our initial public offering; (iii) the date on which we have issued more than $1.0 billion in nonconvertible debt during the previous three years; or (iv) the date on which we are deemed to be a large accelerated filer under the rules of the SEC.

We are also a "smaller reporting company," meaning that the market value of our stock held by non-affiliates plus the proposed aggregate amount of gross proceeds to us as a result of this offering is less than $700 million and our annual revenue is less than $100 million during the most recently completed fiscal year. We may continue to be a smaller reporting company if either (i) the market value of our stock held by non-affiliates is less than $250 million or (ii) our annual revenue is less than $100 million during the most recently completed fiscal year and the market value of our stock held by non-affiliates is less than $700 million. If we are a smaller reporting company at the time we cease to be an emerging growth company, we may continue to rely on exemptions from certain disclosure requirements that are available to smaller reporting companies. Specifically, as a smaller reporting company we may choose to present only the two most recent fiscal years of audited financial statements in our Annual Report on Form 10-K and, similar to emerging growth companies, smaller reporting companies have reduced disclosure obligations regarding executive compensation.

The requirements of being a public company may strain our resources, divert management's attention and affect our ability to attract and retain qualified board members.

As a public company, we will be subject to the reporting requirements of the Exchange Act, the Sarbanes-Oxley Act, the Dodd-Frank Wall Street Reform and Consumer Protection Act, or the Dodd-Frank Act, the listing requirements of the stock exchange on which our common stock is traded and other applicable securities rules and regulations. The SEC and other regulators have continued to adopt new rules and regulations and make additional changes to existing regulations that require our compliance. Stockholder activism, the current political environment, and the current high level of government intervention and regulatory reform may lead to substantial new regulations and disclosure obligations, which may lead to additional compliance costs and impact, in ways we cannot currently anticipate, the manner in which we operate our business. Compliance with these rules and regulations may cause us to incur additional accounting, legal and other expenses that we did not incur as a private company. We also anticipate that we will incur costs associated with corporate governance requirements, including requirements under securities laws, as well as rules and regulations implemented by the SEC and the Nasdaq Global Select Market, particularly after we are no longer an "emerging growth company." We expect these rules and regulations to increase our legal and financial compliance costs and to make some activities more time-consuming and costly. Furthermore, these rules and regulations could make it more difficult or costlier for us to obtain certain types of insurance, including director and officer liability insurance, and we may be forced to accept reduced policy limits and coverage or incur substantially higher costs to obtain the same or similar coverage. The impact of these requirements could also make it more difficult for us to attract and retain qualified persons to serve on our board of directors, our board committees or as executive officers. We are currently evaluating and monitoring developments with respect to these rules and regulations, and we cannot predict or estimate the amount of additional costs we may incur or the timing of such costs.

Risks related to our intellectual property

Our ability to protect our intellectual property and proprietary technology through patents and other means is uncertain.

Our commercial success depends in part on our ability to protect our intellectual property and proprietary technologies. We rely on patent protection, where appropriate and available, as well as a combination of copyright, trade secret and trademark laws, and nondisclosure, confidentiality and other contractual restrictions to protect our proprietary technology. However, these legal means afford only limited protection and may not adequately protect our rights or permit us to gain or keep any competitive advantage.

As of December 31, 2019, we own 14 issued U.S. patents and 5 issued international patents; three in China, one in Taiwan, and one in Eurasia. There are 171 pending patent applications, including 58 in the United States, 105 international applications and eight applications filed under the Patent Cooperation Treaty. Additionally, we have exclusively licensed a patent portfolio containing six issued patents, including one U.S. patent and five international patents, and nine pending applications, including one in the U.S. and eight international applications. We rely on a combination of patent rights, copyrights and trade secrets to protect the proprietary elements of our products. Our policy is to file patent applications to protect technology, inventions and improvements that are important to our business.

Several patent applications covering our technologies have been filed recently. We cannot offer any assurances about which, if any, patents will issue, the breadth of any such patent, or whether any issued patents will be found invalid and unenforceable or will be threatened by third parties. Any successful opposition to these patents or any other patents owned by or, if applicable in the future, licensed to us could deprive us of rights necessary for the practice of our technologies or the successful commercialization of products that we may develop. Since patent applications in the United States and most other countries are confidential for a period of time after filing, we cannot be certain that we were the first to file any patent application related to our technologies or products. Furthermore, an interference proceeding can be provoked by a third party or instituted by the U.S. Patent and Trademark Office, or the USPTO, to determine who was the first to invent any of the subject matter covered by the patent claims of our applications.

Patent law can be highly uncertain and involve complex legal and factual questions for which important principles remain unresolved. In the United States and in many international jurisdictions, policy regarding the breadth of claims allowed in patents can be inconsistent. The U.S. Supreme Court and the Court of Appeals for the Federal Circuit have made, and will likely continue to make, changes in how the patent laws of the United States are interpreted. Similarly, international courts have made, and will likely continue to make, changes in how the patent laws in their respective jurisdictions are interpreted. We cannot predict future changes in the interpretation of patent laws or changes to patent laws that might be enacted into law by U.S. and international legislative bodies.

Moreover, the United States Leahy-Smith American Invents Act, enacted in September 2011, brought significant changes to the U.S. patent system, including a change from a "first to invent" system to a "first to file" system. Under a "first to file" system, assuming the other requirements for patentability are met, the first inventor to file a patent application generally will be entitled to the patent on an invention regardless of whether another inventor had made the invention earlier. Other changes affect the way the patent applications are prosecuted, redefine prior art, and may affect patent litigation. The USPTO developed new regulations and procedures to govern the administration of the Leahy-Smith Act, and many of the substantive changes to patent law associated with the Leahy-Smith Act became effective on March 16, 2013. The Leahy-Smith Act and its implementation could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents, which could have a material adverse effect on our business and financial condition.

If we are unable to obtain, maintain and enforce intellectual property protection, others may be able to make, use, or sell products and technologies substantially the same as ours, which could adversely affect our ability to compete in the market.

We may not pursue or maintain patent protection for our products in every country or territory in which we sell our products and technologies. In addition, our pending U.S. and foreign patent applications may not issue as patents or may not issue in a form that will be sufficient to protect our proprietary technology and gain or keep our competitive advantage. Any patents we have obtained or do obtain may be subject to re-examination, reissue, opposition or other administrative proceedings, or may be challenged in litigation, and such challenges could result in a determination that the patent is invalid or unenforceable.

Patents have a limited lifespan. Patent terms may be shortened or lengthened by, for example, terminal disclaimers, patent term adjustments, supplemental protection certificates, and patent term extensions. Although extensions may be available, the life of a patent, and the protection it affords, is limited. Patent term extensions and supplemental protection certificates, and the like, may be impacted by the regulatory process and may not significantly lengthen patent term. Non-payment or delay in payment of patent fees or annuities, delay in patent filings or delay in extension filing, whether intentional or unintentional, may also result in the loss of patent rights important to our business. In such an event, competitors might be able to enter the market earlier than would otherwise have been the case. In addition, certain countries have compulsory licensing laws under which a patent owner may be compelled to grant licenses to other parties. Furthermore, many countries limit the enforceability of patents against other parties, including government agencies or government contractors. In these countries, the patent owner may have limited remedies, which could materially diminish the value of any patents.

We cannot be certain that the steps we have taken will prevent unauthorized use or unauthorized reverse engineering of our technology. In addition, competitors may be able to design alternative methods or devices that avoid infringement of our patents. To the extent our intellectual property, including licensed intellectual property, offers inadequate protection, or is found to be invalid or unenforceable, we are exposed to a greater risk of direct competition. If our intellectual property does not provide adequate protection against our competitors' products, our competitive position could be adversely affected, as could our business. Both the patent application process and the process of managing patent disputes can be time consuming and expensive.

Monitoring unauthorized use of our intellectual property is difficult and costly. From time to time, we review our competitors' products, and may in the future seek to enforce our patents or other rights against potential infringement. However, the steps we have taken to protect our proprietary rights may not be adequate to prevent misappropriation of our intellectual property. We may not be able to detect unauthorized use of, or take appropriate steps to enforce, our intellectual property rights. We cannot guarantee that any of our patent searches or analyses, including but not limited to the identification of relevant patents, the scope of patent claims or the expiration of relevant patents, are complete or thorough, nor can we be certain that we have identified each and every third-party patent and pending application in the United States and abroad that is relevant to or necessary for the commercialization of our products in any jurisdiction. For example, U.S. applications filed before November 29, 2000 and certain U.S. applications filed after that date that will not be filed outside the United States remain confidential until patents issue. Patent applications in the United States and elsewhere are published approximately 18 months after the earliest filing for which priority is claimed. Therefore, patent applications covering our product candidates or technologies could have been filed by others without our knowledge. Additionally, pending patent applications that have been published can, subject to certain limitations, be later amended in a manner that could cover our platform technologies, our products or the use of our products or technologies. The scope of a patent claim is determined by the interpretation of the law, the written disclosure in a patent and the patent's prosecution history. Our interpretation of the relevance or the scope of a patent or a pending application may be incorrect, which may negatively impact our ability to market our products. We may incorrectly determine that our products are not covered by a third-party patent or may incorrectly predict whether a third party's pending application will issue with claims of relevant scope. Our determination of the expiration date of any patent in the United States or abroad that we consider relevant may be incorrect, which may negatively impact our ability to develop and market our product candidates.

Any inability to meaningfully protect our intellectual property could result in competitors offering products or technologies that incorporate our products or technologies, which could reduce demand for our products or technologies. A court or other judicial body may decide that the patent we seek to enforce is invalid or unenforceable or may refuse to stop the other party from using the technology at issue on the grounds that the patent in question does not cover the technology in question. An adverse result in any litigation could put one or more of our patents at risk of being invalidated or interpreted narrowly. Some of our competitors may be able to devote significantly more resources to intellectual property litigation and may have significantly broader patent portfolios to assert against us if we assert our rights against them.

We cannot predict the breadth of claims that may be allowed or enforced in our patents or in third-party patents. For example:

- we might not have been the first to make the inventions covered by each of our pending patent applications;
- we might not have been the first to file patent applications for these inventions;
- others may independently develop similar or alternative products and technologies or duplicate any of our products and technologies;
- it is possible that none of our pending patent applications will result in issued patents, and even if they issue as patents, they may not provide a basis for commercially viable products, or may not provide us with any competitive advantages, or may be challenged and invalidated by third parties;
- we may not develop additional proprietary products and technologies that are patentable;
- the patents of others may have an adverse effect on our business; and
- we apply for patents covering our products and technologies and uses thereof, as we deem appropriate. However, we may fail to apply for patents on important products and technologies in a timely fashion or at all.

We may not be able to protect our intellectual property rights throughout the world.

Filing, prosecuting and defending patents on our technologies and products in all countries throughout the world would be prohibitively expensive. In addition, the laws of some non-U.S. countries do not protect intellectual property rights to the same extent as the laws of the United States, and many companies have encountered significant problems in protecting and defending such rights in foreign jurisdictions. Consequently, we may not be able to prevent third parties from practicing our inventions in all countries outside the United States, or from selling or importing products made using our inventions in and into the United States or other jurisdictions. Competitors may use our technologies in jurisdictions where we have not obtained patent protection to develop their own technologies and products and further, may export otherwise infringing products to territories where we have patent protection, but enforcement is not as strong as that in the United States. These products may compete with our products, and our patents or other intellectual property rights may not be effective or sufficient enough to prevent them from competing.

The legal systems of certain countries, particularly certain developing countries, do not favor the enforcement of patents and other intellectual property protection, particularly those relating to biotechnology, which could make it difficult for us to stop the infringement of our patents. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial cost and divert our efforts and attention from other aspects of our business, could put our own patents at risk of being invalidated or interpreted narrowly and our patent applications at risk of not issuing, and could provoke third parties to assert claims against us. We may not prevail in any lawsuits that we initiate, and the damages or other remedies awarded, if any, may not be commercially meaningful. Accordingly, our efforts to enforce our intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop.

If we are unable to protect the confidentiality of our proprietary information and know-how, the value of our technology and products could be adversely affected.

In addition to pursuing patents on our technology, we take steps to protect our intellectual property and proprietary technology by entering into confidentiality agreements and intellectual property assignment agreements with our employees, consultants, corporate partners and, when needed, our advisors. Such agreements may not be enforceable or may not provide meaningful protection for our trade secrets or other proprietary information in the event of unauthorized use or disclosure or other breaches of the agreements, and we may not be able to prevent such unauthorized disclosure. Monitoring unauthorized disclosure is difficult, and we do not know whether the steps we have taken to prevent such disclosure are, or will be, adequate. If we were to enforce a claim that a third party had illegally obtained and was using our trade secrets, it would be expensive and time consuming, and the outcome would be unpredictable. In addition, courts outside the United States may be less willing to protect trade secrets.

Trade secrets and know-how can be difficult to protect as trade secrets, and know-how will over time be disseminated within the industry through independent development, the publication of journal articles, and the movement of personnel skilled in the art from company to company. In addition, because we may rely on third parties in the development of our products, we may, at times, share trade secrets with them. We seek to protect our proprietary technology in part by entering into confidentiality agreements and, if applicable, material transfer agreements, consulting agreements or other similar agreements with third parties prior to beginning research or disclosing proprietary information. These agreements typically limit the rights of the third parties to use or disclose our confidential information, including our trade secrets. Despite the contractual provisions employed when working with third parties, the need to share trade secrets and other confidential information increases the risk that such trade secrets become known by our competitors, are inadvertently incorporated into the technology of others, or are disclosed or used in violation of these agreements. If we are unable to prevent material disclosure of the intellectual property related to our technologies to third parties, we will not be able to establish or maintain a competitive advantage in our market, which could materially adversely affect our business, results of operations and financial condition.

Despite our efforts to protect our trade secrets, our competitors may discover our trade secrets, either lawfully or through breach of our agreements with third parties, independent development or publication of information by any of our third-party collaborators. Competitors could willfully infringe our intellectual property rights, design around our protected technology or develop their own competitive technologies that fall outside of our intellectual property rights. In addition, if any of our trade secrets were to be lawfully obtained or independently developed by a competitor, we would have no right to prevent such competitor from using that technology or information to compete with us, which could harm our competitive position. Given that our proprietary position is based, in part, on our know-how and trade secrets, a competitor's discovery of our trade secrets or other unauthorized use or disclosure would impair our competitive position and may have an adverse effect on our business and results of operations.

We may also be subject to claims that former employees, collaborators or other third parties have an ownership interest in our patents or other intellectual property. We were recently involved in litigation of this kind with Agilent. While we have settled this dispute, there can be no assurance that future litigation will not be initiated by the parties. Some of our employees were previously employed at universities or biotechnology or biopharmaceutical companies, including our competitors or potential competitors. We may be subject to claims that these employees or we have inadvertently or otherwise used or disclosed trade secrets or other proprietary information of their former employers. Litigation may be necessary to defend against these and other claims challenging inventorship or ownership. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights. A loss of key research personnel or their work product could hamper our ability to commercialize, or prevent us from commercializing, our products and technologies. Such an outcome could have a material adverse effect on our business. Even if we are successful in defending against such claims, litigation could result in substantial costs and distraction to management and other employees.

We may be involved in lawsuits to protect or enforce our patents and proprietary rights, to determine the scope, coverage and validity of others' proprietary rights, or to defend against third party claims of intellectual property infringement that could require us to spend significant time and money and could prevent us from selling our products or impact our stock price.

Litigation may be necessary for us to enforce our patent and proprietary rights and/or to determine the scope, coverage and validity of others' proprietary rights. Litigation on these matters has been prevalent in our industry and we expect that this will continue. As the biotechnology and synthetic biology industries expand and more patents are issued, the risk increases that there may be patents issued to third parties that relate to our technologies and products of which we are not aware or that we may need to challenge to continue our operations as currently contemplated. In addition, our competitors and others may have patents or may in the future obtain patents and claim that the use of our products or processes infringes these patents. As we move into new markets and applications for our products and processes, incumbent participants in such markets may assert their patents and other proprietary rights against us as a means of slowing our entry into such markets or as a means to extract substantial license and royalty payments from us.

To determine the priority of inventions, we may have to initiate and participate in interference proceedings declared by the USPTO that could result in substantial legal fees and could substantially affect the scope of our patent protection. Also, our intellectual property may be subject to significant administrative and litigation proceedings such as invalidity, unenforceability, re-examination and opposition proceedings against our patents. Whether merited or not, we may additionally face allegations that we have infringed the trademarks, copyrights, patents and other intellectual property rights of third parties, including patents held by our competitors or by non-practicing entities. If we fail to identify and correctly interpret relevant patents, we may be subject to infringement claims. We may also face allegations that our employees have misappropriated the intellectual property rights of their former employers or other third parties. The outcome of any litigation or other proceeding is inherently uncertain and the results might not be favorable to us. For more information on our current legal and regulatory proceedings, see the section of this Form 10-Q captioned "Legal proceedings."

In patent litigation in the United States, defendant counterclaims alleging invalidity or unenforceability are commonplace. Grounds for a validity challenge could be an alleged failure to meet any of several statutory requirements, for example, lack of novelty, obviousness or non-enablement. Grounds for an unenforceability assertion could be an allegation that someone connected with prosecution of the patent withheld relevant information from the USPTO or made a misleading statement during prosecution. The outcome following legal assertions of invalidity and unenforceability during patent litigation is unpredictable. If a defendant were to prevail on a legal assertion of invalidity or unenforceability, we would lose at least part, and perhaps all, of the patent protection on certain aspects of our platform technology. Such a loss of patent protection could have a material and adverse effect on our business, financial condition, results of operations and prospects.

Patent infringement suits can be expensive, lengthy and disruptive to business operations. We could incur substantial costs and divert the attention of our management and technical personnel in prosecuting or defending against any claims and may harm our reputation. Some of our competitors may be able to sustain the costs of complex patent litigation more effectively than we can because they have substantially greater resources. There can be no assurance that we will prevail in any suit initiated against us by third parties, successfully settle or otherwise resolve patent infringement claims. If we are unable to successfully settle claims on terms acceptable to us, we may be required to engage in or continue costly, unpredictable and time-consuming litigation and may be prevented from or experience substantial delays in marketing our technologies and products. Furthermore, parties making claims against us may be able to obtain injunctive or other relief, which could block our ability to develop, commercialize and sell products, and could result in the award of substantial damages against us, including treble damages and attorneys' fees and costs in the event that we are found to be a willful infringer of third party patents.

In the event of a successful claim of infringement against us, we may be required to obtain one or more licenses from third parties, which we may not be able to obtain at a reasonable cost, if at all. We could, therefore, incur substantial costs related to royalty payments for licenses obtained from third parties, which could negatively affect our gross margins. In addition, we could encounter delays in product introductions while we attempt to develop alternative methods or products to avoid infringing third-party patents or proprietary rights. Defense of any lawsuit or failure to obtain any required licenses on favorable terms could prevent us from commercializing our products, and the risk of a prohibition on the sale of any of our products could adversely affect our ability to grow and gain market acceptance for our products.

Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation. In addition, during the course of this kind of litigation, there could be public announcements of the results of hearings, motions or other interim proceedings or developments. If securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on the price of our common stock. Such litigation or proceedings could substantially increase our operating losses and reduce the resources available for development activities or any future sales, marketing or distribution activities. Finally, any uncertainties resulting from the initiation and continuation of any litigation could have a material adverse effect on our ability to raise the funds necessary to continue our operations.

In addition, our agreements with some of our suppliers, distributors, customers and other entities with whom we do business may require us to defend or indemnify these parties to the extent they become involved in infringement claims against us, including the claims described above. We could also voluntarily agree to defend or indemnify third parties in instances where we are not obligated to do so if we determine it would be important to our business relationships. If we are required or agree to defend or indemnify any of these third parties in connection with any infringement claims, we could incur significant costs and expenses that could adversely affect our business, operating results, or financial condition.

We may not be successful in obtaining or maintaining necessary rights to our products and technologies through acquisitions and in-licenses, and our intellectual property agreements with third parties may involve unfavorable terms or be subject to disagreements over contract interpretation.

We may find that our programs require the use of proprietary rights held by third parties, and the growth of our business may depend in part on our ability to acquire, in-license or use these proprietary rights. We may be unable to acquire or in-license compositions, methods of use, processes or other third-party intellectual property rights from third parties that we identify as necessary for our products and technologies. The licensing and acquisition of third-party intellectual property rights is a competitive area, and other companies may also be pursuing strategies to license or acquire third-party intellectual property rights that we may consider attractive. These companies may have a competitive advantage over us due to their size, financial resources and greater commercialization capabilities. In addition, companies that perceive us to be a competitor may be unwilling to assign or license rights to us. Moreover, collaboration arrangements are complex and time-consuming to negotiate, document, implement and maintain. We may not be successful in our efforts to establish and implement collaborations or other alternative arrangements should we so choose to enter into such arrangements. We also may be unable to license or acquire third-party intellectual property rights on terms that would be favorable to us or would allow us to make an appropriate return on our investment.

We engage in discussions regarding other possible commercial and cross-licensing agreements with third parties from time to time. There can be no assurance that these discussions will lead to the execution of commercial license or cross-license agreements or that such agreements will be on terms that are favorable to us. Even if we are able to obtain a license to intellectual property of interest, we may not be able to secure exclusive rights, in which case others could use the same rights and compete with us. In addition, if we enter into cross-licensing agreements, there is no assurance that we will be able to effectively compete against others who are licensed under our patents.

In addition, provisions in our licensing and other intellectual property agreements may be susceptible to multiple interpretations. The resolution of any contract interpretation disagreement that may arise could affect the scope of our rights to the relevant intellectual property or technology or affect financial or other obligations under the relevant agreement, either of which could have a material adverse effect on our business, financial condition, results of operations and prospects.

We have not yet registered some of our trademarks in all of our potential markets, and failure to secure those registrations could adversely affect our business.

Some of our trademark applications may not be allowed for registration, and our registered trademarks may not be maintained or enforced. In addition, in the U.S. Patent and Trademark Office and in comparable agencies in many foreign jurisdictions, third parties are given an opportunity to oppose pending trademark applications and to seek to cancel registered trademarks. Opposition or cancellation proceedings may be filed against our trademarks, and our trademarks may not survive such proceedings.

In addition, third parties may file first for our trademarks in certain countries. If they succeed in registering such trademarks, and if we are not successful in challenging such third-party rights, we may not be able to use these trademarks for marketing our products and technologies in those countries. Over the long-term, if we are unable to establish name recognition based on our trademarks, then our marketing abilities may be materially adversely impacted.

We depend on certain technologies that are licensed to us. We do not control these technologies and any loss of our rights to them could prevent us from selling our products.

We rely on, or may in the future rely on, licenses in order to be able to use various proprietary technologies that are material to our business. We do not or will not own the patents that underlie these licenses. Our rights to use the technology we license are subject to the negotiation of, continuation of and compliance with the terms of those licenses. In some cases, we do not or will not control the prosecution, maintenance, or filing of the patents to which we hold licenses, or the enforcement of these patents against third parties. Some of our patents and patent applications were either acquired from another company who acquired those patents and patent applications from yet another company or are licensed from a third party. For example, Twist Bioscience acquired Genome Compiler Corporation in 2016, and Genome Compiler had a non-exclusive license to U.S. Patent No. 7,805,252 owned by DNA 2.0. Thus, these patents and patent applications are not written by us or our attorneys, and we did not have control over the drafting and prosecution. The former patent owners and our licensors might not have given the same attention to the drafting and prosecution of these patents and applications as we would have if we had been the owners of the patents and applications and had control over the drafting and prosecution. We cannot be certain that drafting and/or prosecution of the licensed patents and patent applications by the licensors have been or will be conducted in compliance with applicable laws and regulations or will result in valid and enforceable patents and other intellectual property rights.

Our rights to use the technology we license is subject to the validity of the owner’s intellectual property rights. Enforcement of our licensed patents or defense or any claims asserting the invalidity of these patents is often subject to the control or cooperation of our licensors. Legal action could be initiated against the owners of the intellectual property that we license. Even if we are not a party to these legal actions, an adverse outcome could harm our business because it might prevent these other companies or institutions from continuing to license intellectual property that we may need to operate our business.

Our licenses contain or will contain provisions that allow the licensor to terminate the license upon specific conditions. Our rights under the licenses are subject to or will be subject to our continued compliance with the terms of the license, including the payment of royalties due under the license.

Termination of these licenses could prevent us from marketing some or all of our products. Because of the complexity of our products and the patents we have licensed, determining the scope of the license and related royalty obligation can be difficult and can lead to disputes between us and the licensor. An unfavorable resolution of such a dispute could lead to an increase in the royalties payable pursuant to the license. If a licensor believed we were not paying the royalties due under the license or were otherwise not in compliance with the terms of the license, the licensor might attempt to revoke the license. If such an attempt were successful, we might be barred from producing and selling some or all of our products.

Risks related to doing business in China

The People's Republic of China, or the PRC, government has the ability to exercise significant influence and control over our proposed wholly owned foreign entity in China.

The PRC plays a significant role in regulating industrial development by imposing business regulations. It also exercises significant control over the country's economic growth through the allocation of resources, controlling the payment of foreign currency-denominated obligations, setting monetary policy and providing preferential treatment to particular industries or companies.

Additional factors that we may experience in connection with setting up operations in China that may adversely affect our business and results of operations include:

- our inability to enforce or obtain a remedy under our agreements;
- PRC restrictions on foreign investment that could impair our ability to conduct our business or acquire or contract with other entities in the future;
- restrictions on currency exchange that may limit our ability to use cash flow most effectively or to repatriate our investments;
- fluctuations in currency values;
- increased challenges of defending our intellectual property;
- cultural, language and managerial differences that may reduce our overall performance; and
- political instability in China.

We may not be able to enforce our rights in China.

China's legal and judicial system may negatively impact foreign investors. The legal system in China is evolving rapidly, and the enforcement of laws is inconsistent. It may be impossible to obtain swift and equitable enforcement of laws or enforcement of the judgment of one court by a court of another jurisdiction. China's legal system is based on civil law or written statutes and a decision by one judge does not set a legal precedent that must be followed by judges in other cases. In addition, the interpretation of Chinese laws may vary to reflect domestic political changes.

There are substantial uncertainties regarding the interpretation and application to our business of PRC laws and regulations, since many of the rules and regulations that companies face in China are not made public. The effectiveness of newly enacted laws, regulations or amendments may be delayed, resulting in detrimental reliance by foreign investors. We cannot predict what effect the interpretation of existing or new PRC laws or regulations may have on the proposed business of our wholly foreign owned entity.

China is a developing nation governed by a one-party communist government and susceptible to political, economic, and social upheaval that could disrupt the economy.

China is a developing country governed by a one-party government. China is also a country with an extremely large population, wide income gaps between rich and poor and between urban and rural residents, minority ethnic and religious populations, and growing access to information about the different social, economic, and political systems found in other countries. China has also experienced extremely rapid economic growth over the last decade, and its legal and regulatory systems have had to change rapidly to accommodate this growth. If China experiences political or economic upheaval, labor disruptions or other organized protests, nationalization of private businesses, civil strife, strikes, acts of war and insurrections, this may disrupt China's economy and could materially and adversely affect the financial performance of our proposed wholly foreign owned entity.

If relations between China and the U.S. deteriorate, our business in the United States and China may be materially and adversely affected.

The relationship between China and the U.S. is subject to periodic tension. Relations may also be compromised if the U.S. becomes a more active advocate of Taiwan or pressures the PRC government regarding its monetary, economic or social policies. Changes in political conditions in China and changes in the state of China-U.S. relations are difficult to predict and could adversely affect the

operations or financial condition of our proposed wholly owned foreign owned entity. In addition, because of our involvement in the Chinese market, any deterioration in political or trade relations might cause a public perception in the U.S. or elsewhere that might cause our products to become less attractive. A proposed enhancement of U.S. export controls is expected to apply to U.S. technology exports to China and Chinese companies, in addition to a more stringent review of foreign investment in U.S. technology companies by the Committee on Foreign Investment in the United States. We cannot predict what effect any changes in China-U.S. relations may have on our ability to access capital or effectively do business in China, including through the proposed business of our proposed wholly foreign owned entity.

Governmental control of currency conversion may limit our ability to utilize our revenues effectively and affect the value of your investment.

The PRC government imposes controls on the convertibility of the Chinese currency, Renminbi, into foreign currencies and, in certain cases, the remittance of currency out of China. Under existing PRC foreign exchange regulations, payments of current account items, including profit distributions, interest payments and trade and service-related foreign exchange transactions, can be made in foreign currencies without prior approval of State Administration of Foreign Exchange, or SAFE, by complying with certain procedural requirements. However, in practice sometimes payment of current account items may be subject to delay and other restrictions. Furthermore, approval from or registration with appropriate government authorities is required where Renminbi is to be converted into foreign currency and remitted out of China to pay capital expenses such as the repayment of loans denominated in foreign currencies.

In light of the flood of capital outflows of China in 2016 due to the weakening Renminbi, the PRC government has imposed more restrictive foreign exchange policies and stepped up scrutiny of major outbound capital movement including overseas direct investment.

More restrictions and substantial vetting process are put in place by SAFE to regulate cross-border transactions falling under the capital account. The PRC government may at its discretion further restrict access in the future to foreign currencies for current account transactions. Therefore, if we receive revenues in Renminbi by our proposed wholly foreign owned entity or otherwise, due to China’s foreign exchange control, such revenues may not be converted to foreign currency and remitted out of China in a timely manner.

Risks relating to owning our common stock

The market price of our common stock is likely to be volatile and could fluctuate or decline, resulting in a substantial loss of your investment.

The market price of our common stock could be subject to wide fluctuations in response to, among other things, the factors described in this “Risk factors” section or otherwise, and other factors beyond our control, such as fluctuations in the valuations of companies perceived by investors to be comparable to us.

Furthermore, the stock markets have experienced price and volume fluctuations that have affected and continue to affect the market prices of equity securities of many companies. These fluctuations often have been unrelated or disproportionate to the operating performance of those companies. These broad market fluctuations, as well as general economic, systemic, political and market conditions, such as recessions, interest rate changes or international currency fluctuations, may negatively affect the market price of our common stock.

Factors that could cause the market price of our common stock to fluctuate significantly include:

- actual or anticipated fluctuations in our financial condition and operating results, including fluctuations in our quarterly and annual results;
- announcements of technological innovations by us or our competitors;
- overall conditions in our industry and the markets in which we operate;
- addition or loss of significant customers, or other developments with respect to significant customers;
- changes in laws or regulations applicable to our products;
- actual or anticipated changes in our growth rate relative to our competitors;
- announcements by us or our competitors of significant acquisitions, strategic partnerships, joint ventures or capital commitments;
- additions or departures of key personnel;

- competition from existing products or new products that may emerge;
- issuance of new or updated research or reports by securities analysts;
- fluctuations in the valuation of companies perceived by investors to be comparable to us;
- disputes or other developments related to proprietary rights, including patents, litigation matters, and our ability to obtain intellectual property protection for our technologies;
- announcement or expectation of additional financing efforts;
- sales of our common stock by us or our stockholders;
- share price and volume fluctuations attributable to inconsistent trading volume levels of our shares;
- the expiration of contractual lock-up agreements with our executive officers, directors and stockholders; and
- general economic and market conditions.

In the past, many companies that have experienced volatility in the market price of their stock have become subject to securities class action litigation. We may be the target of this type of litigation in the future. Securities litigation against us could result in substantial costs and divert our management's attention from other business concerns, which could harm our business.

If securities or industry analysts do not publish research or reports about our business or publish negative reports about our business, our share price and trading volume could decline.

The trading market for our common stock will depend on the research and reports that securities or industry analysts publish about us or our business and we will not have any control over such analysts. If one or more of the analysts who cover us downgrade our shares or change their opinion of our shares, our share price would likely decline. If one or more of these analysts cease coverage of our company or fail to regularly publish reports on us, we could lose visibility in the financial markets, which could cause our share price or trading volume to decline.

Future sales and issuances of our common stock or rights to purchase common stock, including pursuant to our equity incentive plans, could result in additional dilution of the percentage ownership of our stockholders and could cause the stock price of our common stock to decline.

In the future, we may sell common stock, convertible securities or other equity securities in one or more transactions at prices and in a manner, we determine from time to time. We also expect to issue common stock to employees and directors pursuant to our equity incentive plans. If we sell common stock, convertible securities or other equity securities in subsequent transactions, or common stock is issued pursuant to equity incentive plans, investors may be materially diluted. New investors in such subsequent transactions could gain rights, preferences and privileges senior to those of holders of our common stock.

We have never paid dividends on our capital stock and we do not intend to pay dividends for the foreseeable future. Consequently, any gains from an investment in our common stock will likely depend on whether the price of our common stock increases.

We have never declared or paid any dividends on our common stock and do not intend to pay any dividends in the foreseeable future. We anticipate that we will retain all of our future earnings for use in the operation of our business and for general corporate purposes. Any determination to pay dividends in the future will be at the discretion of our board of directors. Accordingly, investors must rely on sales of their common stock after price appreciation, which may never occur, as the only way to realize any future gains on their investments. Furthermore, we are party to a credit agreement with Silicon Valley Bank which contains negative covenants that limit our ability to pay dividends. For more information, see the section of this Form 10-Q captioned "Management's discussion and analysis of financial condition and results of operation—Liquidity and capital resources." For more information regarding the negative covenants in our loan and security agreement with Silicon Valley Bank, see "Risk factors—Our credit facility contains restrictions that limit our flexibility in operating our business."

Our charter documents and Delaware law could prevent a takeover that stockholders consider favorable and could also reduce the market price of our stock.

Our amended and restated certificate of incorporation and our amended and restated bylaws will contain provisions that could delay or prevent a change in control of our company. These provisions could also make it more difficult for stockholders to elect directors and take other corporate actions. These provisions include:

- providing for a classified board of directors with staggered, three-year terms;

- authorizing our board of directors to issue preferred stock with voting or other rights or preferences that could discourage a takeover attempt or delay changes in control;
- prohibiting cumulative voting in the election of directors;
- providing that vacancies on our board of directors may be filled only by a majority of directors then in office, even though less than a quorum;
- prohibiting the adoption, amendment or repeal of our amended and restated bylaws or the repeal of the provisions of our amended and restated certificate of incorporation regarding the election and removal of directors without the required approval of at least 66.67% of the shares entitled to vote at an election of directors;
- prohibiting stockholder action by written consent;
- limiting the persons who may call special meetings of stockholders; and
- requiring advance notification of stockholder nominations and proposals.

These provisions may frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace members of our board of directors, which is responsible for appointing the members of our management. In addition, the provisions of Section 203 of the Delaware General Corporate Law, or the DGCL, govern us. These provisions may prohibit large stockholders, in particular those owning 15% or more of our outstanding voting stock, from merging or combining with us for a certain period of time without the consent of our board of directors.

These and other provisions in our amended and restated certificate of incorporation and our amended and restated bylaws and under Delaware law could discourage potential takeover attempts, reduce the price investors might be willing to pay in the future for shares of our common stock and result in the market price of our common stock being lower than it would be without these provisions.

Insiders have substantial control over us and will be able to influence corporate matters.

As of September 30, 2019, our directors and executive officers and their affiliates beneficially own, in the aggregate, approximately 27.2% of our outstanding capital stock. As a result, these stockholders will be able to exercise significant influence over all matters requiring stockholder approval, including the election of directors and approval of significant corporate transactions, such as a merger or other sale of our company or its assets. This concentration of ownership could limit stockholders' ability to influence corporate matters and may have the effect of delaying or preventing a third party from acquiring control over us.

Claims for indemnification by our directors and officers may reduce our available funds to satisfy successful third-party claims against us and may reduce the amount of money available to us.

Our amended and restated certificate of incorporation and amended and restated bylaws provide that we will indemnify our directors and officers, in each case to the fullest extent permitted by Delaware law.

In addition, as permitted by Section 145 of the DGCL, our amended and restated bylaws and our indemnification agreements that we have entered into with our directors and officers provide that:

- We will indemnify our directors and officers for serving us in those capacities or for serving other business enterprises at our request, to the fullest extent permitted by Delaware law. Delaware law provides that a corporation may indemnify such person if such person acted in good faith and in a manner such person reasonably believed to be in or not opposed to the best interests of the registrant and, with respect to any criminal proceeding, had no reasonable cause to believe such person's conduct was unlawful;
- We may, in our discretion, indemnify employees and agents in those circumstances where indemnification is permitted by applicable law;
- We are required to advance expenses, as incurred, to our directors and officers in connection with defending a proceeding, except that such directors or officers shall undertake to repay such advances if it is ultimately determined that such person is not entitled to indemnification;
- We will not be obligated pursuant to our amended and restated bylaws to indemnify a person with respect to proceedings initiated by that person against us or our other indemnitees, except with respect to proceedings authorized by our board of directors or brought to enforce a right to indemnification;

- The rights conferred in our amended and restated bylaws are not exclusive, and we are authorized to enter into indemnification agreements with our directors, officers, employees and agents and to obtain insurance to indemnify such persons; and
- We may not retroactively amend our amended and restated bylaw provisions to reduce our indemnification obligations to directors, officers, employees and agents.

Our amended and restated certificate of incorporation provides that the Court of Chancery of the State of Delaware and the federal district courts of the United States will be the exclusive forum for substantially all disputes between us and our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers or other employees.

Our amended and restated certificate of incorporation provides that the Court of Chancery of the State of Delaware is the sole and exclusive forum for any derivative action or proceeding brought on our behalf, any action asserting a breach of fiduciary duty owed by any of our directors, officers or other employees to us or our stockholders, any action asserting a claim against us arising pursuant to any provisions of the DGCL, our amended and restated certificate of incorporation or our amended and restated bylaws, any action or proceeding asserting a claim as to which the Delaware General Corporation Law confers jurisdiction upon the Court of Chancery of the State of Delaware or any action asserting a claim against us that is governed by the internal affairs doctrine, subject in each case to the Court of Chancery having personal jurisdiction over the parties named as defendants therein. The exclusive forum provision will not apply to suits brought to enforce any liability or duty created by the Exchange Act or any other claim for which the federal courts have exclusive jurisdiction. The choice of forum provision may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers or other employees, which may discourage such lawsuits against us and our directors, officers and other employees. If a court were to find the choice of forum provision contained in our amended and restated certificate of incorporation to be inapplicable or unenforceable in an action, we might incur additional costs associated with resolving such action in other jurisdictions.

In addition, our amended and restated certificate of incorporation provides that the U.S. federal district courts are the exclusive forum for the resolution of any complaint asserting a cause of action arising under the Securities Act. Our exclusive forum provision will not relieve us of our duties to comply with the federal securities laws and the rules and regulations thereunder, and our stockholders will not be deemed to have waived our compliance with these laws, rules and regulations.

The enforceability of similar federal court choice of forum provisions in other companies' certificates of incorporation has been challenged in legal proceedings, and it is possible that a court could find our federal court choice of forum provision to be inapplicable or unenforceable. If a court were to find either of the choice of forum provisions contained in our amended and restated certificate of incorporation to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions.

For example, on December 19, 2018, the Court of Chancery of the State of Delaware issued an opinion in *Sciabacucchi v. Salzberg*, C.A. No. 2017-0931-JTL, invalidating provisions in the certificates of incorporation of Delaware companies that purport to designate federal district courts as the exclusive forum in which a stockholder could bring a claim under the Securities Act. The Court of Chancery held that a Delaware corporation can only use its constitutive documents to bind a plaintiff to a particular forum where the claim involves rights or relationships established by or under Delaware's corporate law. In light of the *Sciabacucchi* decision, we do not currently intend to enforce our federal forum selection provision unless the *Sciabacucchi* decision is appealed and the Supreme Court for the State of Delaware reverses the decision. If the Supreme Court for the State of Delaware affirms the Delaware Chancery Court's decision, we intend to seek approval by our stockholders to amend the amended and restated certificate of incorporation at our next regularly scheduled annual meeting of stockholders to remove the invalid provision.

Item 2. ***Unregistered sales of equity securities and use of proceeds***

Sales of unregistered securities

None.

Use of proceeds from public offering of common stock

On October 30, 2018, our registration statement on Form S-1 (Registration No. 333-227672) was declared effective by the SEC for our initial public offering pursuant to which we registered an aggregate of 5,000,000 shares of our common stock at an initial public offering price of $14.00 per share for an aggregate price of $70.0 million. Sale of an additional 750,000 shares was registered upon exercise of the underwriters' option to purchase additional shares at an offering price of $14.00 per share for an aggregate price of approximately $10.5 million. The underwriters of the offering were J.P. Morgan Securities LLC, Cowen and Company, LLC, Allen & Company LLC, and Robert W. Baird & Co Incorporated. We paid the underwriters of our initial public offering underwriting discounts and commissions totaling $5.6 million, also, we incurred $5.3 million in offering costs. Thus, the net offering proceeds, after deducting underwriting discounts and commissions and offering expenses, were $69.6 million.

We have begun using and intend to use the net proceeds from this offering primarily to (i) improve and update our platform and core technologies, (ii) expand our sales and marketing capabilities in the United States and other geographies, including China, (iii) continue to expand in the pharmaceutical biologics drug discovery and DNA data storage markets, (iv) establish our operations in China, and (v) for working capital and general corporate purposes. While we have no current agreements, commitments or understandings for any specific strategic acquisitions or in-licenses at this time, we may use a portion of the net proceeds for these purposes.

Item 3. ***Defaults upon senior securities***

None.

Item 4. ***Mine safety disclosures***

Not applicable.

Item 5. ***Other information***

None

Item 6. ***Exhibits***

Exhibit Number	Description	Filed / Furnished / Incorporated from Form
10.1	Settlement Agreement among Agilent Technologies, Inc., Twist Bioscience Corp., Emily Leproust, Siyuan Chen and Solange Glaize, dated February 6, 2020	Filed herewith
31.1	Certification pursuant to Section 302 of the Sarbanes-Oxley Act of 2002, Rule 13(a)-14(a)/15d-14(a), by President and Chief Executive Officer.	Filed herewith
31.2	Certification pursuant to Section 302 of the Sarbanes-Oxley Act of 2002, Rule 13(a)-14(a)/15d-14(a), by President and Chief Financial Officer.	Filed herewith
32.1†	Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, by President and Chief Executive Officer.	Furnished herewith
32.2†	Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, by President and Chief Executive Officer.	Furnished herewith
101.INS	XBRL Instance Document	Filed herewith
101.SCH	XBRL Taxonomy Extension Schema Document	Filed herewith
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document	Filed herewith
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document	Filed herewith
101.LAB	XBRL Taxonomy Extension Label Linkbase Document	Filed herewith
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document	Filed herewith

† The certifications attached as Exhibits 32.1 and 32.2 that accompany this Quarterly Report on Form 10-Q are not deemed filed with the SEC and are not to be incorporated by reference into any filing of Twist Bioscience Corporation. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date of this Quarterly Report on Form 10-Q, regardless of any general incorporation language contained in any filing.

Table of Contents

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.

February 10, 2020

Twist Bioscience Corporation

By: /s/ James M. Thorburn
James M. Thorburn
Chief Financial Officer

SETTLEMENT AGREEMENT

This Settlement Agreement ("Agreement") is made and entered into this 6th day of February 2020 ("Effective Date") by and between Agilent Technologies, Inc., a Delaware corporation ("Agilent"); Twist Bioscience Corp., a Delaware corporation ("Twist"); Emily Leproust, an individual ("Leproust"); Siyuan Chen, an individual ("Chen"); and Solange Glaize, an individual ("Glaize").

RECITALS

WHEREAS, Agilent, Twist, Leproust, Chen and Glaize are collectively referred to herein as the "Parties" and individually referred to herein as a "Party";

WHEREAS, the Parties are parties to that certain lawsuit known as *Agilent Technologies, Inc. v. Twist Bioscience Corp., et al.*, being Case No. 16-cv-291137 presently pending in the Superior Court of the State of California for the County of Santa Clara, wherein Agilent is Plaintiff, and Twist, Leproust, Chen and Glaize are Defendants and Twist and Leproust are Cross-Complainants (the "Lawsuit");

WHEREAS, Agilent, Twist and Leproust are parties to that certain pending appeal by Agilent to the California Court of Appeal, Sixth Appellate District, being Case No.H046985, wherein Agilent is appealing a May 10, 2019 order entered by the Court in the Lawsuit (the "Appeal"); and

WHEREAS, the Parties mutually recognize that it is in their best interest to compromise and settle the disputes that are the subject of the Lawsuit on the terms set forth herein.

NOW, THEREFORE, WITH REFERENCE TO THE FOREGOING RECITALS, IT IS HEREBY AGREED AS FOLLOWS:

1. No Admissions

This Agreement represents a compromise and settlement of disputed claims, and does not constitute acknowledgement or admission by any Party of any fault or liability whatsoever in connection with any matter or thing.

2. Payment to Agilent

Not later than 14 days following the Effective Date, Twist will pay Agilent the sum of twenty-two million, five hundred thousand dollars ($22,500,000.00) by wire transfer to an account to be designated by Agilent (the "Settlement Payment"). No other payments or royalties are due in connection with this Agreement. Agilent will be responsible for payment of any taxes, duties, and levies to which it is subject as a result of the foregoing payment.

3. Dismissal with Prejudice of Lawsuit

Not later than two days following Agilent's receipt of the Settlement Payment, the Parties, through their counsel of record, will file a Request for Dismissal with Prejudice, dismissing all claims and cross claims in the Lawsuit with prejudice, each party to bear its own fees and costs.

4. Withdrawal of Appeal

Not later than two days following Twist's and Leproust's dismissal of their cross-claims, Agilent, through its counsel of record, will file a stipulation withdrawing the Appeal, each party to bear its own fees and costs.

5. Mutual Releases

For and in consideration of the mutual covenants set forth herein, Agilent hereby acknowledges full and complete satisfaction of, and hereby releases and discharges Twist, Leproust, Chen and Glaize, and each of them, and as well its and their respective current and former subsidiaries, officers, directors, employees, agents and counsel, and each of them, from, any and all Claims, of whatever kind or nature, whether known or unknown, arising or existing prior to the Effective Date, that (a) were asserted or could have been asserted by Agilent in the Lawsuit, (b) relate to any alleged trade secret alleged to have been misappropriated by Twist at any time in the Lawsuit, including the Agilent Documents (the "Trade Secrets"), or (c) arise from the Lawsuit and/or from the facts, acts, occurrences or events that gave rise to the Lawsuit. "Claim" means any judicial, arbitral, administrative or other proceeding, or hearing of any kind in any jurisdiction or before any government agency or authority, as well as any and all claims, cross-claims, actions, causes of action, costs, damages, debts, demands, costs and attorneys' fees, expenses, liabilities, losses, obligations, proceedings, and suits of every kind and nature, liquidated or unliquidated, fixed or contingent, in law, equity, or otherwise. For the avoidance of doubt, other than Claims for infringement of patents within the scope of the License and Covenant Not to Sue granted in Section 6 below, this release does not include Claims for patent infringement for activities following the Effective Date.

For and in consideration of the mutual covenants set forth herein, Twist, Leproust, Chen and Glaize, and each of them, hereby acknowledges full and complete satisfaction of, and hereby releases and discharges Agilent, and as well its current and former subsidiaries, officers, directors, employees, agents and counsel, and each of them, from, any and all Claims, of whatever kind or nature, whether known or unknown,

arising or existing prior to the Effective Date, that (a) were asserted or could have been asserted by Twist, Leproust, Chen, and Glaize in the Lawsuit, or (b) arise from the Lawsuit and/or from the facts, acts, occurrences or events that gave rise to the Lawsuit. For the avoidance of doubt, this release does not include Claims for patent infringement for activities following the Effective Date.

The foregoing releases would run in favor of Agilent's and Twist's customers, suppliers, resellers, distributors, and other supply chain parties, solely in their capacity as such.

Agilent, Twist, Leproust, Chen, and Glaize, each on behalf of itself, herself, himself, and themselves, each specifically intend to release all Claims and potential Claims released in this Section 5, whether known or unknown, and do hereby acknowledge and expressly waive the provisions of Section 1542 of the California Civil Code (and similar provisions in other jurisdictions, whether by statute or common law), which provides:

> **"A general release does not extend to claims that the creditor or releasing party does not know or suspect to exist in his or her favor at the time of executing the release and that, if known by him or her, would have materially affected his or her settlement with the debtor or released party."**

In waiving such protections, the Parties expressly acknowledge this Agreement is intended to include in its effect, without limitation, any and all released Claims the Parties do not know or suspect to exist in its, her, his, or their favor at the time of signing this Agreement, and that this Agreement contemplates the extinguishment of any such Claims. The Parties further acknowledge that it, she, he, or they later may discover facts different from or in addition to those it, she, he, or they now knows or believes to be true regarding the matters released or described in this Agreement and, even so, the Parties agree that the releases and agreements contained in this Agreement will remain effective in all respects notwithstanding any later discovery of any different or additional facts.

6. License and Covenant Not to Sue

Agilent hereby grants Twist a non-exclusive, non-transferable (except as permitted under Section 14), non-sublicensable (except to its customers, suppliers, resellers, distributors, and other supply chain parties, solely in their capacity as such) right to use the alleged Agilent trade secrets asserted in the Lawsuit. Without limiting the releases granted in Section 5, Agilent further covenants and agrees that it will not sue Twist in the future for infringement of any Agilent patent issued or pending as of the Effective Date, or claiming priority thereto, solely to the extent the claims of such patent cover an alleged Agilent trade secret asserted in the Lawsuit. For the avoidance of doubt, this limited license is not intended to and shall not be construed to authorize Twist (or any other person or entity) to file any patent application claiming as an

invention the alleged Agilent trade secrets, but nothing in this Agreement will limit Twist's rights to file any patent application. Nothing in this Agreement constitutes an acknowledgement or admission by Twist as to whether any information constitutes a trade secret.

Any person who has been exposed to alleged Agilent trade secrets asserted in the Lawsuit, either under the Stipulated Protective Order or otherwise, is prohibited from disclosing such alleged trade secrets to any other person or entity. For the avoidance of doubt, however, this prohibition will not impair the ability of Twist employees who have not been exposed to alleged Agilent trade secrets from conducting their ordinary business activities and, in the course of such activities, disclosing information they have no reason to know is an alleged Agilent trade secret.

7. Limitation on Future Claims.

Each Party represents and warrants to the other Parties that (a) it has all requisite legal right, power, and authority to execute, deliver, and perform this Agreement, including but limited to granting the releases, licenses, immunities, covenants, and other rights set forth in this Agreement in accordance with their terms, (b) it has not granted any licenses or other rights that would conflict with the releases, licenses, immunities, covenants, and other rights granted in this Agreement, (c) it has not granted or assigned any other person any rights or interest in the Lawsuit, and (d) it is not aware of any Claims arising out of any acts, occurrences, or events, or facts existing, at any time prior to the Effective Date and that are not released under Section 5 of this Agreement. Each Party covenants that it will not assert any Claim that are inconsistent with the releases, licenses, immunities, covenants, and other rights contemplated by this Agreement, and the foregoing representations and warranties.

8. No License or Warranty

Except as specifically stated in Section 6 and Section 7, nothing herein shall be construed as (a) conferring upon any Party a license, whether express, implied or by estoppel, to any other Party's patents, trade secrets, technology, trademarks, copyrights, know-how or any other intellectual property; (b) conferring upon any Party any right or license, whether express, implied or by estoppel, to use in advertising, publicity or otherwise, in any form, the name of, or any trademark or trade name of, any other Party (or any other Party's subsidiaries or affiliates); or (c) giving any warranty or representation of any kind whatsoever, whether express or implied, with respect to any intellectual property or other information (including Agilent's trade secrets asserted in the Lawsuit), files, or documents, including for example with respect to non-infringement of third-party rights.

9. Protective Order

Nothing herein is intended, or shall be deemed, to or release any obligations owed by the Parties or any other person under the terms of the Stipulated Protective

Order entered in the Lawsuit. Provided, however, that outside counsel for Agilent and Twist may each retain an archival copy of all filings, transcripts, discovery responses, document productions or other materials designated by any of the Parties under the Stipulated Protective Order.

10. Destruction of Agilent Property

Not later than 28 days following the Effective Date, Twist, Leproust, Chen and Glaize shall complete a diligent, good faith search and permanently delete and/or destroy all Documents (defined as the items described in Federal Rule of Civil Procedure 34(a)(1)) that are within any of their possession, custody or control and that originate from Agilent, including without limitation the Documents identified by Agilent during the Lawsuit as originating from Agilent and containing alleged Agilent trade secret information or Agilent confidential information ("Agilent Documents"). The search shall include any device or account within the possession, custody or control of Twist, Leproust, Chen, and Glaize as of the Effective Date. A representative for Twist, Leproust, Chen, and Glaize shall provide Agilent with a written certification that this obligation has been complied with. If Twist, Leproust, Chen or Glaize later discovers any Agilent Document in their possession, then they will promptly delete and/or destroy such Agilent Document, whether electronic or otherwise, in which case, the original failure to delete once cured shall not be considered a breach of this Agreement.

In connection with their prior employment by Agilent, Leproust, Chen and Glaize previously executed the Agreement Regarding Confidential Information and Proprietary Developments, and nothing in this Agreement is intended to limit or affect their ongoing obligations thereunder.

11. Entire Agreement

This Agreement represents the entire agreement between the parties, and supersedes all prior understandings, agreements, drafts, negotiations and discussions concerning its subject matter. This Agreement may not be modified, in whole or in part, except in a writing signed by all Parties.

12. Construction

Counsel for each of the Parties has participated in the drafting of this Agreement as a whole, and no term of this Agreement shall be construed against, or in favor of, any party by reason of the extent to which that party's counsel participated in its drafting.

13. Representation of No Reliance

The Parties each acknowledge that no person or entity has made any promise, representation, or warranties whatsoever, whether expressed, implied, or statutory, not contained in this Agreement, to induce the execution of this Agreement.

14. Successors & Assigns

No Party may assign this Agreement or any rights or obligations under this Agreement to any third party without the prior written consent of the other Parties, except that each of Agilent and Twist may assign this Agreement to a successor in connection with a corporate reorganization, merger, or sale involving all or substantially all of Agilent's or Twist's assets or equity. Any attempted assignment in violation of the foregoing will be null and void. This Agreement is binding on and shall inure to the benefit of the Parties and each of their permitted successors and assigns. The releases granted in Section 5 shall not be construed to release Claims against any successor or assign for its activities prior to the Effective Date.

15. Notice

Any notice to be given under this Agreement shall be made by electronic mail (email) and by overnight mail, addressed to the Parties as follows:

If to Agilent:

Michael Tang
Senior Vice President, Agilent General Counsel and Secretary
Agilent Technologies, Inc.

If to Twist:

Mark Daniels
Senior Vice President, Chief Legal Officer, Chief Ethics and Compliance Officer & Secretary

If to Siyuan Chen:

Siyuan Chen
Twist Bioscience

If to Solange Glaize:

Adam Cashman
Cashman Singer

16. Governing Law

This Agreement has been made and entered into in the State of California, and shall be governed by and construed in accordance with the laws of the State of California, including its choice of law principles.

17. Counterparts

This Agreement may be signed in any number of counterparts or copies or on separate signature pages, which when taken together shall be deemed to be an original for all purposes.

18. Severability

If any term or provision of this Agreement shall be determined to be unenforceable or invalid or illegal in any respect, the unenforceability, invalidity or illegality shall not affect any other term or provision of this Agreement and this Agreement shall be construed as if such unenforceable, invalid or illegal term or provision had never been contained herein.

19. Section Headings

Section numbers and headings have been set forth herein for convenience only, and shall not be construed to limit or enlarge any Party's rights, nor to affect the meaning or interpretation of any part of this Agreement.

20. Alternative Dispute Resolution

The Parties agree to submit any dispute arising out of or related to this Agreement or the Trade Secrets to confidential binding conclusive arbitration in Los Angeles, California, which shall be the sole and exclusive remedy for the resolution of such disputes.

Except as otherwise provided by mutual written agreement, any arbitration relating to this Agreement shall be conducted before Hon. Layn Phillips (Ret.) or, if Judge Phillips is unable to serve, before a single neutral arbitrator selected pursuant to the rules and procedures of Judicial Arbitration & Mediation Services ("JAMS"), such arbitration to be conducted pursuant to the JAMS commercial arbitration rules.

[Signature Pages Follow]

IN WITNESS WHEREOF, this Agreement has been duly executed by the Parties as of the Effective Date.

TWIST BIOSCIENCE CORP.

By: /s/ Emily Leproust
Name: Emily Leproust
Title: CEO
Dated: 2/6/2020

EMILY LEPROUST

By: /s/ Emily Leproust
Dated: 2/6/2020

SIYUAN CHEN

By: /s/ Siyuan Chen
Dated: 2/6/2020

SOLANGE GLAIZE

By: /s/ Solange Glaize
Dated: 2/6/2020

AGILENT TECHNOLOGIES, INC.

By: /s/ Michael Tang
Name: Michael Tang
Title: Senior Vice President, General Counsel and Secretary
Dated: February 6, 2020

Exhibit 31.1

Certification of Principal Executive Officer
pursuant to
Exchange Act Rules 13a-14(a) and 15d-14(a),
as adopted pursuant to
Section 302 of the Sarbanes-Oxley Act of 2002

I, Emily M. Leproust, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Twist Bioscience Corporation for the quarter ended December 31, 2019;

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.

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 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.

/s/ Emily M. Leproust
Emily M. Leproust
President and Chief Executive Officer

Date: February 10, 2020

Exhibit 31.2

Certification of Principal Financial Officer
pursuant to
Exchange Act Rules 13a-14(a) and 15d-14(a),
as adopted pursuant to
Section 302 of the Sarbanes-Oxley Act of 2002

I, James M. Thorburn, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Twist Bioscience Corporation for the quarter ended December 31, 2019;

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.

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 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.

/s/ James M. Thorburn
James M. Thorburn
Chief Financial Officer

Date: February 10, 2020

Exhibit 32.1

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER
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 of Twist Bioscience Corporation (the "Company") on Form 10-Q for the quarterly period ended December 31, 2019, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Emily M. Leproust, Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

1. The Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and

2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: February 10, 2020

/s/ Emily M. Leproust
Emily M. Leproust
President and Chief Executive Officer

Exhibit 32.2

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER
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 of Twist Bioscience Corporation (the "Company") on Form 10-Q for the quarterly period ended December 31, 2019, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, James M. Thorburn, Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

1. The Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and

2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: February 10, 2020

/s/ James M. Thorburn
James M. Thorburn
Chief Financial Officer