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 June 30, 2017

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

For the transition period from to

Commission File No. 001-36847

Invitae Corporation

(Exact name of the registrant as specified in its charter)

Delaware	**27-1701898**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**

1400 16 th Street, San Francisco, California 94103
(Address of principal executive offices, Zip Code)

(415) 374-7782
(Registrant's telephone number, including area code)

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 and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☒ No ☐

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

Large accelerated filer	☐	Accelerated filer	☒
Non-accelerated filer	☐ (Do not check if a smaller reporting company)	Smaller 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 ☒

The number of shares of the registrant's Common Stock outstanding as of July 28, 2017 was 43,544,561.

TABLE OF CONTENTS

PART I — Financi al Information

ITEM 1. Financial Statements.

INVITAE CORPORATION

Condensed Consolidated Balance Sheets
(In thousands, except share and per share amounts)
(Unaudited)

	June 30, 2017	December 31, 2016
Assets		
Current assets:		
Cash and cash equivalents	$ 27,673	$ 66,825
Marketable securities	47,699	25,798
Accounts receivable	2,556	1,153
Prepaid expenses and other current assets	8,278	8,024
Total current assets	86,206	101,800
Property and equipment, net	27,664	23,793
Restricted cash	4,997	4,697
Intangible assets, net	6,467	—
Goodwill	13,477	—
Other assets	397	361
Total assets	$ 139,208	$ 130,651
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable	$ 5,123	$ 3,352
Accrued liabilities	12,715	6,711
Capital lease obligation, current portion	1,817	1,309
Debt, current portion	—	3,381
Total current liabilities	19,655	14,753
Capital lease obligation, net of current portion	2,180	266
Debt, net of current portion	38,975	8,721
Other long-term liabilities	11,234	7,837
Total liabilities	72,044	31,577
Commitments and contingencies (Note 7)		
Stockholders' equity:		
Preferred stock, $0.0001 par value: Authorized: 20,000,000 shares; Issued and outstanding: no shares as of June 30, 2017 and December 31, 2016	—	—
Common stock, $0.0001 par value: Authorized: 400,000,000 shares; Issued and outstanding: 43,543,485 and 41,143,513 shares as of June 30, 2017 and December 31, 2016, respectively	4	4
Accumulated other comprehensive loss	(38)	—
Additional paid-in capital	397,901	374,288
Accumulated deficit	(330,703)	(275,218)
Total stockholders' equity	67,164	99,074
Total liabilities and stockholders' equity	$ 139,208	$ 130,651

See accompanying notes to unaudited condensed consolidated financial statements.

INVITAE CORPORATION

Condensed Consolidated Statements of Operations
(In thousands, except share and per share amounts)
(Unaudited)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016	2017	2016
Revenue:				
Test revenue	$ 13,592	$ 5,533	$ 23,287	$ 9,488
Other revenue	744	48	1,387	48
Total revenue	14,336	5,581	24,674	9,536
Costs and operating expenses:				
Cost of test revenue	10,490	6,476	19,819	12,463
Research and development	11,339	10,713	21,362	21,373
Selling and marketing	12,520	6,843	24,092	13,886
General and administrative	8,062	6,384	14,813	12,139
Total costs and operating expenses	42,411	30,416	80,086	59,861
Loss from operations	(28,075)	(24,835)	(55,412)	(50,325)
Other income (expense), net	151	88	(540)	72
Interest expense	(1,067)	(100)	(1,389)	(184)
Net loss before taxes	(28,991)	(24,847)	(57,341)	$ (50,437)
Income tax benefit	(434)	—	(1,856)	—
Net loss	$ (28,557)	$ (24,847)	$ (55,485)	$ (50,437)
Net loss per share, basic and diluted	$ (0.66)	$ (0.77)	$ (1.30)	$ (1.57)
Shares used in computing net loss per share, basic and diluted	43,226,569	32,154,982	42,808,175	32,060,260

See accompanying notes to unaudited condensed consolidated financial statements.

INVITAE CORPORATION

Condensed Consolidated Statements of Comprehensive Loss
(In thousands)
(Unaudited)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016	2017	2016
Net loss	$ (28,557)	$ (24,847)	$ (55,485)	$ (50,437)
Other comprehensive income (loss):				
Unrealized income (loss) on available-for-sale marketable securities, net of tax	(2)	4	(38)	47
Comprehensive loss	$ (28,559)	$ (24,843)	$ (55,523)	$ (50,390)

See accompanying notes to unaudited condensed consolidated financial statements.

INVITAE CORPORATION

Condensed Consolidated Statements of Cash Flows
(In thousands)
(Unaudited)

	Six Months Ended June 31,	
	2017	**2016**
Cash flows from operating activities:		
Net loss	$ (55,485)	$ (50,437)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	3,545	3,251
Stock-based compensation	9,607	3,342
Amortization of premium on marketable securities	80	191
Loss on disposal of assets	268	933
Remeasurements of liabilities associated with business combinations	352	—
Changes in operating assets and liabilities net of effects of business combination:		
Accounts receivable	(1,119)	(311)
Prepaid expenses and other current assets	(198)	(2,270)
Other assets	(36)	964
Accounts payable	2,049	(163)
Accrued expenses and other liabilities	(894)	2,104
Net cash used in operating activities	(41,831)	(42,396)
Cash flows from investing activities:		
Purchases of marketable securities	(57,187)	(69,898)
Proceeds from maturities of marketable securities	35,168	69,835
Acquisition of businesses, acquired cash	108	—
Purchases of property and equipment	(3,476)	(3,802)
Net cash used in investing activities	(25,387)	(3,865)
Cash flows from financing activities:		
Proceeds from issuance of common stock	2,264	1,361
Proceeds from loan agreement	—	5,000
Proceeds from loan and security agreement	39,661	—
Loan payments	(12,102)	(915)
Capital lease principal payments	(1,457)	(795)
Net cash provided by financing activities	28,366	4,651
Net decrease in cash, cash equivalents and restricted cash	(38,852)	(41,610)
Cash, cash equivalents and restricted cash at beginning of period	71,522	78,069
Cash, cash equivalents and restricted cash at end of period	$ 32,670	$ 36,459
Supplemental cash flow information:		
Interest paid	$ 1,209	$ 184
Supplemental cash flow information of non-cash investing and financing activities:		
Equipment acquired through capital leases	$ 3,879	$ —
Purchases of property and equipment in accounts payable and accrued liabilities	$ 1,647	$ 984
Warrants issued pursuant to loan and security agreement	$ 740	$ —
Common stock issued for acquisition of businesses	$ 11,002	$ —
Consideration payable for acquisition of businesses	$ 7,522	$ —

See accompanying notes to unaudited condensed consolidated financial statements.

1. Organization and description of business

Invitae Corporation (the "Company") was incorporated in the State of Delaware on January 13, 2010, as Locus Development, Inc. and changed its name to Invitae Corporation in 2012. The Company utilizes an integrated portfolio of laboratory processes, software tools and informatics capabilities to process DNA-containing samples, analyze information about patient-specific genetic variation and generate test reports for clinicians and their patients. The Company's production facility and headquarters is located in San Francisco, California. The Company currently has more than 20,000 genes in production and provides a variety of diagnostic tests that can be used in multiple indications. The Company's tests include multiple genes associated with hereditary cancer, neurological disorders, cardiovascular disorders, pediatric disorders, metabolic disorders and other hereditary conditions. The Company operates in one segment.

The Company has incurred substantial losses since its inception and expects to continue to incur operating losses in the near-term future. For the year ended December 31, 2016, the Company's net loss was $100.3 million, and for the six months ended June 30, 2017, the Company's net loss was $55.5 million. At June 30, 2017, the Company's accumulated deficit was $330.7 million. To date, the Company has generated only limited revenue, and it may never achieve revenue sufficient to offset its expenses. The Company believes its existing cash and cash equivalents as of June 30, 2017, revenue from the sale of its tests, a second term loan of $20.0 million under the loan agreement funded in March 2017, and the net proceeds of a private placement that closed in August 2017 (see Note 11) will be sufficient to meet its anticipated cash requirements for the 12-month period following the filing date of this report. Beyond this 12-month period, the Company intends to generate sufficient cash from operations to fund its future operating needs, but there can be no assurance it will be able to do so.

The Company may need to obtain additional funding to finance operations prior to achieving profitability. Company management regularly considers fundraising opportunities and will determine the timing, nature and amount of financings based upon various factors, including market conditions and management's operating plans. The Company may in the future elect to finance operations by selling equity or debt securities or borrowing money. If additional funding is required, there can be no assurance that additional funds will be available to the Company on acceptable terms on a timely basis, if at all. If the Company is unable to obtain additional funding when needed, it will need to curtail planned activities to reduce costs. Doing so will likely have an unfavorable effect on the Company's ability to execute on its business plan, and have an adverse effect on its business, results of operations and future prospects.

The Company has implemented the guidance in Financial Accounting Standards Board ("FASB") Accounting Standards Update ("ASU") No. 2014-15, *Presentation of Financial Statements – Going Concern* (Subtopic 205-40), and concluded that there are not conditions or events, considered in the aggregate, that raise substantial doubt about the Company's ability to continue as a going concern for a period of one year following the date that the June 30, 2017 financial statements are issued.

Basis of presentation

The accompanying unaudited condensed consolidated financial statements have been prepared in accordance with U.S. generally accepted accounting principles ("U.S. GAAP") for interim financial information and in accordance with the instructions to Form 10-Q and Rule 10-01 of Regulation S-X. Accordingly, they do not include all of the information and footnotes required by generally accepted accounting principles for complete financial statements. The unaudited interim condensed consolidated financial statements have been prepared on the same basis as the annual financial statements. In the opinion of management, the accompanying unaudited condensed consolidated financial statements reflect all adjustments (consisting only of normal recurring adjustments) considered necessary for a fair presentation. The information included in this Quarterly Report on Form 10-Q should be read in conjunction with the audited financial statements and notes thereto included in the Company's Annual Report on Form 10-K for the year ended December 31, 2016. The results for the three and six months ended June 30, 2017 are not necessarily indicative of the results expected for the full fiscal year or any other periods.

During the quarter ended September 30, 2016, the Company identified immaterial classification errors in the condensed consolidated financial statements for the quarters ended March 31, 2016 and June 30, 2016, related to the classification of asset impairment charges. Based on a quantitative and qualitative analysis of the errors as required by authoritative guidance, management concluded the errors had no material effect on any of the Company's previously issued financial statements, were immaterial to the Company's results for the first and second quarters of 2016, did not affect the expected full year results for 2016, and had no material effect on the trend of financial statements.

As a result of the immaterial classification errors discussed above, the unaudited condensed consolidated financial statements for the six months ended June 30, 2016 reflect the following immaterial reclassification adjustments: reclassification for asset impairment charges from other income (expense), net to general and administrative expense of $0.2 million for the three months

ended March 31, 2016; and reclassification for asset impairment charges from other income (expense) , net, to general and administrative expense of $0.7 million for the three months ended June 30, 2016.

2. Summary of significant accounting policies

Principles of consolidation

The unaudited condensed consolidated financial statements include the accounts of the Company and its wholly owned subsidiaries. All intercompany balances and transactions have been eliminated in consolidation.

Use of estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent liabilities as of the date of the financial statements and the reported amounts of revenue and expenses during the reporting period. The Company believes judgment is involved in determining revenue recognition; the recoverability of long-lived assets; impairment of goodwill and intangible assets; stock-based compensation expense; and income tax uncertainties. The Company bases these estimates on historical and anticipated results, trends, and various other assumptions that the Company believes are reasonable under the circumstances, including assumptions as to future events. Actual results could differ materially from those estimates and assumptions.

Concentrations of credit risk and other risks and uncertainties

Financial instruments that potentially subject the Company to a concentration of credit risk consist of cash and cash equivalents. The Company's cash and cash equivalents are held by financial institutions in the United States. Such deposits may exceed federally insured limits.

No single customer represented 10.0% of accounts receivable in the consolidated financial statements as of June 30, 2017 or 2016. One customer represented 10.4% and 10.0% of total revenue for three and six months ended June 30, 2017, respectively. No customer represented over 10.0% of total revenue for the three and six months ended June 30, 2016.

Cash equivalents

The Company considers all highly liquid investments with original maturities of three months or less from the date of purchase to be cash equivalents. Cash equivalents consist primarily of amounts invested in money market funds and U.S. government agency securities.

Marketable securities

All marketable securities have been classified as "available-for-sale" and are carried at estimated fair value as determined based upon quoted market prices or pricing models for similar securities. Management determines the appropriate classification of its marketable debt securities at the time of purchase and reevaluates such designation at each balance sheet date. Short-term marketable securities have maturities less than 365 days at the balance sheet date. Unrealized gains and losses are excluded from earnings and are reported as a component of other comprehensive loss. Realized gains and losses and declines in fair value judged to be other than temporary, if any, on available-for-sale securities are included in interest and other income (expense), net. The cost of securities sold is based on the specific-identification method. Interest on marketable securities is included in interest and other income (expense), net.

Accounts receivable

The Company receives payment for its tests from patients, institutional customers and third-party payers. For most payers, the Company has not been able to demonstrate a predictable pattern of collectability, and therefore recognizes revenue when payment is received. For payers who have demonstrated a consistent pattern of payment of tests billed, the Company recognizes revenue, at estimated realizable amounts, upon delivery of test results. Accounts receivable balances primarily represent patient, institutional customer and Medicare billings.

Restricted cash

Restricted cash consists of money market funds that serve as: collateral for a security deposit for the Company's lease agreement for its production facility and headquarters entered into in September 2015; collateral for a credit card agreement at one of the Company's financial institutions; and for securing a letter of credit as collateral for a facility sublease agreement.

Cash, cash equivalents and restricted cash

The following table provides a reconciliation of cash, cash equivalents and restricted cash reported within the unaudited condensed consolidated balance sheets that sum to the total of the same amounts shown in the unaudited statements of cash flows (in thousands):

	June 30, 2017	June 30, 2016
Cash and cash equivalents	$ 27,673	$ 31,587
Restricted cash	4,997	4,872
Total cash, cash equivalents and restricted cash	$ 32,670	$ 36,459

Business combinations

The tangible and identifiable intangible assets acquired and liabilities assumed in a business combination are recorded based on their estimated fair values as of the business combination date, including identifiable intangible assets which either arise from a contractual or legal right or are separable from goodwill. The Company bases the estimated fair value of identifiable intangible assets acquired in a business combination on independent valuations that use information and assumptions provided by management, which consider management's estimates of inputs and assumptions that a market participant would use. Any excess purchase price over the estimated fair value assigned to the net tangible and identifiable intangible assets acquired and liabilities assumed is recorded to goodwill. The use of alternative valuation assumptions, including estimated revenue projections, growth rates, cash flows, discount rates, estimated useful lives and probabilities surrounding the achievement of contingent milestones could result in different purchase price allocations and amortization expense in current and future periods.

In circumstances where an acquisition involves a contingent consideration arrangement that meets the definition of a liability under FASB Accounting Standards Codification ("ASC") Topic 480, *Distinguishing Liabilities from Equity* , the Company recognizes a liability equal to the fair value of the contingent payments the Company expects to make as of the acquisition date. The Company remeasures this liability each reporting period and records changes in the fair value as a component of operating expenses.

Transaction costs associated with acquisitions are expensed as incurred in general and administrative expenses. Results of operations and cash flows of acquired companies are included in the Company's operating results from the date of acquisition.

Intangible Assets

Amortizable intangible assets include trade names, non-compete agreements, developed technology and customer relationships acquired as part of business combinations. Intangible assets subject to amortization are amortized using the straight-line method over their estimated useful lives ranging from five to ten years and are reviewed for impairment in accordance with ASC 360, *Property, Plant and Equipment.*

Goodwill

In accordance with ASC 350, *Intangibles-Goodwill and Other* ("ASC 350"), the Company's goodwill is not amortized but is tested for impairment on an annual basis or whenever events or changes in circumstances indicate that the carrying amount of these assets may not be recoverable. Under ASC 350, the Company will perform its first annual impairment review of its goodwill balance as of October 1, 2017 in accordance with ASU 2017-04, *Intangibles – Goodwill and Other (Topic 350),* which the Company adopted effective January 1, 2017. In testing for goodwill, the Company compares the fair value of its reporting unit to its carrying value including the goodwill of that unit. If the carrying value, including goodwill, exceeds the reporting unit's fair value, the Company will recognize an impairment loss for the amount by which the carrying amount exceeds the reporting unit's fair value. The loss recognized cannot exceed the total amount of goodwill allocated to that reporting unit.

The Company acquired goodwill as part of business acquisitions in January 2017 and June 2017, and therefore has not previously tested for nor recorded any goodwill impairment losses.

Leases

The Company rents its facilities under operating lease agreements and recognizes related rent expense on a straight-line basis over the term of the applicable lease agreement. Some of the lease agreements contain rent holidays, scheduled rent increases, lease incentives, and renewal options. Rent holidays and scheduled rent increases are included in the determination of rent expense to be recorded over the lease term. Lease incentives are recognized as a reduction of rent expense on a straight-line basis over the term of the lease. Renewals are not assumed in the determination of the lease term unless they are deemed to be reasonably assured at the inception of the lease. The Company recognizes rent expense beginning on the date it obtains the legal right to use and control the leased space.

Fair value of financial instruments

The Company's financial instruments consist principally of cash and cash equivalents, marketable securities, accounts payable, accrued liabilities, capital leases and debt. The carrying amounts of certain of these financial instruments, including cash and cash equivalents, accounts receivable, accounts payable and accrued and other current liabilities approximate their current fair value due to the relatively short-term nature of these accounts. Based on borrowing rates available to the Company, the carrying value of capital leases approximates fair value. The Company believes the fair value of the term debt approximates recorded amounts as of June 30, 2017 as the interest rates on the term debt are variable and are based on market interest rates after consideration of default and credit risk (using level 2 inputs).

See Note 6, "Fair value measurements" for further information on the fair value of the Company's financial instruments.

Revenue recognition

Test revenue is generated from the sale of tests that provide analysis and associated interpretation of the sequencing of parts of the genome. Revenue associated with subsequent re-requisition services and family variant tests was de minimis for all periods presented.

Test revenue is recognized when persuasive evidence of an arrangement exists; delivery has occurred or services have been rendered; the fee is fixed or determinable; and collectability is reasonably assured. The criterion for whether the fee is fixed or determinable and whether collectability is reasonably assured are based on management's judgments. When evaluating collectability, in situations where contracted reimbursement coverage does not exist, the Company considers whether the Company has sufficient history to reliably estimate a payer's individual payment patterns. The Company reviews the number of tests paid against the number of tests billed over at least six months of payment history and the payer's outstanding balance for unpaid tests to determine whether payments are being made at a consistently high percentage of tests billed and at appropriate amounts given the amount billed. For most payers, the Company has not been able to demonstrate a predictable pattern of collectability, and therefore recognizes revenue when payment is received. For payers who have demonstrated a consistent pattern of payment of tests billed at appropriate amounts, the Company recognizes revenue, at estimated realizable amounts, upon delivery of test results.

Other revenue consists primarily of revenue from genome network subscription services which is recognized on a straight-line basis over the subscription term, and revenue from collaboration agreements.

Cost of test revenue

Cost of revenue reflects the aggregate costs incurred in delivering the genetic testing results to clinicians and includes expenses for personnel costs including stock-based compensation, materials and supplies, equipment and infrastructure expenses associated with testing and allocated overhead including rent, equipment depreciation and utilities. Costs associated with performing the Company's test are recorded as the test is processed regardless of whether and when revenue is recognized with respect to that test.

Income taxes

The Company uses the asset and liability method of accounting for income taxes. Under this method, deferred tax assets and liabilities are determined based on the differences between the financial reporting and the tax bases of assets and liabilities and are measured using the enacted tax rates and laws that will be in effect when the differences are expected to reverse. A valuation allowance is provided when it is more likely than not that some portion or all of a deferred tax asset will not be realized.

Stock-based compensation

The Company measures its stock-based payment awards made to employees and directors based on the estimated fair values of the awards and recognizes the compensation expense over the requisite service period. The Company uses the Black-Scholes option-pricing model to estimate the fair value of its stock option awards and employee stock purchase plan ("ESPP") purchases. The fair value of restricted stock unit ("RSU") awards with time-based vesting terms is based on the grant date share price. The Company grants performance-based restricted stock unit ("PRSU") awards to certain employees which vest upon the achievement of certain performance conditions, subject to the employees' continued service relationship with the Company. The probability of vesting is assessed at each reporting period and compensation cost is adjusted based on this probability assessment. The Company recognizes such compensation expense on an accelerated vesting method.

Stock-based compensation expense for awards without a performance condition is recognized using the straight-line method. Stock-based compensation expense is based on the value of the portion of stock-based payment awards that is ultimately expected to vest. As such, the Company's stock-based compensation is reduced for the estimated forfeitures at the date of grant and revised, if necessary, in subsequent periods if actual forfeitures differ from those estimates.

The Compa ny accounts for compensation expense related to stock options granted to non-employees based on fair values estimated using the Black-Scholes option-pricing model. Stock options granted to non-employees are re-measured at each reporting date until the awar d is vested.

Net loss per common share

Basic net loss per common share is calculated by dividing net loss by the weighted-average number of common shares outstanding during the period, without consideration of common stock equivalents. Diluted net loss per share is computed by dividing net loss by the weighted-average number of common share equivalents outstanding for the period determined using the treasury stock method. Potentially dilutive securities, consisting of options to purchase common stock, common stock warrants, RSUs and PRSUs, are considered to be common stock equivalents and were excluded from the calculation of diluted net loss per share because their effect would be antidilutive for all periods presented.

Recent accounting pronouncements

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* . ASU 2016-13 is intended to improve financial reporting by requiring timelier recording of credit losses on loans and other financial instruments held by financial institutions and other organizations. ASU 2016-13 is effective for annual and interim periods beginning on or after December 15, 2019 and early adoption is permitted. The adoption of this standard is not expected to have a material effect on the Company's consolidated financial statements, related disclosures and ongoing financial reporting.

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)* . Under the new guidance, lessees will be required to recognize a lease liability and a right-of-use asset for all leases (with the exception of short-term leases) at the commencement date. Lessor accounting under ASU 2016-02 is largely unchanged. ASU 2016-02 is effective for annual and interim periods beginning on or after December 15, 2018 and early adoption is permitted. Under ASU 2016-02, lessees (for capital and operating leases) and lessors (for sales-type, direct financing, and operating leases) must apply a modified retrospective transition approach for leases existing at, or entered into after, the beginning of the earliest comparative period presented in the financial statements. Lessees and lessors may not apply a full retrospective transition approach. The Company is evaluating the effect that ASU 2016-02 will have on its consolidated financial statements, related disclosures and ongoing financial reporting. The Company has not yet selected an implementation date for ASU 2016-02.

In May 2014, the FASB issued ASU 2014-09, *Revenue from Contracts with Customers* ("ASU 2014-09"), which requires an entity to recognize the amount of revenue to which it expects to be entitled for the transfer of promised goods or services to customers. ASU 2014-09 will replace most existing revenue recognition guidance in U.S. GAAP when it becomes effective. In August 2015, the FASB issued ASU 2015-14, *Revenue from Contracts with Customers (Topic 606)* . ASU 2015-14 defers the effective date of ASU 2014-09 for public business entities by one year to annual reporting periods beginning after December 15, 2017. Therefore, the new standard will become effective for the Company on January 1, 2018. The new standard permits the use of two methods of adoption: retrospectively to each prior reporting period presented (the full retrospective method), or retrospectively with the cumulative effect of initially applying the guidance recognized at the date of initial application (the modified retrospective method). The Company plans to implement ASU 2014-09 effective January 1, 2018 using the modified retrospective method. While the Company continues to evaluate the effect that ASU 2014-09 will have on its consolidated financial statements, related disclosures and ongoing financial reporting, it anticipates the adoption of ASC 2014-09 will result in changes in the timing of revenue recognition. The Company currently recognizes revenue for the majority of third-party payers on a cash basis. Under ASU 2014-09, the Company anticipates it will recognize revenue from third-party payers on an accrual basis. Therefore, the timing of revenue recognition for third-party payers will be accelerated under ASC-2014-09, in comparison to the Company's current revenue recognition practices.

Recently adopted accounting pronouncements

In January 2017, the FASB issued ASU 2017-04, *Intangibles – Goodwill and Other (Topic 350)* . The amendments in this ASU simplify the subsequent measurement of goodwill by eliminating Step 2 from the goodwill impairment test. The amendments also eliminate the requirements for any reporting unit with a zero or negative carrying amount to perform a qualitative assessment and, if it fails that qualitative test, to perform Step 2 of the goodwill impairment 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. The amendments in this ASU should be applied on a prospective basis. The Company early adopted ASU 2017-04 effective January 1, 2017 and the adoption of this standard did not have a material effect on the Company's consolidated financial statements, related disclosures and ongoing financial reporting.

In January 2017, the FASB issued ASU 2017-01, *Business Combinations (Topic 805): Clarifying the Definition of a Business* . The amendments in this ASU clarify the definition of a business with the objective of adding guidance to assist entities with

evaluating whether transactions should be accounted for as acquisitions (or disposals) of businesses. ASU 2017-01 is effective for annual and interim periods beginning after December 15, 2017 and early adoption is permitted. The Company early adopted ASU 2017-01 effective January 1, 2017 and the a doption of this standard did not have a material effect on the Company's consolidated financial statements, related disclosures and ongoing financial reporting.

In December 2016, the FASB issued ASU 2016-18, *Statement of Cash Flows (Topic 230): Restricted Cash* . The amendments in this ASU require that a statement of cash flows explain the change during the period in the total of cash, cash equivalents, and amounts generally described as restricted cash or restricted cash equivalents. Therefore, amounts generally described as restricted cash and restricted cash equivalents should be included with cash and cash equivalents when reconciling the beginning-of-period and end-of-period total amounts shown on the statement of cash flows. The amendments in this ASU apply to all entities that have restricted cash or restricted cash equivalents and are required to present a statement of cash flows under Topic 230. ASU 2016-18 is effective for annual and interim periods beginning on or after December 15, 2018 and early adoption is permitted. The Company early adopted ASU 2016-18 effective January 1, 2017 and the adoption of this standard did not have a material effect on the Company's consolidated financial statements, related disclosures and ongoing financial reporting.

In August 2016, the FASB issued ASU 2016-15, *Statement of Cash Flows (Topic 230) – Classification of Certain Cash Receipts and Cash Payments* . The ASU is intended to improve financial reporting by reducing diversity in practice of how certain cash receipts and cash payments are presented and classified in the statement of cash flows. ASU 2016-15 is effective for annual and interim periods beginning on or after December 15, 2016. The Company adopted ASU 2016-15 effective January 1, 2017 and the adoption of this standard did not have a material effect on the Company's consolidated financial statements, related disclosures and ongoing financial reporting.

In March 2016, the FASB issued ASU 2016-09, *Compensation - Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting* , which simplifies accounting for share-based payment award transactions. ASU 2016-09 is effective for annual and interim periods beginning on or after December 15, 2016. The Company adopted ASU 2016-09 effective January 1, 2017 and upon adoption of this standard, recorded a deferred tax asset for unrecorded excess tax benefits of approximately $0.4 million related to share-based payments through a cumulative effect adjustment to retained earnings, and a corresponding offset of the deferred tax asset with a 100% valuation allowance. In addition, under ASU 2016-09 the Company can elect a policy to account for forfeitures as they occur rather than on an estimated basis. The Company elected to continue its current policy of estimating forfeitures. The adoption of ASU 2016-09 did not have a material effect on the Company's consolidated financial statements, related disclosures and ongoing financial reporting.

The Company has determined there are no other recently adopted or issued accounting standards that had, or will have, a material impact on its Condensed Consolidated Financial Statements.

Prior Period Reclassifications

Revenue amounts in prior periods have been reclassified to conform with current period presentation, which separates test revenue from other revenue, which consists principally of revenue from genome network subscription services and collaboration arrangements.

3. Business combinations

AltaVoice

In January 2017, the Company acquired AltaVoice (formerly Patient Crossroads, Inc.), a privately-owned patient-centered data company with a global platform for collecting, curating, coordinating, and delivering safeguarded data from patients and clinicians. The acquisition, complemented by several other strategic partnerships, will expand the Company's genome network, designed to connect patients, clinicians, advocacy organizations, researchers, and therapeutic developers to accelerate the understanding, diagnosis, and treatment of hereditary disease. Pursuant to the terms of the Stock Purchase Agreement entered into on January 6, 2017, the Company acquired all of the outstanding shares of AltaVoice for total purchase consideration of $12.4 million, payable in the Company's common stock, as follows:

(a) payment of $5.5 million through the issuance of 641,126 shares of the Company's common stock;

(b) payment of $5.0 million in the Company's common stock, payable on March 31, 2018, with the common shares deliverable equal to $5.0 million divided by the trailing average share price of the Company's common stock for the 30 days preceding March 31, 2018;

(c) payment of $5.0 million in the Company's common stock, contingently payable on March 31, 2018 if a milestone based on a certain threshold of revenue is achieved during 2017, with the shares deliverable equal to $5.0 million divided by the trailing average share price of the Company's common stock for the 30 days preceding March 31, 2018; or should the

foregoing milestone not be achieved, then there is a new contingent m ilestone based on achieving a revenue target during 2017 and 2018. Should the new milestone revenue target be achieved, then on March 31, 2019, a payment of up to $5.0 million in the Company's common stock would be payable . The actual payout is dependent u pon the 2017 and 2018 revenue target (capped at $14.0 million) times 75% less $5.5 million. This formula in effect caps the possible payout amount at $5.0 million in the Company's common shares. The number of shares to be issued will be equal to the payout amount divided by the trailing average share price of the Company's common stock for the 30 days preceding March 31, 2019.

The first payment of $5.5 million was classified as equity. The second payment was discounted to $4.7 million and recorded as a liability, and will be remeasured to fair value at each reporting date until the extinguishment of the liability on March 31, 2018. The third payment, representing contingent consideration, was determined to have a fair value of $2.2 million and was recorded as a liability. In accordance with ASC Topic 805, *Business Combinations,* the contingent consideration of $2.2 million will be remeasured to fair value at each reporting date until the contingency is resolved, with changes in fair value recognized in earnings.

For the second payment, whose acquisition-date fair value was $4.7 million, the Company recorded a remeasurement loss of $58,000 and $111,000 in other income (expense), net, for the three and six months ended June 30, 2017, respectively. These remeasurement losses resulted from adjustments to the discounted value of the second payment, reflecting the passage of time. For the third payment whose contingent acquisition-date fair value was $2.2 million, the Company recorded a remeasurement loss of $241,000 in operating expense for the three and six months ended June 30, 2017. This remeasurement loss reflected an updated estimation of fair value of the third payment. The principal input affecting that estimation was the passage of time.

The allocation of the purchase price is based on valuations derived from estimated fair value assessments and assumptions used by the Company. While the Company believes that its estimates and assumptions underlying the valuations are reasonable, different estimates and assumptions could result in different valuations assigned to the individual assets acquired and liabilities assumed, and the resulting amount of goodwill. The following table summarizes the fair values of assets acquired and liabilities assumed at the date of acquisition (in thousands):

Cash	$	54
Accounts receivable		274
Prepaid expense and other assets		52
Non-compete agreement		286
Developed technology		570
Customer relationships		3,389
Total identifiable assets acquired		4,625
Accounts payable		(28)
Deferred revenue		(202)
Accrued expenses		(21)
Deferred tax liability		(1,422)
Total liabilities assumed		(1,673)
Net identifiable assets acquired		2,952
Goodwill		9,432
Net assets acquired	$	12,384

Acquisition-related intangibles included in the above table are finite-lived and are being amortized on a straight-line basis over their estimated lives, which approximates the pattern in which the economic benefits of the intangible assets are expected to be realized, as follows (in thousands):

	Gross Purchased Intangible Assets	Estimated Useful Life (in Years)
Non-compete agreement	$ 286	5
Developed technology	570	6
Customer relationships	3,389	10
	$ 4,245	

Goodwill represents the excess of the purchase price over the fair value of the net tangible and intangible assets acquired. The acquisition of AltaVoice resulted in $9.4 million of goodwill. The Company believes this goodwill consists principally of expected

synergies to be realized by combining capabilities, technology, and data to accelerate the use of genetic information for the diagnosis and treatment of hereditary diseases. In accordance with ASC 350, goodwill will not be amortized but will be tested for impairment at least annually. Goodwill created as a result of the acquisition is not deductible for tax purposes. Concurrent with the acquisition, the Company recorded additional goodwill of $1.4 million relating to the tax consequence of recognizing the fair value of the acquisition-related intangibles, with an equal offset to deferred tax liability.

The results of operations of AltaVoice for the period from the acquisition date through June 30, 2017 are included in the accompanying consolidated statements of operations. Pursuant to ASC 805, the Company incurred and expensed approximately $159,000 in acquisition and transitional costs associated with the acquisition of AltaVoice during the year ended December 31, 2016 and the three months ended March 31, 2017, which were primarily general and administrative related.

Ommdom

In June 2017, the Company acquired Ommdom, Inc., a privately-held company that develops, commercializes and sells hereditary risk assessment and management software, including CancerGene Connect, a cancer genetic counseling platform. The acquisition expands Invitae's suite of genome management offerings designed to help patients and clinicians use genetic information as part of mainstream medical care. CancerGene Connect is a platform for collecting and managing genetic family histories. The platform uses a cloud-based, mobile friendly patient interface to gather family history information from patients prior to a clinician appointment. Then, analysis tools analyze patients' predisposition to disease and provide actionable analysis to inform therapeutic decisions, such as genetic testing or treatment approaches. In addition, the platform provides clinicians with the ability to look beyond the individual to understand trends across all of their patients.

Pursuant to the terms of the Stock Exchange Agreement entered into on June 11, 2017, the Company acquired all of the outstanding shares of Ommdom for consideration of $6.1 million, payable entirely in the Company's common stock. There was no cash consideration nor any contingent payments associated with the acquisition, other than a hold-back amount of $613,000. Per the terms of the agreement, the Company will issue shares of its common stock as follows:

(a) payment of $5.5 million through the issuance of 600,108 shares of the Company's common stock; and

(b) payment of $0.6 through the issuance of 66,582 shares of the Company's common stock, representing a hold-back amount, and payable on the twelve-month anniversary of the acquisition date.

The first payment of $5.5 million was classified as equity. The second payment of $613,000 was recorded as a stock payable liability and will be reclassified to equity upon the issuance of the Company's common stock on the twelve-month anniversary of the acquisition date.

The allocation of the purchase price is based on valuations derived from estimated fair value assessments and assumptions used by the Company. While the Company believes that its estimates and assumptions underlying the valuations are reasonable, different estimates and assumptions could result in different valuations assigned to the individual assets acquired and liabilities assumed, and the resulting amount of goodwill. The following table summarizes the fair values of assets acquired and liabilities assumed at the date of acquisition (in thousands):

Cash	$	53
Accounts receivable		10
Prepaid expense and other assets		4
Trade name		13
Developed technology		2,335
Customer relationships		147
Total identifiable assets acquired		2,562
Accounts payable		(16)
Accrued expenses		(17)
Deferred tax liability		(434)
Total liabilities assumed		(467)
Net identifiable assets acquired		2,095
Goodwill		4,045
Net assets acquired	$	6,140

Finite-lived intangibles included in the above table are being amortized on a straight-line basis over their estimated lives, which approximates the pattern in which the economic benefits of the intangible assets are expected to be realized, as follows (in thousands):

	Gross Purchased Intangible Assets	Estimated Useful Life (in Years)
Trade name	$ 13	5
Developed technology	2,335	5
Customer relationships	147	5
	$ 2,495	

Goodwill represents the excess of the purchase price over the fair value of the net tangible and intangible assets acquired. The acquisition of Ommdom resulted in the recognition of $4.0 million of goodwill. The Company believes this goodwill consists principally of expected synergies to be realized by expanding the Company's suites of genome management offerings designed to help patients and clinicians use genetic information as part of mainstream medical care. In accordance with ASC 350, goodwill will not be amortized but rather will be tested for impairment at least annually. Goodwill created as a result of the acquisition is not deductible for tax purposes. Concurrent with the acquisition, the Company recorded additional goodwill of $434,000 relating to the tax consequence of recognizing the fair value of the acquisition-related intangibles, with an equal offset to deferred tax liability.

The results of operations of Ommdom for the period from the acquisition date through June 30, 2017 are included in the accompanying consolidated statements of operations. Pursuant to ASC 805, the Company incurred and expensed approximately $164,000 in acquisition and transitional costs associated with the acquisition of Ommdom during the three and six months ended June 30, 2017, which were primarily general and administrative related.

Pro-forma Financial Information

The unaudited financial information in the table below summarizes the combined results of operations of the Company, AltaVoice and Ommdom on a pro forma basis, as though the companies had been combined as of the beginning of each of the periods presented. The pro forma financial information is presented for informational purposes only and is not indicative of the results of operations that would have been achieved if the acquisitions had taken place at the beginning of each of the periods presented. The unaudited pro forma financial information for the three and six months ended June 30, 2017 combines the results of the Company for the three and six months ended June 30, 2017, which include the results of AltaVoice subsequent to January 6, 2017 and the results of Ommdom subsequent to June 11, 2017 (the acquisition dates for AltaVoice and Ommdom, respectively), with the historical results for AltaVoice for the period from January 1, 2017 to January 6, 2017 and the historical results for Ommdom for the period from January 1, 2017 to June 11, 2017. The unaudited pro forma financial information for the three and six months ended June 30, 2016 combines the historical results for the Company for those periods, with the historical results for AltaVoice and Ommdom for the same periods.

The following table summarizes the pro forma financial information for the three and six months ended June 30, 2017 and 2016 (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016	2017	2016
Total revenue	$ 14,395	$ 6,076	$ 24,791	$ 10,461
Net loss	$ (28,855)	$ (25,082)	$ (55,900)	$ (50,996)

4. Goodwill and intangible assets

Goodwill

Details of the Company's goodwill for the six months ended June 30, 2017 are as follows (in thousands):

	AltaVoice	Ommdom	Total
Balance as of December 31, 2016	$ —	$ —	$ —
Goodwill acquired	9,432	—	9,432
Balance as of March 31, 2017	9,432	—	9,432
Goodwill acquired	—	4,045	4,045
Balance as of June 30, 2017	$ 9,432	$ 4,045	$ 13,477

The acquisitions of AltaVoice and Ommdom resulted in the recognition of $9.4 million and $4.0 million of goodwill, respectively, for the six months ended June 30, 2017.

Intangible Assets

The following table presents details of the Company's finite-lived intangible assets as of June 30, 2017 (in thousands):

	Cost	Accumulated Amortization	Net	Estimated Remaining Useful Life (in Years)
Customer relationships	$ 3,536	$ (172)	$ 3,364	9.3
Developed technology	2,905	(72)	2,833	5.0
Non-compete agreement	286	(29)	257	4.5
Trade name	13	—	13	4.9
	$ 6,740	$ (273)	$ 6,467	

Acquisition-related intangibles included in the above table are finite-lived and are being amortized on a straight-line basis over their estimated lives, which approximates the pattern in which the economic benefits of the intangible assets are realized. Amortization expense was $149,000 and $273,000 for the three and six months ended June 30, 2017, respectively. As all acquisition-related intangible assets were acquired in 2017, no amortization was recorded for the three and six months ended June 30, 2016. Intangible assets are carried at cost less accumulated amortization. Amortization expense is recorded to sales and marketing and general and administrative expense.

The following table summarizes the Company's estimated future amortization expense of intangible assets with finite lives as of June 30, 2017 (in thousands):

	Amount
Remainder of 2017	$ 495
2018	990
2019	990
2020	990
2021	990
Thereafter	2,012
	$ 6,467

5. Balance sheet components

Cash equivalents and marketable securities

The following is a summary of cash equivalents and marketable securities (in thousands):

	June 30, 2017			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Money market funds	$ 21,993	$ —	$ —	$ 21,993
U.S. treasury notes	11,018	—	(9)	11,009
U.S. government agency securities	37,720	—	(29)	37,691
	$ 70,731	$ —	$ (38)	$ 70,693
Reported as:				
Cash equivalents				$ 17,997
Restricted cash				4,997
Marketable securities				47,699
Total cash equivalents, restricted cash and marketable securities				$ 70,693

	December 31, 2016			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Money market funds	$ 19,457	$ —	$ —	$ 19,457
U.S. treasury notes	11,515	2	—	11,517
U.S. government agency securities	14,283	—	(2)	14,281
	$ 45,255	$ 2	$ (2)	$ 45,255
Reported as:				
Cash equivalents				$ 14,760
Restricted cash				4,697
Marketable securities				25,798
Total cash equivalents, restricted cash and marketable securities				$ 45,255

The total amount of unrealized losses at June 30, 2017 was $38,000. The total fair value of investments with unrealized losses at June 30, 2017 was $47.7 million. None of the available-for-sale securities held as of June 30, 2017 has been in a continuous unrealized loss position for more than one year. At June 30, 2017, unrealized losses on available-for-sale investments are not attributed to credit risk and are considered to be temporary. The Company believes it is more likely than not that investments in an unrealized loss position will be held until maturity or the recovery of the cost basis of the investment. To date, the Company has not recorded any impairment charges on marketable securities related to other-than-temporary declines in market value.

At June 30, 2017, the remaining contractual maturities of available-for-sale securities were less than one year. For the six months ended June 30, 2017, there were no realized gains or losses on available-for-sale securities.

Property and equipment, net

Property and equipment consisted of the following (in thousands):

	June 30, 2017	December 31, 2016
Leasehold improvements	$ 12,447	$ 1,256
Laboratory equipment	15,386	13,644
Equipment under capital lease	6,628	5,871
Computer equipment	2,759	2,514
Software	2,489	2,489
Furniture and fixtures	523	238
Automobiles	20	20
Construction-in-progress	2,938	12,229
Total property and equipment, gross	43,190	38,261
Accumulated depreciation and amortization	(15,526)	(14,468)
Total property and equipment, net	$ 27,664	$ 23,793

Depreciation expense was $1.6 million and $1.7 million for the three months ended June 30, 2017 and 2016, respectively, and $3.2 million and $3.3 million for the six months ended June 30, 2017 and 2016, respectively.

Accrued liabilities

Accrued liabilities consisted of the following (in thousands):

	June 30, 2017	December 31, 2016
Accrued compensation and related expenses	$ 4,088	$ 3,072
Accrued laboratory materials purchases	521	338
Accrued professional services	692	446
Accrued construction in progress	—	1,215
Lease incentive obligation, current	469	468
Liabilities associated with business combinations	5,434	—
Other	1,511	1,172
Total accrued liabilities	$ 12,715	$ 6,711

Other long-term liabilities

Other long-term liabilities consisted of the following (in thousands):

	June 30, 2017	December 31, 2016
Lease incentive obligation, non-current	$ 4,009	$ 4,243
Deferred rent, non-current	4,610	3,419
Liabilities associated with business combination	2,440	—
Other non-current liabilities	175	175
Total other long-term liabilities	$ 11,234	$ 7,837

6. Fair value measurements

Financial assets and liabilities are recorded at fair value. Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability (an exit price) in an orderly transaction between market participants at the reporting date. The authoritative guidance establishes a three-level valuation hierarchy that prioritizes the inputs to valuation techniques used to measure fair value based upon whether such inputs are observable or unobservable. Observable inputs reflect market data obtained from independent sources, while unobservable inputs reflect market assumptions made by the reporting entity.

The three-level hierarchy for the inputs to valuation techniques is summarized as follows:

Level 1—Observable inputs such as quoted prices (unadjusted) for identical instruments in active markets.

Level 2—Observable inputs such as quoted prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, or model-derived valuations whose significant inputs are observable.

Level 3—Unobservable inputs that reflect the reporting entity's own assumptions.

The following tables set forth the fair value of the Company's consolidated financial instruments that were measured at fair value on a recurring basis as of June 30, 2017 and December 31, 2016 (in thousands):

	June 30, 2017			
	Level 1	Level 2	Level 3	Total
Financial assets:				
Money market funds	$ 21,993	$ —	$ —	$ 21,993
U.S. treasury notes	11,009	—	—	11,009
U.S. government agency securities	—	37,691	—	37,691
Total financial assets	$ 33,002	$ 37,691	$ —	$ 70,693
Financial liabilities:				
Contingent consideration	—	—	2,441	2,441
Total financial liabilities	$ —	$ —	$ 2,441	$ 2,441

	December 31, 2016			
	Level 1	Level 2	Level 3	Total
Financial assets:				
Money market funds	$ 19,457	$ —	$ —	$ 19,457
U.S. treasury notes	11,517	—	—	11,517
U.S. government agency securities	—	14,281	—	14,281
Total financial assets	$ 30,974	$ 14,281	$ —	$ 45,255

There were no transfers between Level 1, Level 2 and Level 3 during the periods presented.

The following table presents the Company's Level 3 financial instruments that are measured at fair value on a recurring basis (in thousands):

	Level 3
	Contingent Consideration Liability
Balance as of December 31, 2016	$ —
Contingent consideration	2,200
Change in estimate of fair value	241
Balance as of June 30, 2017	$ 2,441

The Company's debt securities of U.S. government agency entities are classified as Level 2 as they are valued based upon quoted market prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active and model-based valuation techniques for which all significant inputs are observable in the market or can be corroborated by observable market data for substantially the full term of the assets. Where applicable, these models project future cash flows and discount the future amounts to a present value using market-based observable inputs obtained from various third party data providers, including but not limited to, benchmark yields, interest rate curves, reported trades, broker/dealer quotes and reference data.

As of June 30, 2017, the Company had a contingent obligation up to $5.0 million payable in the Company's common stock to the former owners of AltaVoice in conjunction with the Company's acquisition of AltaVoice in January 2017. The contingency is dependent upon future revenues attributable to AltaVoice. If such revenues are least $10 million in 2017, the Company will make a payment of $5.0 million in the Company's common stock on March 31, 2018. If revenue attributable to AltaVoice is less than $10 million in 2017, but the combined revenue attributable to AltaVoice for the combined period of 2017 and 2018 is at least $10 million, the Company will make a payment of up to $5.0 million in the Company's common stock on March 31, 2019. The Company estimated the fair value of the contingent consideration at $2.2 million at the acquisition date of January 6, 2017, based on a Monte Carlo simulation, as well as estimates of the 30-day trailing price of its stock at certain dates, its volatility assumptions and its revenue forecasts, all of which were significant inputs in the Level 3 measurement not supported by market activity. The value of the liability will be subsequently remeasured to fair value at each reporting date. Changes to revenue forecasts can significantly affect the estimated fair value of the contingent consideration. Changes in estimated fair value will be recorded as a component of operating expenses until the contingency is paid or expires. The change in the fair value of the contingent consideration between the acquisition date and June 30, 2017 was an increase of $241,000.

The fair value of the Company's outstanding debt is estimated using the net present value of future debt payments, discounted at an interest rate that is consistent with market interest rates, which is a Level 2 input. The carrying amount and the estimated fair value of the Company's outstanding debt at June 30, 2017 and December 31, 2016, are as follows (in thousands):

	June 30, 2017		December 31, 2016	
	Carrying Amount	Fair Value	Carrying Amount	Fair Value
Debt	$ 38,975	$ 39,560	$ 12,102	$ 11,905

7. Commitments and contingencies

Operating leases

In September 2015, the Company entered into a lease agreement for a headquarters and production facility in San Francisco, California. This lease expires in July 2026 and the Company may renew the lease for an additional ten years. The Company has determined the lease term to be a ten-year period expiring in 2026. The lease term commenced when the Company took occupancy of the facility in February 2016. In connection with the execution of the lease, the Company provided a security deposit of approximately $4.6 million which is included in restricted cash in the Company's consolidated balance sheets. Minimum annual rent under the lease

is subje ct to increases based on stated rental adjustment terms. In addition, per the terms of the lease, the Company will receive a $5.2 million lease incentive in the form of reimbursement from the landlord for a portion of the costs of leasehold improvements th e Company has made to the facility. The assets purchased with the lease incentive are included in property and equipment, net, in the Company's consolidated balance sheets and the lease incentive is recognized as a reduction of rental expense on a straight -line basis over the term of the lease. At June 30, 2017, all of the lease incentive had been utilized by the Company and reimbursements totaling $4 .4 million had been received from the landlord . Aggregate future minimum lease payments for the new facility at June 30, 2017 were approximately $6 7.4 million.

In addition to the security deposit of approximately $4.6 million for the headquarters and production facility, the Company has provided, as collateral for other leases, security deposits of $0.6 million and $0.8 million at June 30, 2017 and December 31, 2016, respectively, which are included in other assets in the Company's consolidated balance sheets.

Future minimum payments under non-cancelable operating leases as of June 30, 2017 are as follows (in thousands):

	Amounts
2017 (remainder of year)	$ 3,552
2018	6,898
2019	6,946
2020	6,917
2021	7,079
Thereafter	37,137
Total minimum lease payments	$ 68,529

Rent expense was $1.8 million and $1.6 million for the three months ended June 30, 2017 and 2016 respectively and $4.0 million and $3.9 million for the six months ended June 30, 2017 and 2016, respectively.

Debt financing

In July 2015, the Company entered into a Loan and Security Agreement (the "Loan Agreement") with a bank under which term loans were available for purchases of equipment up to an aggregate of $15.0 million. As of December 31, 2016, obligations under the Loan Agreement were $12.1 million.

On March 15, 2017, the Company entered into a Loan and Security Agreement (the "Loan and Security Agreement") with a lender pursuant to which the Company borrowed an initial term loan of $40.0 million, and received net proceeds of approximately $39.7 million. Subject to certain conditions, the Company will also be eligible to borrow a second term loan of $20.0 million in the first quarter of 2018. In connection with entering into the Loan and Security Agreement, the Company terminated the Loan Agreement and repaid in full the balance of its obligations under such agreement, approximately $12.1 million. The payment to the lender under the Loan Agreement included a prepayment premium of $670,000, which was classified as extinguishment of debt and included in other income (expense), net.

Term loans under the Loan and Security Agreement bear interest at a floating rate equal to an index rate plus 7.73%, where the index rate is the greater of 0.77% or the 30-day U.S. Dollar London Interbank Offered Rate "LIBOR" as reported in *The Wall Street Journal* , with the floating rate resetting monthly subject to a floor of 8.5%. The Company can make monthly interest-only payments until May 1, 2019 (or, subject to certain conditions, May 1, 2020), and thereafter monthly payments of principal and interest are required to fully amortize the borrowed amount by a final maturity date of March 1, 2022. A fee of 5% of each funded draw is due at the earlier of prepayment or loan maturity, a facility fee of 0.5% is due upon funding for each draw, and a prepayment fee of between 1% and 3% of the outstanding balance will apply in the event of a prepayment. Concurrent with each term loan, the Company will grant to the lender a warrant to acquire shares of the Company's common stock equal to the quotient of 3% of the funded amount divided by a per share exercise price equal to the lower of the average closing price for the previous ten days of trading (calculated on the day prior to funding) or the closing price on the day prior to funding. In connection with the initial term loan, the Company granted the lender a warrant to purchase 116,845 shares of common stock at an exercise price of $10.27 per share. The Company classified the warrant as equity and determined the fair value of the warrant to be $740,000. The warrant has a term of ten years from the date of issuance and includes a cashless exercise provision.

The Company's obligations under the Loan and Security Agreement are subject to quarterly covenants to achieve certain revenue levels as well as additional covenants, including limits on the Company's ability to dispose of assets, undergo a change in control, merge with or acquire other entities, incur debt, incur liens, pay dividends or other distributions to holders of its capital stock, repurchase stock and make investments, in each case subject to certain exceptions. The Company's obligations under the Loan and Security Agreement are secured by a security interest on substantially all the Company's assets, excluding its intellectual property.

At June 30, 2017, obligations under the Loan and Security Agreement were $40.0 million. Debt issuance costs related to the Loan and Security Agreement of $339,000 and the warrant fair value of $740,000 were recorded as a direct deduction from the debt liability and are bein g amortized to interest expense over the term of the Loan and Security Agreement. Future payments under the Loan and Security Agreement as of June 30, 2017 are as follows (in thousands):

	Amounts
2017 (remainder of year)	$ 1,787
2018	3,565
2019	12,469
2020	15,910
2021	14,682
Thereafter	5,480
Total remaining debt payments	53,893
Less: amount representing debt discount	(1,025)
Less: amount representing interest	(13,893)
Present value of remaining debt payments	38,975
Less: current portion	—
Total non-current debt obligation	$ 38,975

Interest expense related to the Loan and Security Agreement and the Loan Agreement was $1.3 million and $124,000 for the six months ended June 30, 2017 and 2016, respectively.

Capital leases

The Company has entered into various capital lease agreements to obtain laboratory equipment. The terms of the capital leases are typically three years with interest rates ranging from 4.3% to 6.3%. The leases are secured by the underlying equipment. The portion of the future payments designated as principal repayment was classified as a capital lease obligation on the consolidated balance sheets.

Future payments under capital leases at June 30, 2017 are as follows (in thousands):

	Amounts
2017 (remainder of year)	$ 1,193
2018	1,430
2019	1,161
2020	532
Total capital lease obligations	4,316
Less: amount representing interest	(319)
Present value of net minimum capital lease payments	3,997
Less: current portion	(1,817)
Total non-current capital lease obligations	$ 2,180

Interest expense related to capital leases was $45,000 and $60,000 for the six months ended June 30, 2017 and 2016, respectively.

Property and equipment under capital leases was $6.6 million and $5.9 million as of June 30, 2017 and December 31, 2016, respectively. Accumulated depreciation and amortization, collectively, on these assets was $2.1 million and $3.4 million at June 30, 2017 and December 31, 2016, respectively.

Guarantees and indemnifications

As permitted under Delaware law and in accordance with the Company's bylaws, the Company indemnifies its directors and officers for certain events or occurrences while the officer or director is or was serving in such capacity. The maximum amount of potential future indemnification is unlimited; however, the Company maintains director and officer liability insurance. This insurance allows the transfer of the risk associated with the Company's exposure and may enable it to recover a portion of any future amounts paid. The Company believes the fair value of these indemnification agreements is minimal. Accordingly, the Company did not record any liabilities associated with these indemnification agreements at June 30, 2017 or December 31, 2016.

Contingencies

The Company was not a party to any material legal proceedings at June 30, 2017, or at the date of this report. The Company may from time to time become involved in various legal proceedings arising in the ordinary course of business, and the resolution of any such claims could be material.

8. Stock incentive plans

Stock incentive plans

In 2010, the Company adopted the 2010 Incentive Plan (the "2010 Plan"). The 2010 Plan provides for the granting of stock-based awards to employees, directors, and consultants under terms and provisions established by the Board of Directors. Under the terms of the 2010 Plan, options may be granted at an exercise price not less than fair market value. For employees holding more than 10% of the voting rights of all classes of stock, the exercise prices for incentive and nonstatutory stock options must be at least 110% of fair market of the common stock on the grant date, as determined by the Board of Directors. The terms of options granted under the 2010 Plan may not exceed ten years.

In January 2015, the Company adopted the 2015 Stock Incentive Plan (the "2015 Plan"), which became effective upon the closing of the Company's initial public offering ("IPO"). The 2015 Plan had 4,370,452 shares of common stock reserved for future issuance at the time of its effectiveness, which included 120,452 shares under the 2010 Plan which were transferred to the 2015 Plan upon effectiveness of the 2015 Plan. The 2015 Plan provides for automatic annual increases in shares available for grant, beginning on January 1, 2016 through January 1, 2025. In addition, shares subject to awards under the 2010 Plan that are forfeited or terminated will be added to the 2015 Plan. The 2015 Plan provides for the grant of incentive stock options, nonstatutory stock options, restricted stock awards, stock units, stock appreciation rights and other forms of equity compensation, all of which may be granted to employees, including officers, non-employee directors and consultants. Additionally, the 2015 Plan provides for the grant of cash-based awards.

Options granted generally vest over a period of four years. Typically, the vesting schedule for options granted to newly hired employees provides that 1/4 of the award vests upon the first anniversary of the employee's date of hire, with the remainder of the award vesting monthly thereafter at a rate of 1/48 of the total shares subject to the option. All other options typically vest in equal monthly installments over the four-year vesting schedule.

RSUs generally vest over a period of three years. Typically, the vesting schedule for RSUs provides that one third of the award vests upon each anniversary of the grant date.

In February 2016, the Company granted PRSUs under the 2015 Plan, which PRSUs could be earned based on the achievement of specified performance conditions measured over a period of approximately 12 months. In February 2017, upon the Audit Committee's determination of the level of achievement, 352,045 fully vested stock units were awarded to holders of PRSUs.

Based on its evaluations of the probability of achieving performance conditions, the Company recorded stock-based compensation expense of zero for the three months ended June 30, 2017 and 2016, and $0.4 million and zero for the six months ended June 30, 2017 and 2016, respectively, related to the PRSUs.

Activity under the 2010 Plan and the 2015 Plan is set forth below (in thousands, except share and per share amounts and years):

	Shares Available For Grant	Stock Options Outstanding	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Life (years)	Aggregate Intrinsic Value
Balances at December 31, 2016	1,375,766	4,490,662	$ 8.21	8.11	$ 5,312
Additional shares reserved	2,923,183	—			
Options granted	(592,398)	592,398	$ 9.19		
Options cancelled	286,165	(286,165)	$ 9.71		
Options exercised		(208,823)	$ 4.50		
RSUs granted	(1,858,540)				
RSUs cancelled	115,181				
PRSUs cancelled	177,960				
Balances at June 30, 2017	2,427,317	4,588,072	$ 8.41	7.88	$ 7,283
Options exercisable at June 30, 2017		2,044,146	$ 7.35	6.88	$ 5,392
Options vested and expected to vest at June 30, 2017		4,248,035	$ 8.34	7.80	$ 7,068

The aggregate intrinsic value is calculated as the difference between the exercise price of the underlying stock options and the fair value of the Company's common stock for stock options that were in-the-money.

The weighted-average fair value of options to purchase common stock granted was $5.97 and $6.21 in the six months ended June 30, 2017 and 2016, respectively. The weighted-average fair value of RSUs granted was $10.25 and $9.88 in the six months ended June 30, 2017 and 2016. No PRSUs were granted in the six months ended June 30, 2017 and the weighted average fair value of PRSUs granted in the six months ended June 30, 2016 was $6.33.

The total grant date fair value of options to purchase common stock vested was $4.2 million and $1.5 million in the six months ended June 30, 2017 and 2016, respectively.

The intrinsic value of options to purchase common stock exercised was $1.1 million and $852,000 in the six months ended June 30, 2017 and 2016, respectively.

The following table summarizes RSU and PRSU activity for the six months ended June 30, 2017:

	Number of Shares		Weighted-Average Grant Date Fair Value
Balance at December 31, 2016	1,421,757	$	8.77
RSUs granted	1,858,540	$	10.25
RSUs vested	(417,815)	$	10.66
PRSUs vested	(352,045)	$	6.54
RSUs cancelled	(115,181)	$	10.30
PRSUs cancelled	(177,960)	$	6.53
Balance at June 30, 2017	2,217,296	$	10.11

2015 employee stock purchase plan

In January 2015, the Company adopted the 2015 Employee Stock Purchase Plan (the "ESPP"), which became effective upon the closing of the IPO. Employees participating in the ESPP may purchase common stock at 85% of the lesser of the fair market value of common stock on the purchase date or last trading day preceding the offering date. At June 30, 2017, cash received from payroll deductions pursuant to the ESPP was $369,000.

The ESPP provides for automatic annual increases in shares available for grant, beginning on January 1, 2016 and continuing through January 1, 2025. At June 30, 2017, a total of 505,400 shares of common stock are reserved for issuance under the ESPP.

Stock-based compensation

The Company uses the grant date fair value of its common stock to value both employee and non-employee options when granted. The Company revalues non-employee options each reporting period using the fair market value of the Company's common stock as of the last day of each reporting period.

In determining the fair value of stock options and ESPP purchases, the Company uses the Black-Scholes option-pricing model and, for stock options, the assumptions discussed below. Each of these inputs is subjective and its determination generally requires significant judgment. The fair value of RSU and PRSU awards is based on the grant date share price. Compensation cost is recognized as expense on a straight-line basis over the vesting period for options and RSUs and on an accelerated basis for PRSUs.

Expected term —The expected term represents the period that the Company's stock-based awards are expected to be outstanding and is determined using the simplified method (based on the midpoint between the vesting date and the end of the contractual term).

Expected volatility —Because the Company was privately held until February 2015 and did not have any trading history for its common stock prior to its IPO, the expected volatility was estimated based on the average volatility for comparable publicly traded biopharmaceutical companies over a period equal to the expected term of the stock option grants. When selecting comparable companies on which it has based its expected stock price volatility, the Company selected companies with comparable characteristics to it, including enterprise value, risk profiles, position within the industry, and with historical share price information sufficient to meet the expected life of the stock-based awards. The historical volatility data was computed using the daily closing prices for the selected companies' common stock during the equivalent period of the calculated expected term of the stock-based awards. The Company will continue to apply this process until a sufficient amount of historical information regarding the volatility of its own stock price becomes available.

Risk-free interest rate —The risk-free interest rate is based on the U.S. Treasury zero coupon issues in effect at the time of grant for periods corresponding with the expected term of the optio n.

Dividend yield —The Company has never paid dividends on its common stock and has no plans to pay dividends on its common stock. Therefore, the Company used an expected dividend yield of zero.

The fair value of share-based payments for options granted to employees and directors was estimated on the date of grant using the Black-Scholes option-pricing model based on the following assumptions:

	Three Months Ended,		Six Months Ended,	
	June 30, 2017	June 30, 2016	June 30, 2017	June 30, 2016
Expected term (in years)	6.03	6.03	6.03	6.12
Expected volatility	71.74%	71.04%	72.64%	71.05%
Risk-free interest rate	1.89%	1.41%	2.01%	1.33%
Dividend yield	—	—	—	—

Stock-based compensation related to stock options granted to non-employees is recognized as the stock options vest. The fair value of the stock options granted is calculated at each reporting date using the Black-Scholes option-pricing model based on the following assumptions:

	As of June 30,	
	2017	2016
Expected term (in years)	6.00 – 8.75	6.76 – 9.32
Expected volatility	71.66 – 77.36%	71.36%
Risk-free interest rate	2.02 – 2.21%	1.18 – 1.42%
Dividend yield	—	—

The following table summarizes stock-based compensation expense for the three and six months ended June 30, 2017 and 2016, included in the consolidated statements of operations (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016	2017	2016
Cost of revenue	$ 885	$ 373	$ 1,202	$ 574
Research and development	2,462	729	3,757	1,267
Selling and marketing	1,489	335	2,205	576
General and administrative	1,493	440	2,443	925
Total stock-based compensation expense	$ 6,329	$ 1,877	$ 9,607	$ 3,342

At June 30, 2017, unrecognized compensation expense related to unvested stock options, net of estimated forfeitures, was $12.6 million, which the Company expects to recognize on a straight-line basis over a weighted-average period of 2.6 years. Unrecognized compensation expense related to RSUs at June 30, 2017, net of estimated forfeitures, was $16.8 million, which the Company expects to recognize on a straight-line basis over a weighted-average period of 2.5 years. At June 30, 2017, there was no unrecognized compensation expense related to PRSUs and no capitalized stock-based employee compensation.

9. Net loss per common share

The following table presents the calculation of basic and diluted net loss per share for the three and six months ended June 30, 2017 and 2016 (in thousands, except share and per share amounts):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016	2017	2016
Net loss	$ (28,557)	$ (24,847)	$ (55,485)	$ (50,437)
Shares used in computing net loss per share, basic and diluted	43,226,569	32,154,982	42,808,175	32,060,260
Net loss per share, basic and diluted	$ (0.66)	$ (0.77)	$ (1.30)	$ (1.57)

The following common stock equivalents have been excluded from diluted net loss per share for the three and six months ended June 30, 2017 and 2016 because their inclusion would be anti-dilu tive:

	Three and Six Months Ended June 30,	
	2017	2016
Shares of common stock subject to outstanding options	4,588,072	4,624,133
Shares of common stock subject to outstanding warrants	116,845	—
Shares of common stock subject to outstanding RSUs	2,217,296	1,055,835
Shares of common stock subject to outstanding PRSUs	—	520,286
Shares of common stock pursuant to ESPP	45,384	51,702
Total shares of common stock equivalents	6,967,597	6,251,956

10. Geographic information

Revenue by country is determined based on the billing address of the customer. The following presents revenue by country for the three and six months ended June 30, 2017 and 2016 (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016	2017	2016
United States	$ 12,945	$ 4,599	$ 22,123	$ 7,550
Canada	858	567	1,457	1,351
Rest of world	533	415	1,094	635
Total revenue	$ 14,336	$ 5,581	$ 24,674	$ 9,536

All long-lived assets, at June 30, 2017 and December 31, 2016, were located in the United States.

11. Subsequent events

Private placement

On August 3, 2017, in a private placement to certain accredited investors, the Company sold 5,188,235 shares of its common stock at a price of $8.50 per share, and 3,458,823 shares of its Series A convertible preferred stock at a price of $8.50 per share, for gross proceeds of approximately $73.5 million and estimated net proceeds of $68.8 million. The Series A preferred stock is a non-voting common stock equivalent and conversion of the Series A preferred stock is prohibited if the holder exceeds a specified threshold of voting security ownership. The Series A preferred stock is convertible into common stock on a one-for-one basis, subject to adjustment for events such as stock splits, combinations and the like.

CombiMatrix acquisition

In July 2017, the Company, Coronado Merger Sub, Inc., a wholly-owned subsidiary of the Company, and CombiMatrix Corporation (NASDAQ: CBMX), a Delaware corporation, entered into a Merger Agreement, pursuant to which CombiMatrix will become a wholly-owned subsidiary of the Company and the surviving corporation in the merger. The transaction is subject to certain closing conditions, including approval by the stockholders of CombiMatrix.

Consideration for the CombiMatrix acquisition merger consists of $27.0 million in shares of the Company's common stock, payable to the holders of the outstanding shares of CombiMatrix common stock, to the holders of the outstanding restricted stock units and to the holders of in-the-money stock options. In aggregate, the share total is approximately 2.85 million shares, subject to certain adjustments per the Merger Agreement.

In addition, the Company contemplates a warrant exchange to the holders of outstanding CombiMatrix Series F warrants (the "Warrant Exchange Offer") for up to approximately $6.0 million in shares of the Company's common stock, or approximately 0.63 million shares. To the extent the CombiMatrix Series F warrants are not exchanged in the Warrant Exchange Offer and are either exercised or assumed as part of the CombiMatrix Merger, the consideration payable by the Company could increase by up to $15.0 million in shares of the Company's common stock, or approximately 1.58 million shares.

Good Start Genetics acquisition

In July 2017, the Company, Bueno Merger Sub, Inc., a wholly-owned subsidiary of the Company, and Good Start Genetics, Inc., a privately-held Delaware corporation, entered into a Merger agreement, pursuant to which, Good Start will become a wholly-owned subsidiary of the Company and the surviving corporation in the merger. The acquisition closed on August 4, 2017.

Consideration for the Good Start acquisition consisted of approximately $40.0 million, including approximately $16.0 million in shares of the Company's common stock, or approximately 1.69 million shares, subject to a hold back of approximately 25% of such amount for up to 13 months to cover potential indemnification liabilities, cash of up to approximately $18.4 million, which was paid to retire certain Good Start debt and the payment or assumption of approximately $5.6 million in pre-closing and closing-related liabilities and obligations of Good Start.

ITEM 2. Management's Discussion and Analysis of Financial Condition and Results of Operations.

The following discussion of our financial condition and results of operations should be read in conjunction with our condensed consolidated financial statements and the related notes included in Item 1 of Part I of this report, and together with our audited consolidated financial statements and the related notes included in our Annual Report on Form 10-K for the year ended December 31, 2016. Historic results are not necessarily indicative of future results.

This report contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. All statements in this report other than statements of historical fact, including statements identified by words such as "believe," "may," "will," "estimate," "continue," "anticipate," "intend," "expect" and similar expressions, are forward-looking statements. Forward-looking statements include, but are not limited to, statements about:

- the structure, timing, stockholder approval and/or completion of the proposed merger with CombiMatrix Corporation;
- our intention to conduct a warrant exchange offer in connection with the proposed merger with CombiMatrix;
- our beliefs regarding the potential benefits and synergies from completed and pending acquisitions;
- our views regarding the future of genetic testing and its role in mainstream medical practice;
- strategic plans for our business, products and technology, including our ability to expand our assay and develop new assays while maintaining attractive pricing, further enhance our genetic testing service and the related user experience, build interest in and demand for our tests and attract potential partners;
- the implementation of our business model;
- the rate and degree of market acceptance of our tests and genetic testing generally;
- our ability to scale our infrastructure and operations in a cost-effective manner;
- the timing of and our ability to introduce improvements to our genetic testing platform and to expand our assay to include additional genes;
- our expectations with respect to future hirings;
- the timing and results of studies with respect to our tests;
- developments and projections relating to our competitors and our industry;
- the degree to which individuals will share genetic information generally, as well as share any related potential economic opportunities with us;
- our commercial plans, including our sales and marketing expectations;
- our ability to obtain and maintain adequate reimbursement for our tests;
- regulatory developments in the United States and foreign countries;
- our ability to hire and retain key personnel;
- our expectations regarding our ability to obtain and maintain intellectual property protection and not infringe on the rights of others;
- our expectations regarding the time during which we will be an emerging growth company under the JOBS Act;
- our ability to obtain funding for our operations;
- our financial performance, including our expectations regarding profitability;
- the impact of accounting pronouncements and our critical accounting policies, judgments, estimates, models and assumptions on our financial results; and
- our expectations regarding our future revenue, cost of revenue, operating expenses and capital expenditures, and our future capital requirements.

Forward-looking statements are subject to a number of risks and uncertainties that could cause actual results to differ materially from those expected. These risks and uncertainties include, but are not limited to, those risks discussed in Item 1A of Part II of this report. Although we believe that the expectations and assumptions reflected in the forward-looking statements are reasonable, we cannot guarantee future results, level of activity, performance or achievements. In addition, neither we nor any other person assumes responsibility for the accuracy and completeness of any of these forward-looking statements. Any forward-looking statements in this

report speak only as of the date of this report. We expressly disclaim any obligation or undertaking to update any forward-looking statements.

This report contains statistical data and estimates that we obtained from industry publications and reports. These publications typically indicate that they have obtained their information from sources they believe to be reliable, but do not guarantee the accuracy and completeness of their information. Some data contained in this report is also based on our internal estimates. Although we have not independently verified the third-party data, we believe it to be reasonable.

In this report, all references to "Invitae," "we," "us," "our," or "the company" mean Invitae Corporation.

Invitae and the Invitae logo are trademarks of Invitae Corporation. We also refer to trademarks of other corporations and organizations in this report.

Business overview

Our mission is to bring comprehensive genetic information into mainstream medical practice to improve the quality of healthcare for billions of people. We now have more than 20,000 genes in production and provide a variety of diagnostic tests that can be used in multiple indications. These additions to our test menu have resulted from a series of process improvements that have enabled us to continue to expand our test menu while maintaining our strategy of lowering the cost of genetic testing.

We have continued to experience rapid growth. For the six months ended June 30, 2017 and 2016 our revenue was $24.7 million and $9.5 million, respectively, and we incurred net losses of $55.5 million and $50.4 million, respectively. At June 30, 2017, we had an accumulated deficit of $330.7 million. We increased our number of employees to 395 at June 30, 2017 from 298 at June 30, 2016. Our sales force grew to 63 at June 30, 2017 from 38 at June 30, 2016. We expect headcount will continue to increase in 2017 as we add staff to support anticipated growth.

Since our commercial launch through June 30, 2017, we have delivered approximately 133,000 billable tests. Sales of our tests have grown significantly. In 2015 we generated approximately 19,000 billable tests, in 2016 we generated approximately 57,000 billable tests, and in the first six months of 2017 we generated approximately 53,000 billable tests. On a historical basis through June 30, 2017, approximately 21% of the billable tests we performed have been billable to institutions and patients, and the remainder have been billable to third-party payers. Many of the gene tests on our assays are tests for which private insurers reimburse. However, when we do not have reimbursement policies or contracts with private insurers, our claims for reimbursement may be denied upon submission, and we must appeal the claims. The appeals process is time consuming and expensive, and may not result in payment. Even if we are successful in achieving reimbursement, we may be paid at lower rates than if we were under contract with the third-party payer. When there is not a contracted rate for reimbursement, there is typically a greater co-insurance or co-payment requirement from the patient which may result in further delay or decreased likelihood of collection.

We intend to continue to invest in our business. In 2015 we entered into a lease agreement for a new production facility and headquarters in San Francisco, California. This lease expires in July 2026, and at June 30, 2017, aggregate future minimum lease payments for the new facility are approximately $67.4 million. In January 2017, we acquired AltaVoice, a patient-centered data company with a global platform for collecting, curating, coordinating, and delivering safeguarded data from patients and clinicians. This acquisition expands our Genome Network, designed to connect patients, clinicians, advocacy organizations, researchers, and therapeutic developers to accelerate the understanding, diagnosis, and treatment of hereditary disease. In June 2017, we acquired Ommdom, Inc., a company that develops, commercializes and sells hereditary risk assessment and management software, including CancerGene Connect, a cancer genetic counseling platform. The acquisition of Ommdom expands our suite of genome management offerings designed to help patients and clinicians use genetic information as part of mainstream medical care. On July 31, 2017, we announced that we had entered into an agreement to acquire CombiMatrix Corporation, a provider of advanced diagnostic testing for women and newborns. The pending acquisition is subject to closing conditions. On August 4, 2017, we acquired Good Start Genetics, a provider of carrier testing and preimplantation embryo testing. See Note 11 to the condensed consolidated financial statements.

We believe that the keys to our future growth will be to steadily increase the amount of genetic content we offer, consistently improve the client experience, drive physician and patient utilization of our website for ordering and delivery of results, achieve broad reimbursement coverage for our tests from third-party payers, increase the number of strategic partners working with us to add value for our clients and consistently drive down the price per gene for genetic analysis and interpretation.

Factors affecting our performance

Number of billable tests

The growth in our genetic testing business is tied to the number of tests for which we bill third-party payers, institutions or patients, which we refer to as billable tests. We bill for our services following delivery of the billable test report derived from testing samples and interpreting the results. We incur the expenses associated with a test in the period in which the test is processed regardless

of when payment is received with respect to that test. We believe the number of billable tests in any period is an important indicat or of the growth in our business.

Success obtaining reimbursement

Our ability to increase the number of billable tests and our revenue will depend in part on our success achieving broad reimbursement coverage for our tests from third-party payers. Reimbursement may depend on a number of factors, including a payer's determination that a test is appropriate, medically necessary and cost-effective. Because each payer makes its own decision as to whether to establish a policy or enter into a contract to reimburse for our testing services, seeking these approvals is a time-consuming and costly process. In addition, clinicians may decide not to order our tests if the cost of the test is not covered by insurance. Because we require an ordering physician to requisition a test, our revenue growth also depends on our ability to successfully promote the adoption of our testing services and expand our base of ordering clinicians. We believe that establishing coverage from third-party payers, including the Centers for Medicare and Medicaid Services, or CMS, is an important factor in gaining adoption by ordering clinicians. We are approved as a Medicare provider, which allows us to bill for our services to Medicare patients. In October 2016, we announced that CMS had set final pricing for our multi-gene tests for hereditary breast cancer-related disorders at $925.00 per test. We are also in contract with numerous other third-party payers, and as of June 30, 2017, we have a total of over 203 million covered lives in network, including Medicare.

In cases where we have established reimbursement rates with third-party payers, we face additional challenges in complying with their procedural requirements for reimbursement, for instance, prior authorization. These requirements may vary from payer to payer, and it may be time-consuming and require additional resources to meet these requirements. We may also experience delays in or denials of coverage if we do not adequately comply with these requirements. In addition, we have experienced, and may continue to experience, temporary delays in reimbursement when we transition to being an in-network provider with a payer.

We expect to continue to focus our resources on increasing adoption of, and expanding coverage and reimbursement for, our current tests and any future tests we may develop. However, if we are not able to continue to obtain and maintain adequate reimbursement from third-party payers for our testing services and expand the base of clinicians ordering our tests, we may not be able to effectively increase the number of billable tests or our revenue.

Ability to lower the costs associated with performing our tests

Reducing the costs associated with performing our genetic tests is both a near-term focus and a strategic objective of ours. Over the long term we will need to reduce the cost of raw materials by improving the output efficiency of our assays and laboratory processes, modifying our platform-agnostic assays and laboratory processes to use materials and technologies that provide equal or greater quality at lower cost, improving how we manage our materials and negotiating favorable terms for our materials purchases. We also have and intend to continue to design and implement hardware and software tools that will reduce personnel cost for both laboratory and clinical operations by increasing personnel efficiency and thus lowering labor costs per test.

Ability to expand our genetic content

As we reduce our costs, we intend to continue to expand our test menus by steadily releasing additional genetic content for the same or lower prices per test, ultimately leading to affordable whole genome services. The breadth and flexibility of our offering will be a critical factor in our ability to address new markets for genetic testing services. Both of these will be critical to our ability to continue to grow the volume of billable tests we deliver.

Investment in our business and timing of expenses

We plan to continue to invest significantly in our genetic testing and information management business. We deploy state-of-the-art and costly technologies in our genetic testing services, and we intend to significantly scale our infrastructure, including our testing capacity and information systems. We also expect to incur software development costs as we seek to further automate our laboratory processes and our genetic interpretation and report sign-out procedures, to scale our customer service capabilities and to expand the functionality of our website. As part of our growth, we also plan to hire additional personnel, including software engineers, sales and marketing personnel, research and development personnel, medical specialists, biostatisticians and geneticists. In addition, we expect to incur ongoing expenses as a result of operating as a public company. The expenses we incur may vary significantly by quarter, as we focus on building out different aspects of our business.

How we recognize revenue

Our historical revenue has been recognized primarily upon cash receipt. While we recognized $6.7 million of test revenue on an accrual basis in the six months ended June 30, 2017, and while we anticipate the number of payers for whom we recognize revenue

upon delivery of test results will increase in the future, we do not expect to recognize significant additional amounts of revenue on an accrual basis in 2017. Bec ause the timing and amount of cash payments received from payers is difficult to predict, we expect that our revenue will fluctuate significantly in any given quarter.

For the six months ended June 30, 2017 and 2016, amounts billed for tests delivered totaled $62.0 million and $23.4 million, respectively. In the six months ended June 30, 2017, we recognized test revenue of $17.0 million related to amounts billed for tests delivered during 2017, $6.0 million related to amounts billed for tests delivered during 2016 and $0.3 million related to amounts billed for tests delivered in 2015, as well as other revenue of $1.4 million. Of the total revenue of $24.7 million recognized for the six months ended June 30, 2017, $16.6 million was recognized as test revenue upon cash receipt, $6.7 million was recognized as test revenue on an accrual basis and $1.4 million was recognized as other revenue on an accrual basis. It is difficult to predict future revenue from previously delivered but unpaid tests. Accordingly, we cannot provide any assurance as to when, if ever, or to what extent any of these amounts will be collected. Because we are in the early stages of commercializing our tests, we have had limited payment and collection history. Notwithstanding our efforts to obtain payment for these tests, payers may deny our claims, in whole or in part, and we may never receive revenue from any previously delivered but unpaid tests. Revenue from these tests, if any, may not be equal to the billed amount due to a number of factors, including differences in reimbursement rates, the amounts of patient co-payments, the existence of secondary payers and claims denials. In addition, private payers often ask us to refrain from submitting claims for a period of up to 60 days after contract execution, which can cause the timing of payments to vary significantly during the months after contract signing, which may in turn cause our revenues to vary significantly from quarter to quarter.

We incur and recognize expenses for tests in the period in which the test is conducted and recognize revenue for tests in the period in which our revenue recognition criteria are met. Accordingly, any revenue that we receive in respect of previously delivered but unpaid tests will favorably affect our results of operations in future periods.

Financial overview

Revenue

We generate test revenue from the sale of our tests, which provide the analysis, and associated interpretation of the sequencing of parts of the genome. Clients are billed upon delivery of test results to the physician. For most of our customers, we do not have sufficient history of collection and are not yet able to determine a predictable pattern of collection, and therefore we currently recognize revenue from these customers when cash is received. Our ability to increase our test revenue will depend on our ability to increase our market penetration, obtain contracted reimbursement coverage from third-party payers and increase the rate at which we are paid for tests performed.

Other revenue consists of revenues from genome network data services and collaboration agreements, under which we provide data services for biopharma partners.

Cost of test revenue

Cost of revenue reflects the aggregate costs incurred in delivering test results to clinicians and includes expenses for materials and supplies, personnel costs including medical interpretation costs, equipment and infrastructure expenses associated with testing and allocated overhead including rent, equipment depreciation and utilities. Costs associated with performing our test are recorded as the patient's sample is processed regardless of whether and when revenue is recognized with respect to that test. As a result, our cost of revenue as a percentage of revenue may vary significantly from period to period because we generally do not recognize revenue in the period in which costs are incurred. We expect cost of revenue to generally increase in line with the increase in the number of tests we perform. However, we expect that the cost per test will decrease over time due to the efficiencies we may gain as test volume increases and from automation and other cost reductions.

Operating expenses

Our operating expenses are classified into three categories: research and development, selling and marketing, and general and administrative. For each category, the largest component is personnel costs, which include salaries, employee benefit costs, bonuses, commissions, as applicable, and stock-based compensation expense.

Research and development

Research and development expenses represent costs incurred to develop our technology and future tests and data services. These costs are principally for process development associated with our efforts to expand the number of genes we can evaluate in our tests, with our efforts to lower the cost of performing our test. In addition, we incur process development costs to further develop the software we use to operate our laboratory, analyze the data it generates, process customer orders, deliver reports and automate our

business processes. These costs consist of personnel costs, laboratory supplies and equipment expenses, cons ulting costs and allocated overhead including rent, information technology, equipment depreciation and utilities.

We expense all research and development costs in the periods in which they are incurred. We expect our research and development expenses in 2017 will be approximately equal to those incurred in 2016, as we continue our efforts to develop additional tests and reduce testing costs.

Selling and marketing

Selling and marketing expenses consist of personnel costs, client service expenses, direct marketing expenses, educational and promotional expenses, market research and analysis, and allocated overhead including rent, information technology, equipment depreciation and utilities. We expect our selling and marketing expenses will increase significantly in 2017, compared to 2016, primarily driven by the cost of hiring additional sales account executives associated with efforts to further penetrate the domestic market.

General and administrative

General and administrative expenses include executive, finance and accounting, legal and human resources functions. These expenses include personnel-related costs, audit and legal expenses, consulting costs, and allocated overhead including rent, information technology, equipment depreciation and utilities. We expect our general and administrative expenses will increase in 2017, compared to 2016, as we continue to scale our operations.

Other income (expense), net

Other income (expense), net, primarily consists of interest income and, in 2017, a loss on extinguishment of debt, and in 2016, the net exchange gain (loss) on foreign currency transactions related to the operations of our subsidiary in Chile. We closed our Chilean facility in 2016.

Interest expense

Interest expense is attributable to borrowings under our loan and security agreement, our loan agreement and financing obligations under capital lease agreements.

Critical accounting policies and estimates

Management's discussion and analysis of our financial condition and results of operations is based on our consolidated financial statements, which have been prepared in accordance with U.S. generally accepted accounting principles, or U.S. GAAP. The preparation of these financial statements requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements, as well as the reported revenue generated and expenses incurred during the reporting periods. Our estimates are based on our historical experience and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions and any such differences may be material. We believe that the accounting policies discussed below are critical to understanding our historical and future performance, as these policies relate to the more significant areas involving management's judgments and estimates.

Revenue recognition

We generate test revenue from delivery of test reports generated from our assays. Revenue is recognized when persuasive evidence of an arrangement exists; delivery has occurred or services have been rendered; the fee is fixed or determinable; and collectability is reasonably assured. The assessment of the fixed or determinable nature of the fees charged for testing performed and the collectability of those fees require significant judgment by management. When evaluating these criteria, we consider whether we have sufficient history to reliably estimate a payer's payment pattern. We review the number of tests paid against the number of tests billed over a period of at least six months and the payer's outstanding balance for unpaid tests to determine whether payments are being made at a consistently high percentage of tests billed and at appropriate amounts given the amount billed. For most payers, we have not been able to demonstrate a predictable pattern of collectability, and therefore recognize revenue when payment is received. For payers who have demonstrated a consistent pattern of payment of tests billed, we recognize revenue upon delivery of test results.

We generate other revenue from genome network subscription services and collaboration agreements. Other revenue is recognized when persuasive evidence of an arrangement exists; delivery has occurred or services have been ren dered; the fee is fixed or determinable; and collectability is reasonably assured.

Stock-based compensation

Stock-based compensation expense is measured at the date of grant and is based on the estimated fair value of the award. Compensation cost is recognized as expense on a straight-line basis over the vesting period for options and restricted stock unit, or RSU, awards and on an accelerated basis for performance based restricted stock unit, or PRSU, awards. We recognize stock-based compensation expense associated with PRSU grants when we determine the achievement of performance conditions is probable. In determining the fair value of stock options and Employee Stock Purchase Plan, or ESPP, purchases, we estimate the grant date fair value, and the resulting stock-based compensation expense, using the Black-Scholes option-pricing model. We estimate the grant date fair value of RSU and PRSU awards based on the grant date share price.

We account for stock-based compensation arrangements with non-employees using a fair value approach. The fair value of these options is measured using the Black-Scholes option-pricing model reflecting the same assumptions as applied to employee options in each of the reported periods, other than the expected life, which is assumed to be the remaining contractual life of the option. The compensation expenses of these arrangements are subject to remeasurement over the vesting terms as earned.

For the six months ended June 30, 2017 and 2016 we recorded stock-based compensation expense of $9.6 million and $3.3 million, respectively. At June 30, 2017, our unrecognized stock-based compensation expense related to unvested stock options, net of estimated forfeitures, was $12.6 million, which we expect to recognize over a weighted-average period of 2.6 years. Unrecognized compensation expense related to RSUs at June 30, 2017 was $16.8 million, which we expect to recognize on a straight-line basis over a weighted-average period of 2.5 years.

The Black-Scholes option-pricing model requires the use of highly subjective assumptions, which determine the fair value of stock-based awards. These assumptions include:

Expected term —The expected term represents the period that stock-based awards are expected to be outstanding. We used the simplified method to determine the expected term, which is based on the mid-point between the vesting date and the end of the contractual term.

Expected volatility —Since we were privately held until our initial public offering in February 2015 and did not have any trading history for our common stock, the expected volatility was estimated based on the average volatility for comparable publicly traded biopharmaceutical companies over a period equal to the expected term of the stock option grants. When selecting comparable companies on which we based our expected stock price volatility, we selected companies with comparable characteristics to us, including enterprise value, risk profiles, position within the industry, and with historical share price information sufficient to meet the expected life of the stock-based awards. The historical volatility data was computed using the daily closing prices for the selected companies' shares during the equivalent period of the calculated expected term of the stock-based awards. We will continue to apply this process until a sufficient amount of historical information regarding the volatility of our own stock price becomes available.

Risk-free interest rate —The risk-free interest rate is based on the U.S. Treasury zero coupon issues in effect at the time of grant for periods corresponding with the expected term of an option.

Dividend yield —We have never paid dividends on our common stock and have no plans to pay dividends on our common stock. Therefore, we used an expected dividend yield of zero.

In addition to the Black-Scholes assumptions, we estimate our forfeiture rate based on an analysis of our actual forfeitures and will continue to evaluate the adequacy of the forfeiture rate based on actual forfeiture experience, analysis of employee turnover behavior, and other factors. The impact from any forfeiture rate adjustment would be recognized in full in the period of adjustment and if the actual number of future forfeitures differs from our estimates, we might be required to record adjustments to stock-based compensation in future periods.

Results of operations

Comparison of the three months ended June 30, 2017 and 2016 (in thousands except for percentage changes)

	Three Months Ended June 30,		Dollar	%
	2017	2016	Change	Change
Revenue:				
Test revenue	$ 13,592	$ 5,533	$ 8,059	146%
Other revenue	744	48	696	1,450%
Total revenue	14,336	5,581	8,755	157%
Operating expenses:				
Cost of test revenue	10,490	6,476	4,014	62%
Research and development	11,339	10,713	626	6%
Selling and marketing	12,520	6,843	5,677	83%
General and administrative	8,062	6,384	1,678	26%
Total operating expenses	42,411	30,416	11,995	39%
Loss from operations	(28,075)	(24,835)	(3,240)	13%
Other income (expense), net	151	88	63	72%
Interest expense	(1,067)	(100)	(967)	967%
Net loss before taxes	(28,991)	(24,847)	(4,144)	17%
Income tax benefit	(434)	—	(434)	(100)%
Net loss	$ (28,557)	$ (24,847)	$ (3,710)	15%

Comparison of the six months ended June 30, 2017 and 2016 (in thousands except for percentage changes)

	Six Months Ended June 30,		Dollar	%
	2017	2016	Change	Change
Revenue:				
Test revenue	$ 23,287	$ 9,488	$ 13,799	145%
Other revenue	1,387	48	1,339	2,790%
Total revenue	24,674	9,536	15,138	159%
Operating expenses:				
Cost of test revenue	19,819	12,463	7,356	59%
Research and development	21,362	21,373	(11)	(0)%
Selling and marketing	24,092	13,886	10,206	73%
General and administrative	14,813	12,139	2,674	22%
Total operating expenses	80,086	59,861	20,225	34%
Loss from operations	(55,412)	(50,325)	(5,087)	10%
Other income (expense), net	(540)	72	(612)	(850)%
Interest expense	(1,389)	(184)	(1,205)	655%
Net loss before taxes	(57,341)	(50,437)	(6,904)	14%
Income tax benefit	(1,856)	—	(1,856)	100%
Net loss	$ (55,485)	$ (50,437)	$ (5,048)	10%

Revenue

The increase in total revenue of $8.8 million for the three months ended June 30, 2017 compared to the same period in 2016 was due primarily to increased test volume and improved collections. Revenue recognized on an accrual basis increased to $4.1 million in the three months ended June 30, 2017 compared to $0.5 million in the same period in 2016. In the three months ended June 30, 2017, other revenue of $0.7 million consisted primarily of genome network revenues relating to our acquisition of AltaVoice.

The increase in total revenue of $15.1 million for the six months ended June 30, 2017 compared to the same period in 2016 was due primarily to increased test volume and improved collections. Revenue recognized on an accrual basis increased to $6.7 million in the six months ended June 30, 2017 compared to $1.3 million in the same period in 2016. In the six months ended June 30, 2017, other revenue of $1.4 million consisted primarily of genome network revenues relating to our acquisition of AltaVoice.

Cost of test revenue

The increase in the cost of test revenue of $4.0 million for the three months ended June 30, 2017 compared to the same period in 2016 was primarily due to costs associated with increased test volume. For the three months ended June 30, 2017, the number of billable test results delivered increased to more than 29,000 from approximately 12,100 for the same period in 2016. Personnel costs increased by $1.5 million reflecting increased headcount, increased time spent processing revenue-generating tests and related overhead costs. Shipping and collection costs increased by $0.8 million, reagent and laboratory materials costs increased by $0.7 million and costs associated with equipment and equipment maintenance increased by $0.5 million. Allocated technology and facilities-related expenses increased by $0.2 million, reflecting costs associated with our new production facility and headquarters, which became fully operational in February 2017.

The increase in the cost of test revenue of $7.4 million for the six months ended June 30, 2017 compared to the same period in 2016 was primarily due to costs associated with increased test volume. For the six months ended June 30, 2017, the number of billable test results delivered increased to approximately 53,200 from approximately 21,800 for the same period in 2016. Personnel costs increased by $2.8 million reflecting increased headcount, increased time spent processing revenue-generating tests and related overhead costs. Reflecting the increased test volumes, shipping and collection costs increased by $1.6 million and reagent and laboratory materials costs increased by $1.5 million. Costs associated with equipment and equipment maintenance increased by $0.9 million. Allocated technology and facilities-related expenses increased by $0.3 million, reflecting costs associated with our new production facility and headquarters, which became fully operational in February 2017.

Research and development

The increase in research and development expenses of $0.6 million for the three months ended June 30, 2017 compared to the same period in 2016 was primarily driven by increased stock-based compensation costs of $2.1 million reflecting new restricted stock unit grants. In addition allocated technology and facilities-related expenses increased by $0.4 million, reflecting costs associated with our new production facility and headquarters, which became fully operational in February 2017. These cost increases were partially offset by an increase of $0.9 million in research and development activities charged to cost of revenue, reflecting increased test volumes and reduced validation sequencing activities in 2017. Also, costs of reagents and laboratory materials decreased by $0.4 million, depreciation decreased by $0.2 million, personnel costs decreased by $0.2 million and professional fees decreased by $0.1 million.

The decrease in research and development expenses of $11,000 for the six months ended June 30, 2017 compared to the same period in 2016 was primarily driven by the effect of increased test volumes and reduced validation sequencing activities in 2017 offset by increased stock-based compensation costs. Allocation of resources from research and development to cost of revenue, which reduces research and development expense, increased by $1.9 million, reflecting greater test volumes. Costs of reagents and laboratory materials decreased by $0.8 million. In addition, professional fees, personnel costs and depreciation each decreased by $0.3 million. These cost decreases were partially offset by increased stock-based compensation costs of $2.9 million reflecting new restricted stock unit grants. In addition, allocated technology and facilities-related expenses increased by $0.9 million, reflecting costs associated with our new production facility and headquarters, which became fully operational in February 2017.

Selling and marketing

The increase in selling and marketing expenses of $5.7 million for the three months ended June 30, 2017 compared to the same period in 2016 was due primarily to increased personnel costs of $3.5 million. Personnel costs increased due to headcount increases which reflected the hiring of new field sales representatives, the addition of former AltaVoice employees and the transfer of personnel to selling and marketing from research and development. In addition, stock-based compensation costs increased by $1.3 million reflecting new restricted stock unit grants and increased headcount. Allocated technology and facilities-related expenses increased by $1.0 million, reflecting costs associated with our new production facility and headquarters, which became fully operational in February 2017. Travel costs increased by $0.4 million, reflecting increased headcount. These cost increases were partially offset by an increase of $0.6 million in sales and marketing activities charged to cost of test revenue, reflecting increased test volumes and sign-out activity.

The increase in selling and marketing expenses of $10.2 million for the six months ended June 30, 2017 compared to the same period in 2016 was due primarily to increased personnel costs of $6.7 million. Personnel costs increased due to headcount increases which reflected the hiring of new field sales representatives, the addition of former AltaVoice employees and the transfer of personnel to selling and marketing from research and development. In addition, allocated technology and facilities-related expenses increased by $2.0 million, reflecting costs associated with our new production facility and headquarters, which became fully operational in February 2017. Stock-based compensation costs increased by $1.8 million reflecting new restricted stock unit grants and increased headcount and travel costs increased by $0.8 million, reflecting increased headcount. These cost increases were partially offset by an increase of $1.0 million in allocations of resources from sales and marketing to cost of revenue, reflecting increased test volumes and sign-out activity. In addition, marketing expenses decreased by $0.2 million.

General and administrative

The increase in general and administrative expenses of $1.7 million for the three months ended June 30, 2017 compared to the same period in 2016 was primarily due to the following: stock-based compensation costs increased by $1.1 million reflecting new restricted stock unit grants and increased headcount, legal and accounting fees increased by $1.0 million and personnel costs increased by $1.0 million principally reflecting increased headcount. Headcount increased principally due to hiring an internal billings and collection team to replace third-party billings and collections contractors. We recorded a charge of $0.2 million for the change in fair value of contingent consideration related to the AltaVoice acquisition. Information technology costs increased by $0.3 million. Also, depreciation increased by $0.2 million, due to leasehold improvements in our new production facility and headquarters and consulting costs increased by $0.2 million.

These cost increases were offset by the following: allocated technology and facilities-related expenses decreased by $1.6 million, reflecting the allocation of costs associated with our new production facility and headquarters, which became fully operational in February 2017, to other departments. Occupancy costs decreased by $0.8 million principally for the following reason; from February 2016 to January 2017, we recorded rent expense for our new production facility and headquarters as general and administrative expense. Beginning in February 2017, upon commencement of occupancy of our new production facility and headquarters, we began allocating rent expense to other functional areas of our organization, that is, to cost of test revenue, research and development, selling and marketing, and general and administrative.

The increase in general and administrative expenses of $2.7 million for the six months ended June 30, 2017 compared to the same period in 2016 was primarily due to the following: stock-based compensation costs increased by $1.5 million reflecting new restricted stock unit grants and increased headcount. Personnel costs increased by $1.2 million principally reflecting increased headcount. Headcount increased principally due to hiring an internal billings and collection team to replace third-party billings and collections contractors. Third-party billings and collection costs increased by $0.9 million, reflecting increased billing-related cash collections. Information technology costs increased by $0.5 million. We recorded a charge of $0.2 million, in the second quarter of 2017, for the change in fair value of contingent consideration related to the AltaVoice acquisition. Depreciation increased by $0.3 million, due to leasehold improvements in our new production facility and headquarters and consulting costs increased by $0.3 million. In addition, travel and related costs increased by $0.2 million.

These cost increases were offset by increased allocations of technology and facilities-related expenses to other functional areas of $3.2 million, reflecting the allocation of costs associated with our new production facility and headquarters, which became fully operational in February 2017. From February 2016 to January 2017, we recorded rent expense for our new production facility and headquarters as general and administrative expense. Beginning in February 2017, we began allocating this cost across our organization.

Other income (expense), net

The net increase in other income (expense), net of $0.1 million for the three months ended June 30, 2017 compared to the same period in 2016 was principally due to increased interest income, gains on sales of equipment and adjustments to the fair value of stock liabilities related to acquisitions.

The net decrease in other income (expense), net of $0.6 million for the six months ended June 30, 2017 compared to the same period in 2016 was principally due to a loss on extinguishment of debt of $0.7 million recorded in March 2017. This charge related to our repayment in full, and prior to the scheduled maturity date, of the balance of our obligations under a loan and security agreement entered into in July 2015, or the 2015 Loan Agreement.

Interest expense

The increase in interest expense of $1.0 million for the three months ended June 30, 2017 compared to the same period in 2016 was due principally to increased borrowings, under a loan and security agreement entered into in March 2017, or the 2017 Loan Agreement.

The increase in interest expense of $1.2 million for the six months ended June 30, 2017 compared to the same period in 2016 was due principally to increased borrowings, both under the 2015 Loan Agreement and the 2017 Loan Agreement.

Income tax benefit

The income tax benefit of $0.4 million and $1.9 million recorded in the three and six months ended June 30, 2017, respectively, was due to changes in our deferred income tax asset valuation allowances resulting from our acquisitions of AltaVoice in January 2017 and Ommdom in June 2017.

Liquidity and capital resources

Liquidity and capital expenditures

We have incurred net losses since our inception. For the six months ended June 30, 2017 and 2016, we had net losses of $55.5 million and $50.4 million, respectively, and we expect to incur additional losses in the near-term future. At June 30, 2017, we had an accumulated deficit of $330.7 million. To date, we have generated only limited revenue, and we may never achieve revenue sufficient to offset our expenses.

Since inception, our operations have been financed primarily by net proceeds of $202.3 million from sales of our convertible preferred stock, net proceeds of approximately $105.7 million from our initial public offering and net proceeds of $47.1 million from an underwritten public offering of our common stock which closed in November 2016. In addition, in August 2017, we sold common stock and Series A convertible preferred stock in a private placement for net proceeds of approximately $68.8 million.

From inception through June 30, 2017, we have entered into various capital lease agreements for an aggregate financing amount of $11.8 million to obtain laboratory equipment. The terms of our capital leases are typically three years. Interest rates for currently outstanding capital leases range from 4.3% to 6.3% and the leases are secured by the underlying equipment.

In addition, in July 2015, we entered into the 2015 Loan Agreement, with a bank under which term loans for purchases of equipment up to an aggregate of $15.0 million were available in tranches not to exceed $2.5 million. At December 31, 2016, we had borrowed a total of $15.0 million under the 2015 Loan Agreement and our outstanding balance payable to the lender was $12.1 million. In March 2017, in connection with the execution of a new loan agreement, we repaid in full the balance of our obligations under the 2015 Loan Agreement, approximately $12.1 million, and terminated the 2015 Loan Agreement.

On March 15, 2017, we entered into the 2017 Loan Agreement, with a lender pursuant to which we borrowed an initial term loan of $40.0 million, and received net proceeds of approximately $39.7 million. Subject to certain conditions, we will also be eligible to borrow a second term loan of $20.0 million in the first quarter of 2018.

Term loans under the 2017 Loan Agreement bear interest at a floating rate equal to an index rate plus 7.73%, where the index rate is the greater of 0.77% or the 30-day U.S. Dollar London Interbank Offered Rate, or LIBOR, as reported in *The Wall Street Journal* , with the floating rate resetting monthly subject to a floor of 8.5%. We can make monthly interest-only payments until May 1, 2019 (or, subject to certain conditions, May 1, 2020), and thereafter monthly payments of principal and interest are required to fully amortize the borrowed amount by a final maturity date of March 1, 2022. A fee of 5% of each funded draw is due at the earlier of prepayment or loan maturity, a facility fee of 0.5% is due upon funding for each draw, and a prepayment fee of between 1% and 3% of the outstanding balance will apply in the event of a prepayment. Concurrent with each term loan, we will grant to the lender a warrant to acquire shares of our common stock equal to the quotient of 3% of the funded amount divided by a per share exercise price equal to the lower of the average closing price for the previous ten days of trading (calculated on the day prior to funding) or the closing price on the day prior to funding. In connection with the initial term loan, we granted the lender a warrant to purchase 116,845 shares of common stock at an exercise price of $10.27 per share. The warrants have a term of ten years from the date of issuance and include a cashless exercise provision.

Our obligations under the 2017 Loan Agreement are subject to quarterly covenants to achieve certain revenue levels as well as additional covenants, including limits on our ability to dispose of assets, undergo a change in control, merge with or acquire other entities, incur debt, incur liens, pay dividends or other distributions to holders of our capital stock, repurchase stock and make investments, in each case subject to certain exceptions. Our obligations under the 2017 Loan Agreement are secured by a security interest on substantially all of our assets, excluding our intellectual property.

We estimate our capital expenditures for the full year 2017 will be $8.6 million.

At June 30, 2017 and December 31, 2016, we had $80.4 million and $97.3 million, respectively, of cash, cash equivalents, restricted cash and marketable securities.

Our primary uses of cash are to fund our operations as we continue to grow our business. Cash used to fund operating expenses is affected by the timing of when we pay expenses, as reflected in the change in our outstanding accounts payable and accrued expenses.

We have incurred substantial losses since our inception, and we expect to continue to incur operating losses in the near-term. We believe our existing cash and cash equivalents as of June 30, 2017, revenue from the sale of our tests, a second term loan of $20.0 million under the 2017 Loan Agreement, and the net proceeds of a private placement that closed in August 2017, will be sufficient to meet our anticipated cash requirements for the 12-month period following the filing date of this report. See Note 11, “Subsequent events” in the Notes to Condensed Consolidated Financial Statements.

Beyond this 12-month period, we intend to generate sufficient cash from operations to fund our future operating needs, but there can be no assurance we will be able to do so.

We may need additional funding to finance operations prior to achieving profitability. We regularly consider fundraising opportunities and will determine the timing, nature and amount of financings based upon various factors, including market conditions and our operating plans. We may in the future elect to finance o perations by selling equity or debt securities or borrowing money. If we raise funds by issuing equity securities, dilution to stockholders may result. Any equity securities issued may also provide for rights, preferences or privileges senior to those of h olders of our common stock. If we raise funds by issuing debt securities, these debt securities would have rights, preferences and privileges senior to those of holders of our common stock. In addition, the terms of debt securities or borrowings could impo se significant restrictions on our operations. If additional funding is required, there can be no assurance that additional funds will be available to us on acceptable terms on a timely basis, if at all. If we are unable to obtain additional funding when n eeded, we will need to curtail planned activities to reduce costs. Doing so will likely have an unfavorable effect on our ability to execute on our business plan, and have an adverse effect on our business, results of operations and future prospects.

We have implemented the guidance in Financial Accounting Standards Board Accounting Standards Update No. 2014-15, *Presentation of Financial Statements — Going Concern (Subtopic 205-40)* , and concluded that there are not conditions or events, considered in the aggregate, that raise substantial doubt about our ability to continue as a going concern for a period of one year following the date that the June 30, 2017 financial statements are issued.

The following table summarizes our cash flows for the six months ended June 30, 2017 and 2016:

	Six Months Ended June 30,	
	2017	2016
	(in thousands)	
Cash used in operating activities	$ (41,831)	$ (42,396)
Cash used in investing activities	(25,387)	(3,865)
Cash provided by financing activities	28,366	4,651

Cash flows from operating activities

For the six months ended June 30, 2017, cash used in operating activities of $41.8 million principally resulted from our net loss of $55.5 million offset by non-cash charges of $9.6 million for stock-based compensation, $3.5 million for depreciation and amortization and $0.3 million for losses on disposals of assets. The net effect on cash of changes in net operating assets was a use of cash of $0.2 million.

For the six months ended June 30, 2016, cash used in operating activities of $42.4 million principally resulted from our net loss of $50.4 million offset by non-cash charges of $3.3 million for stock-based compensation, $3.3 million for depreciation and amortization and $0.9 million for losses on disposals of assets. The net effect on cash of changes in net operating assets was a source of cash of $0.3 million.

Cash flows from investing activities

For the six months ended June 30, 2017, cash used in investing activities of $25.4 million was primarily due to purchases of marketable securities exceeding maturities of marketable securities by $22.0 million. This was due to the application of net proceeds received from the term loan under the 2017 Loan Agreement to purchase marketable securities. In addition, cash used for purchases of property and equipment was $3.5 million.

For the six months ended June 30, 2016, cash used in investing activities of $3.9 million was primarily due to purchases of property and equipment of $3.8 million.

Cash flows from financing activities

For the six months ended June 30, 2017, cash provided by financing activities of $28.4 million consisted of net proceeds of $39.7 million from an initial term loan under the 2017 Loan Agreement and cash received from exercises of stock options and employee stock plan purchases totaling $2.3 million. These cash inflows were partially offset by loan payments of $12.1 million and capital lease obligations payments of $1.5 million.

For the six months ended June 30, 2016, cash provided by financing activities of $4.7 million consisted of borrowings of $5.0 million under the 2015 Loan Agreement and cash received from exercises of stock options of $1.4 million, partially offset by loan payments of $0.9 million and capital lease obligations payments of $0.8 million.

Contractual obligations

The following table summarizes our contractual obligations, including interest, as of June 30, 2017 (in thousands):

Contractual obligations:	Remainder of 2017	2018 and 2019	2020 and 2021	2022 and beyond	Total
Operating leases	$ 3,552	$ 13,844	$ 13,996	$ 37,137	$ 68,529
Capital leases	1,193	2,591	532	—	4,316
Term loan	1,787	16,034	30,592	5,480	53,893
Total	$ 6,532	$ 32,469	$ 45,120	$ 42,617	$ 126,738

In September 2015, we entered into a lease agreement for our new production facility and headquarters in San Francisco, California, in which we commenced occupancy and operations in January 2017. This lease expires in July 2026. Leases for other facilities in California and in Cambridge, Massachusetts expire at various dates from April 2017 through January 2018.

Aggregate future minimum lease payments for these facilities are included in the table above. See Note 7, “Commitments and contingencies” in the Notes to Condensed Consolidated Financial Statements.

In March 2017, we entered into the 2017 Loan Agreement pursuant to which we borrowed an initial term loan of $40.0 million and received net proceeds of $39.7 million. Subject to certain conditions, we will also be eligible to borrow a second term loan of $20.0 million in the first quarter of 2018. The amounts in the line item “Term loan” in the table above include principal and interest payments pertaining to the initial term loan of $40.0 million. See Note 7, “Commitments and contingencies” in the Notes to Condensed Consolidated Financial Statements.

Off-balance sheet arrangements

We have not entered into any off-balance sheet arrangements and do not have any holdings in variable interest entities.

Recent accounting pronouncements

See “Recent accounting pronouncements” in Note 2, “Summary of significant accounting policies” in the Notes to Condensed Consolidated Financial Statements for a discussion of recently adopted accounting pronouncements and accounting pronouncements not yet adopted, and their expected effect on our financial position and results of operations.

ITEM 3. Quantitative and Qualitative Disclosures About Market Risk.

We are exposed to market risks in the ordinary course of our business. These risks primarily relate to interest rates. We had loan obligations of $40.0 million at June 30, 2017, which resulted from a term loan pursuant to the 2017 Loan Agreement. This loan is subject to a floating interest rate. We had capital lease obligations of $4.0 million as of June 30, 2017, which result from various capital lease agreements to obtain laboratory equipment. Our capital lease obligations carry fixed rates of interest. Our cash, cash equivalents, marketable securities and restricted cash totaled $80.4 million at June 30, 2017, and consisted of bank deposits, money market funds, U.S treasury notes, and U.S. government agency securities. Such interest-bearing instruments carry a degree of risk; however, because our investments are primarily short-term in duration, we have not been exposed to, nor do we anticipate being exposed to, material risks due to changes in interest rates. At June 30, 2017, a hypothetical 1% (100 basis points) increase in interest rates would have resulted in a decline in the fair value of our cash equivalents and portfolio of marketable securities of approximately $197,000. Fluctuations in the value of our cash equivalents and portfolio of marketable securities caused by a change in interest rates (gains or losses on the carrying value) are recorded in other comprehensive gain (loss), and are realized only if we sell the underlying securities prior to maturity or declines in fair value are determined to be other-than-temporary.

ITEM 4. Controls and Procedures.

(a) Evaluation of disclosure controls and procedures

We maintain “disclosure controls and procedures,” as such term is defined in Rule 13a-15(e) under the Securities Exchange Act of 1934, or Exchange Act, that are designed to ensure that information required to be disclosed by us in reports that we file or submit under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in Securities and Exchange Commission rules and forms, and that such information is accumulated and communicated to our management, including our principal executive officer and principal financial officer, as appropriate, to allow timely decisions regarding required disclosure. In designing and evaluating our disclosure controls and procedures, management recognized that disclosure controls and procedures, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the disclosure

controls and procedures are met. Our disclosure controls and procedures have been designed to meet reasonable assurance standards. Additionally, in designing disclosu re controls and procedures, our management necessarily was required to apply its judgment in evaluating the cost-benefit relationship of possible disclosure controls and procedures. The design of any disclosure controls and procedures also is 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.

Based on their evaluation as of the end of the period covered by this Quarterly Report on Form 10-Q, our Chief Executive Officer (our principal executive officer) and Chief Financial Officer (our principal financial officer) have 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

During the quarterly period covered by this Quarterly Report on Form 10-Q, there were no changes in our internal control over financial reporting that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II — Othe r Information

ITEM 1. Legal Proceedings.

We are not a party to any material legal proceedings on the date of this report. We may from t ime to time become involved in legal proceedings arising in the ordinary course of business, and the resolution of any such claims could be material.

ITEM 1A. Risk Factors.

Risks related to the proposed acquisition of CombiMatrix

The completion of the proposed merger with CombiMatrix is subject to a number of conditions that are outside the control of Invitae and CombiMatrix, and there can be no assurance that the proposed merger will be completed in a timely manner or at all. If the merger is not consummated, Invitae's business could suffer materially and its stock price could decline

The consummation of the proposed merger between Invitae and CombiMatrix is subject to a number of closing conditions, including (i) the approval by CombiMatrix's stockholders and (ii) completion of Invitae's warrant exchange offer for CombiMatrix Series F warrants, which requires (a) a minimum participation level by holders of at least 90% of the Series F warrants, unless waived by Invitae, and (b) other closing conditions to the warrant exchange offer are satisfied. The completion of the merger is also subject to a number of other conditions, including certain governmental approvals and the absence of a material adverse effect upon either party. We cannot assure you that all of the conditions will be satisfied or waived. If the conditions are not satisfied or waived, the merger may not occur or will be delayed, and Invitae may lose some or all of the intended benefits of the merger.

If the proposed merger is not consummated, we may be subject to a number of material risks, and our business and stock price could be adversely affected, as follows:

- We have incurred and expect to continue to incur significant expenses related to the proposed merger with CombiMatrix even if the merger is not consummated;
- We could be obligated to reimburse CombiMatrix for various expenses incurred in connection with the merger up to a maximum of $400,000; and
- The market price of our common stock may decline to the extent that the current market price reflects a market assumption that the proposed merger will be completed.

Our proposed acquisition of CombiMatrix could disrupt our business and harm our financial condition.

The announcement of the merger or the pendency of the proposed transaction may disrupt our current plans and operations and may divert management's time and resources from our core business. Furthermore, we may not realize the expected benefits, synergies and growth prospects resulting from the proposed merger with CombiMatrix, or they may not be achieved in a timely manner. We have limited experience with respect to acquisitions and may not be successful in integrating CombiMatrix' business following the closing or in managing our growth effectively. We may experience potential difficulties in employee retention as a result of the announcement and pendency of the proposed acquisition. Additionally, the reaction of customers and potential customers, payers, partners and competitors to the announcement of the proposed transaction may disrupt our business. Any cash we may spend as part of the integration activities after closing of the proposed merger could divert that cash from other uses.

The merger exchange ratio is not adjustable based on the market price of our common stock so the merger consideration at the closing may have a greater or lesser value than at the time the merger agreement was signed.

The merger agreement establishes the exchange ratio for the CombiMatrix common stock and preferred stock, and any changes in the market price of our common stock before the completion of the merger will not affect the number of shares CombiMatrix securityholders will be entitled to receive pursuant to the merger agreement. Therefore, if before the completion of the merger the market price of our common stock declines from the market price on the date of the merger agreement, then CombiMatrix securityholders could receive merger consideration with substantially lower value. Similarly, if before the completion of the merger the market price of our common stock increases from the market price on the date of the merger agreement, then CombiMatrix securityholders could receive merger consideration with substantially more value for their shares of CombiMatrix capital stock than the parties had negotiated for in the establishment of the exchange ratio. Additionally, the merger agreement does not include a price-based termination right. Because the exchange ratio does not adjust as a result of changes in the value of our common stock, for each one percentage point that the market value of our common stock rises or declines, there is a corresponding one percentage point rise or decline, respectively, in the value of the total merger consideration issued to CombiMatrix securityholders.

The merger m ay be completed even though material adverse changes may result from the announcement of the merger, industry-wide changes and other causes.

In general, either we or CombiMatrix can refuse to complete the merger if there is a material adverse change affecting the other party between the date of the merger agreement and the closing. However, certain types of changes do not permit either party to refuse to complete the merger, even if such change could be said to have a material adverse effect on us or CombiMatrix, including:

- conditions generally affecting the industries in which CombiMatrix and Invitae operate or the United States or global economy or capital markets as a whole;
- any natural disaster or any acts of terrorism, sabotage, military action or war or any escalation of worsening thereof;
- changes in regulatory, legislative or political conditions in the United States or any other country or region in the world;
- changes in conditions in the financial markets, credit markets or capital markets in the United States or any other country or region in the world;
- any effect resulting from the execution, delivery, announcement or performance of the obligations under the merger agreement or the announcement, pendency or anticipated consummation of the merger;
- any failure by Invitae or CombiMatrix to meet internal projections or forecasts or third party revenue or earnings predictions for any period ending on or after the date of the merger agreement;
- any changes in GAAP or applicable legal requirements after the date of the merger agreement;
- with respect to CombiMatrix, any rejection by a governmental body of a registration or filing by CombiMatrix relating to certain intellectual property rights; or
- with respect to CombiMatrix, any change in the cash position of CombiMatrix which results from operations in the ordinary course of business.

If adverse changes occur and the parties still complete the merger, our stock price may suffer. This in turn may reduce the value of the merger to our stockholders.

Our stockholders will experience substantial dilution as a result of the additional securities we will issue for the acquisition.

Our stockholders will experience substantial dilution as a result of the additional shares of our common stock, and securities exercisable for additional shares of our common stock, to be issued to CombiMatrix security holders as a result of the acquisition, and this could cause the market price of our common stock to decline.

The market price of our common stock following the merger may decline as a result of the merger.

The market price of our common stock may decline as a result of the merger for a number of reasons, including:

- investors react negatively to the prospects of the combined organization's business and prospects from the merger;
- the effect of the merger on the combined organization's business and prospects is not consistent with the expectations of financial or industry analysts; or
- the combined organization does not achieve the perceived benefits of the merger as rapidly or to the extent anticipated by financial or industry analysts.

Risks related to our business and strategy

We expect to continue incurring significant losses, and we may not successfully execute our plan to achieve or sustain profitability.

We have incurred substantial losses since our inception. For the six months ended June 30, 2017 and 2016, we had net losses of $55.5 million and $50.4 million, respectively. At June 30, 2017, we had an accumulated deficit of $330.7 million. To date, we have generated limited revenue, and we expect to continue to incur significant losses. In addition, these losses may increase as we focus on scaling our business and operations. Our prior losses and expected future losses have had and will continue to have an adverse effect on our stockholders' equity and working capital. Although we plan on achieving profitability by the end of 2018, we may not successfully execute our plan. Our failure to achieve and sustain profitability in the future would negatively affect our business, financial condition, results of operations and cash flows, and could cause the market price of our common stock to decline.

We began operations in January 2010, and commercially launched our initial assay in late November 2013; accordingly, we have a relatively limited operating history upon which you can evaluate our business and prospects. Our limited commercial histo ry makes it difficult to evaluate our current business and makes predictions about our future results, prospects or viability subject to significant uncertainty. Our prospects must be considered in light of the risks and difficulties frequently encountered by companies in their early stage of development, particularly companies in new and rapidly evolving markets such as ours. These risks include an evolving and unpredictable business model and the management of growth. To address these risks, we must, amon g other things, increase our customer base, implement and successfully execute our business and marketing strategy, continue to expand, automate and upgrade our laboratory, technology and data systems, obtain and maintain coverage and reimbursement by heal thcare payers, provide rapid test turnaround times with accurate results at low prices, provide superior customer service, respond to competitive developments and attract, retain and motivate qualified personnel. We cannot assure you that we will be succes sful in addressing these risks, and the failure to do so could have a material adverse effect on our business, prospects, financial condition and results of operations.

We have acquired and may continue to acquire businesses or assets, form joint ventures or make investments in other companies or technologies that could harm our operating results, dilute our stockholders' ownership, or cause us to incur debt or significant expense.

As part of our business strategy, we have pursued and may continue to pursue acquisitions of complementary businesses or assets, as well as technology licensing arrangements. We also may pursue strategic alliances that leverage our core technology and industry experience to expand our offerings or distribution, or make investments in other companies. As an organization, we have limited experience with respect to acquisitions as well as the formation of strategic alliances and joint ventures.

In January 2017, we acquired AltaVoice (formerly PatientCrossroads), a privately-owned, patient-centered data company. In June 2017, we acquired Ommdom, a privately-held company that develops, commercializes and sells hereditary risk assessment and management software, including CancerGene Connect, a cancer genetic counseling platform. In July 2017, we entered into a merger agreement to acquire CombiMatrix Corporation, a publicly-traded company which specializes in prenatal diagnosis, miscarriage analysis and pediatric developmental disorders. In August 2017, we acquired Good Start Genetics, a privately-held company focused on preimplantation and carrier screening for inherited disorders.

With respect to AltaVoice, Ommdom, Good Start and any acquisitions we may make in the future, including CombiMatrix, we may not be able to integrate these acquisitions successfully into our existing business, and we could assume unknown or contingent liabilities. Any acquisitions by us also could result in significant write-offs or the incurrence of debt and contingent liabilities, any of which could harm our operating results. Integration of an acquired company or business, including Good Start, also may require management resources that otherwise would be available for ongoing development of our existing business. We may not identify or complete future transactions, such as CombiMatrix, in a timely manner, on a cost-effective basis, or at all, and we may not realize the anticipated benefits of any acquisition, technology license, strategic alliance, joint venture or investment.

To finance any acquisitions or investments, we may choose to raise additional funds. If we raise funds by issuing equity securities, dilution to our stockholders could result. Any equity securities issued also may provide for rights, preferences or privileges senior to those of holders of our common stock. In August 2017, in a private placement to certain accredited investors, we offered and sold common stock and Series A convertible preferred stock for gross proceeds of approximately $73.5 million. The Series A preferred stock is a non-voting common stock equivalent and conversion of the Series A preferred stock is prohibited if the holder exceeds a specified threshold of voting security ownership. The Series A preferred stock is convertible into common stock on a one-for-one basis, subject to adjustment for events such as stock splits, combinations and the like. If we raise funds by issuing debt securities, these debt securities would have rights, preferences and privileges senior to those of holders of our common stock. The terms of debt securities issued or borrowings could impose significant restrictions on our operations. If we raise funds through collaborations and licensing arrangements, we might be required to relinquish significant rights to our technologies or products, or grant licenses on terms that are not favorable to us. If the price of our common stock is low or volatile, we may not be able to acquire other companies for stock. Alternatively, it may be necessary for us to raise additional funds for these activities through public or private financings. Additional funds may not be available on terms that are favorable to us, or at all. In addition, our 2017 Loan Agreement limits our ability to merge with or acquire other entities, incur debt, incur liens, pay dividends or other distributions to holders of our capital stock and make investments, in each case subject to certain exceptions.

If third-party payers, including managed care organizations, private health insurers and government health plans do not provide adequate reimbursement for our tests or we are unable to comply with their requirements for reimbursement, our commercial success could be negatively affected.

Our ability to increase the number of billable tests and our revenue will depend on our success achieving reimbursement for our tests from third-party payers. Reimbursement by a payer may depend on a number of factors, including a payer's determination that a test is appropriate, medically necessary, and cost-effective.

Since each payer makes its own decision as to whether to establish a policy or enter into a contract to cover our tests, as well as the amount it will reimburse for a test, seeking these approvals is a time-consuming and costly process. In addition, the determination by a payer to cover and the amount it will reimburse for our tests will likely be made on an indication by indication basis. To date, we have obtained policy-level reimbursement approval or contractual reimbursement for some indications for our test from many of the large commercial third- party payers in the United States, and in April 2016, the Centers for Medicare and Medicaid Services began providing reimbursement for our multi-gene tests for hereditary breast cancer-related disorders. We believe that establishing adequate reimbursement from Medicare is an important factor in gaining adoption from healthcare providers. Our claims for reimbursement from third-party payers may be denied upon submission, and we must appeal the claims. The appeals process is time consuming and expensive, and may not result in payment. In cases where there is not a contracted rate for reimbursement, there is typically a greater co-insurance or co-payment requirement from the patient, which may result in further delay or decreased likelihood of collection.

In cases where we have established reimbursement rates with third-party payers, we face additional challenges in complying with their procedural requirements for reimbursement. These requirements may vary from payer to payer, and it may be time-consuming and require additional resources to meet these requirements. We may also experience delays in or denials of coverage if we do not adequately comply with these requirements. In addition, we have experienced, and may continue to experience, temporary delays in reimbursement when we transition to being an in-network provider with a payer.

We expect to continue to focus our resources on increasing adoption of, and expanding coverage and reimbursement for, our current tests and any future tests we may develop. If we fail to expand and maintain broad adoption of, and coverage and reimbursement for, our tests, our ability to generate revenue could be harmed and our future prospects and our business could suffer.

Our inability to raise additional capital on acceptable terms in the future may limit our ability to develop and commercialize new tests and expand our operations.

We expect capital expenditures and operating expenses to increase over the next several years as we expand our infrastructure, commercial operations and research and development activities. We believe our existing cash and cash equivalents as of June 30, 2017, revenue from the sale of our tests, the net proceeds of a term loan, which was funded in March 2017, and the net proceeds of a private placement financing which closed in August 2017, will be sufficient to meet our anticipated cash requirements for the 12-month period following the filing date of this report. Beyond this 12-month period, we intend to generate sufficient cash from operations to fund our future operating needs, but there can be no assurance we will be able to do so. We may need additional funding to finance our operations prior to achieving profitability. We may seek to raise additional capital through equity offerings, debt financings, collaborations or licensing arrangements. Additional funding may not be available to us on acceptable terms, or at all. If we raise funds by issuing equity securities, dilution to our stockholders would result. Any equity securities issued also may provide for rights, preferences or privileges senior to those of holders of our common stock. The terms of debt securities issued or borrowings, if available, could impose significant restrictions on our operations. Our obligations under our new loan agreement are subject to covenants, including quarterly covenants to achieve certain revenue levels as well as additional covenants, including limits on our ability to dispose of assets, undergo a change in control, merge with or acquire other entities, incur debt, incur liens, pay dividends or other distributions to holders of our capital stock, repurchase stock and make investments, in each case subject to certain exceptions. The incurrence of additional indebtedness or the issuance of certain equity securities could result in increased fixed payment obligations and could also result in restrictive covenants, such as limitations on our ability to incur additional debt or issue additional equity, limitations on our ability to acquire or license intellectual property rights, and other operating restrictions that could adversely affect our ability to conduct our business. In addition, the issuance of additional equity securities by us, or the possibility of such issuance, may cause the market price of our common stock to decline. In the event that we enter into collaborations or licensing arrangements to raise capital, we may be required to accept unfavorable terms. These agreements may require that we relinquish or license to a third party on unfavorable terms our rights to tests we otherwise would seek to develop or commercialize ourselves, or reserve certain opportunities for future potential arrangements when we might be able to achieve more favorable terms. If we are not able to secure additional funding when needed, we may have to delay, reduce the scope of or eliminate one or more research and development programs or selling and marketing initiatives. In addition, we may have to work with a partner on one or more aspects of our tests or market development programs, which could lower the economic value of those tests or programs to our company.

We will need to scale our infrastructure in advance of demand for our tests, and our failure to generate sufficient demand for our tests would have a negative impact on our business and our ability to attain profitability.

Our success will depend in large part on our ability to extend our market position, to provide customers with high quality test reports quickly and at a lower price than our competitors, and to achieve sufficient test volume to realize economies of scale. In order to execute our business model, we intend to continue to invest heavily in order to significantly scale our infrastructure, including our testing capacity and information systems, expand our commercial operations, customer service, billing and systems processes and enhance our internal quality assurance program. We need to continue to hire and retain sufficient numbers of skilled personnel, including geneticists, biostatisticians, certified laboratory scientists and other scientific and technical personnel to process and interpret our genetic tests. In addition, we need to continue to expand our sales force with qualified and experienced personnel. We

expect that much of this growth will be in adv ance of demand for our tests. Our current and future expense levels are to a large extent fixed and are largely based on our investment plans and our estimates of future revenue. Because the timing and amount of revenue from our tests is difficult to forec ast, when revenue does not meet our expectations we may not be able to adjust our spending promptly or reduce our spending to levels commensurate with our revenue. Even if we are able to successfully scale our infrastructure and operations, we cannot assur e you that demand for our tests will increase at levels consistent with the growth of our infrastructure. If we fail to generate demand commensurate with this growth or if we fail to scale our infrastructure sufficiently in advance of demand to successfull y meet such demand, our business, prospects, financial condition and results of operations could be adversely affected.

We face intense competition, which is likely to intensify further as existing competitors devote additional resources to, and new participants enter, the market. If we cannot compete successfully, we may be unable to increase our revenue or achieve and sustain profitability.

With the development of next generation sequencing, the clinical genetics market is becoming increasingly competitive, and we expect this competition to intensify in the future. We face competition from a variety of sources, including:

- dozens of relatively specialized competitors focused on inherited clinical genetics and gene sequencing, such as Ambry Genetics, Inc., pending its acquisition by a subsidiary of Konica Minolta Inc., Athena Diagnostics, Baylor Genetics, Blueprint Genetics, Inc., Centogene AC, Color Genomics, Inc., Connective Tissue Gene Test LLC, Cooper Surgical, Counsyl, Inc., Eurofins Scientific, GeneDx, a subsidiary of OPKO Health, Inc., MNG Laboratories, LLC, Myriad Genetics, Inc., or Myriad, Natera, Inc., PreventionGenetics, LLC and Progenity, Inc.;
- a few large, established general testing companies with large market share and significant channel power, such as Laboratory Corporation of America Holdings and Quest Diagnostics Incorporated;
- a large number of clinical laboratories in an academic or healthcare provider setting that perform clinical genetic testing on behalf of their affiliated institutions and often sell and market more broadly; and
- a large number of new entrants into the market for genetic information ranging from informatics and analysis pipeline developers to focused, integrated providers of genetic tools and services for health and wellness including Illumina, Inc., who is also one of our suppliers.

Hospitals, academic medical centers and eventually physician practice groups and individual clinicians may also seek to perform at their own facilities the type of genetic testing we would otherwise perform for them. In this regard, continued development of equipment, reagents, and other materials as well as databases and interpretation services may enable broader direct participation in genetic testing and analysis.

Participants in closely related markets such as clinical trial or companion diagnostic testing could converge on offerings that are competitive with the type of tests we perform. Instances where potential competitors are aligned with key suppliers or are themselves suppliers could provide such potential competitors with significant advantages.

In addition, the biotechnology and genetic testing fields are intensely competitive both in terms of service and price, and continue to undergo significant consolidation, permitting larger clinical laboratory service providers to increase cost efficiencies and service levels, resulting in more intense competition.

We believe the principal competitive factors in our market are:

- breadth and depth of content;
- reliability;
- accessibility of results;
- turnaround time of testing results;
- price and quality of tests;
- coverage and reimbursement arrangements with third-party payers;
- convenience of testing;
- brand recognition of test provider;
- additional value-added services and informatics tools;
- client service; and
- quality of website content.

Many of our competitors and potential competitors have longer operating histories, larger customer bases, greater brand recognition and market penetration, higher margins on their tests, substantially greater financial, technological and research and development resources and selling and marketing capabilities, and more experience dealing with third-party payers. As a result, they may be able to respond more quickly to changes in customer requirements, devote greater reso urces to the development, promotion and sale of their tests than we do, or sell their tests at prices designed to win significant levels of market share. We may not be able to compete effectively against these organizations. Increased competition and cost- saving initiatives on the part of governmental entities and other third-party payers are likely to result in pricing pressures, which could harm our sales, profitability or ability to gain market share. In addition, competitors may be acquired by, receive investments from or enter into other commercial relationships with larger, well-established and well-financed companies as use of next generation sequencing for clinical diagnosis and preventative care increases. Certain of our competitors may be able to s ecure key inputs from vendors on more favorable terms, devote greater resources to marketing and promotional campaigns, adopt more aggressive pricing policies and devote substantially more resources to website and systems development than we can. In additi on, companies or governments that control access to genetic testing through umbrella contracts or regional preferences could promote our competitors or prevent us from performing certain services. If we are unable to compete successfully against current an d future competitors, we may be unable to increase market acceptance and sales of our tests, which could prevent us from increasing our revenue or achieving profitability and could cause our stock price to decline.

We may not be able to manage our future growth effectively, which could make it difficult to execute our business strategy.

Our expected future growth could create a strain on our organizational, administrative and operational infrastructure, including laboratory operations, quality control, customer service, marketing and sales, and management. We may not be able to maintain the quality of or expected turnaround times for our tests, or satisfy customer demand as it grows. We will need to continue expanding our sales force to facilitate our growth and we may have difficulties locating, recruiting, training and retaining sales personnel. Our ability to manage our growth properly will require us to continue to improve our operational, financial and management controls, as well as our reporting systems and procedures. We plan to implement new enterprise software systems in a number of areas affecting a broad range of business processes and functional areas. The time and resources required to implement these new systems is uncertain, and failure to complete these activities in a timely and efficient manner could adversely affect our operations. If we are unable to manage our growth effectively, it may be difficult for us to execute our business strategy and our business could be harmed. Future growth in our business could also make it difficult for us to maintain our corporate culture.

Our success will depend in part on our ability to generate sales using our internal sales team and through alternative marketing strategies.

We may not be able to market or sell our current tests and any future tests we may develop effectively enough to drive demand sufficient to support our planned growth. We currently sell our tests in the United States through our internal sales force and outside the United States with the assistance of distributors. Historically, our sales efforts have been focused primarily on hereditary cancer and our efforts to sell our tests to clinicians outside of oncology may not be successful, or may be difficult to do successfully without significant additional selling and marketing efforts and expense. In fact, we significantly increased the size of our sales force in the first quarter of 2017. Our future sales will also depend in large part on our ability to develop and substantially expand awareness of our company and our tests through alternative strategies including through education of key opinion leaders, through social media-related and online outreach, education and marketing efforts, and through focused channel partner strategies designed to drive demand for our tests. We have limited experience implementing these types of alternative marketing efforts. We may not be able to drive sufficient levels of revenue using these sales and marketing methods and strategies necessary to support our planned growth, and our failure to do so could limit our revenue and potential profitability.

Outside the United States we use distributors to assist with sales, logistics, education, and customer support. Sales practices utilized by our distributors that are locally acceptable may not comply with sales practices standards required under U.S. laws that apply to us, which could create additional compliance risk. If our sales and marketing efforts are not successful outside the United States, we may not achieve significant market acceptance for our tests outside the United States, which could materially and adversely impact our business.

We rely on highly skilled personnel in a broad array of disciplines and, if we are unable to hire, retain or motivate these individuals, or maintain our corporate culture, we may not be able to maintain the quality of our services or grow effectively.

Our performance, including our research and development programs and laboratory operations, largely depend on our continuing ability to identify, hire, develop, motivate, and retain highly skilled personnel for all areas of our organization, including scientists, biostatisticians, technicians and software developers. Competition in our industry for qualified employees is intense, and we may not be able to attract or retain qualified personnel in the future, including scientists, biostatisticians, technicians and software developers, due to the competition for qualified personnel among life science businesses as well as universities and public and private research institutions, particularly in the San Francisco Bay Area. In addition, our compensation arrangements, such as our equity

award programs, may not always be successful in attracting new employees and retaining and motivating ou r existing employees. If we are not able to attract and retain the necessary personnel to accomplish our business objectives, we may experience constraints that could adversely affect our ability to scale our business, support our research and development efforts and our clinical laboratory. We believe that our corporate culture fosters innovation, creativity and teamwork. However, as our organization grows, we may find it increasingly difficult to maintain the beneficial aspects of our corporate culture. T his could negatively impact our ability to retain and attract employees and our future success.

If we are not able to continue to generate substantial demand of our tests, our commercial success will be negatively affected.

Our business model assumes that we will be able to generate significant test volume, and we may not succeed in continuing to drive clinical adoption of our test to achieve sufficient volumes. Inasmuch as detailed genetic data from broad-based testing panels such as our tests have only recently become available at relatively affordable prices, the continued pace and degree of clinical acceptance of the utility of such testing is uncertain. Specifically, it is uncertain how much genetic data will be accepted as necessary or useful, as well as how detailed that data should be, particularly since medical practitioners may have become accustomed to genetic testing that is specific to one or a few genes. Given the substantial amount of additional information available from a broad-based testing panel such as ours, there may be distrust as to the reliability of such information when compared with more limited and focused genetic tests. To generate further demand for our tests, we will need to continue to make clinicians aware of the benefits of our tests, including the price, the breadth of our testing options, and the benefits of having additional genetic data available from which to make treatment decisions. Because broad-based testing panels are relatively new, it may be more difficult or take more time for us to expand clinical adoption of our assay beyond our current customer base. In addition, clinicians in other areas of medicine may not adopt genetic testing for hereditary disease as readily as it has been adopted in hereditary cancer and our efforts to sell our tests to clinicians outside of oncology may not be successful. A lack of or delay in clinical acceptance of broad-based panels such as our tests would negatively impact sales and market acceptance of our tests and limit our revenue growth and potential profitability. Genetic testing is expensive and many potential customers may be sensitive to pricing. In addition, potential customers may not adopt our tests if adequate reimbursement is not available, or if we are not able to maintain low prices relative to our competitors. If we are not able to generate demand for our tests at sufficient volume, or if it takes significantly more time to generate this demand than we anticipate, our business, prospects, financial condition and results of operations could be materially harmed.

Our success will depend on our ability to use rapidly changing genetic data to interpret test results accurately and consistently, and our failure to do so would have an adverse effect on our operating results and business, harm our reputation and could result in substantial liabilities that exceed our resources.

Our success depends on our ability to provide reliable, high-quality tests that incorporate rapidly evolving information about the role of genes and gene variants in disease and clinically relevant outcomes associated with those variants. Errors, including if our tests fail to detect genomic variants with high accuracy, or mistakes, including if we fail to or incompletely or incorrectly identify the significance of gene variants, could have a significant adverse impact on our business. Hundreds of genes can be implicated in some disorders, and overlapping networks of genes and symptoms can be implicated in multiple conditions. As a result, a substantial amount of judgment is required in order to interpret testing results for an individual patient and to develop an appropriate patient report. We classify variants in accordance with published guidelines as benign, likely benign, variants of uncertain significance, likely pathogenic or pathogenic, and these guidelines are subject to change. In addition, it is our practice to offer support to clinicians and geneticists ordering our tests around which genes or panels to order as well as interpretation of genetic variants. We also rely on clinicians to interpret what we report and to incorporate specific information about an individual patient into the physician’s treatment decision.

The marketing, sale and use of our genetic tests could subject us to liability for errors in, misunderstandings of, or inappropriate reliance on, information we provide to clinicians or geneticists, and lead to claims against us if someone were to allege that our test failed to perform as it was designed, if we failed to correctly interpret the test results, or if the ordering physician were to misinterpret test results or improperly rely on them when making a clinical decision. A product liability or professional liability claim could result in substantial damages and be costly and time-consuming for us to defend. Although we maintain liability insurance, including for errors and omissions, we cannot assure you that our insurance would fully protect us from the financial impact of defending against these types of claims or any judgments, fines or settlement costs arising out of any such claims. Any liability claim, including an errors and omissions liability claim, brought against us, with or without merit, could increase our insurance rates or prevent us from securing insurance coverage in the future. Additionally, any liability lawsuit could cause injury to our reputation or cause us to suspend sales of our tests. The occurrence of any of these events could have an adverse effect on our business, reputation and results of operations.

Our i ndustry is subject to rapidly changing technology and new and increasing amounts of scientific data related to genes and genetic variants and their role in disease. Our failure to develop tests to keep pace with these changes could make us obsolete.

In recent years, there have been numerous advances in methods used to analyze very large amounts of genomic information and the role of genetics and gene variants in disease and treatment therapies. Our industry has and will continue to be characterized by rapid technological change, increasingly larger amounts of data, frequent new testing service introductions and evolving industry standards, all of which could make our tests obsolete. Our future success will also depend on our ability to keep pace with 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. Our tests could become obsolete unless we continually update our offerings to reflect new scientific knowledge about genes and genetic variations and their role in diseases and treatment therapies.

Security breaches, loss of data and other disruptions could compromise sensitive information related to our business or prevent us from accessing critical information and expose us to liability, which could adversely affect our business and our reputation.

In the ordinary course of our business, we and our third-party billing and collections provider collect and store sensitive data, including legally protected health information, personally identifiable information, intellectual property and proprietary business information owned or controlled by ourselves or our customers, payers, and other parties. We manage and maintain our applications and data utilizing a combination of on-site systems, managed data center systems, and cloud-based data center systems. We also communicate sensitive patient data through our Invitae Family History Tool, Patient Insights Network, or PIN, and CancerGene Connect platform. These applications and data encompass a wide variety of business-critical information including research and development information, commercial information, and business and financial information. We face a number of risks relative to protecting this critical information, including loss of access risk, inappropriate disclosure, inappropriate modification, and the risk of our being unable to adequately monitor and modify our controls over our critical information. Any technical problems that may arise in connection with our data and systems, including those that are hosted by third-party providers, could result in interruptions in our business and operations. These types of problems may be caused by a variety of factors, including infrastructure changes, human or software errors, viruses, security attacks, fraud, spikes in customer usage and denial of service issues. From time to time, large third-party web hosting providers have experienced outages or other problems that have resulted in their systems being offline and inaccessible. Such outages could materially impact our business and operations.

The secure processing, storage, maintenance and transmission of this critical information are vital to our operations and business strategy, and we devote significant resources to protecting such information. Although we take measures to protect sensitive information from unauthorized access or disclosure, our information technology and infrastructure may be vulnerable to attacks by hackers or viruses or breached due to employee error, malfeasance, or other disruptions. Any such breach or interruption could compromise our networks and the information stored there could be accessed by unauthorized parties, publicly disclosed, lost, or stolen. Any such access, disclosure or other loss of information could result in legal claims or proceedings, liability under federal or state laws that protect the privacy of personal information, such as the Health Insurance Portability and Accountability Act of 1996, or HIPAA, the Health Information Technology for Economic and Clinical Heath Act, or HITECH, and regulatory penalties. Although we have implemented security measures and a formal, dedicated enterprise security program to prevent unauthorized access to patient data, our Invitae Family History Tool, PIN and CancerGene Connect are currently accessible through our online portal and/or through our mobile applications, and there is no guarantee we can protect our online portal or our mobile applications from breach. Unauthorized access, loss or dissemination could also disrupt our operations (including our ability to conduct our analyses, provide test results, bill payers or patients, process claims and appeals, provide customer assistance, conduct research and development activities, collect, process, and prepare company financial information, provide information about our tests and other patient and physician education and outreach efforts through our website, and manage the administrative aspects of our business) and damage our reputation, any of which could adversely affect our business.

Penalties for failure to comply with a requirement of HIPAA and HITECH vary significantly, and include civil monetary penalties of up to $1.5 million per calendar year for each provision of HIPAA that is violated. A person who knowingly obtains or discloses individually identifiable health information in violation of HIPAA may face a criminal penalty of up to $50,000 and up to one-year imprisonment. The criminal penalties increase if the wrongful conduct involves false pretenses or the intent to sell, transfer, or use identifiable health information for commercial advantage, personal gain, or malicious harm.

In addition, the interpretation and application of consumer, health-related, and data protection laws in the United States, Europe and elsewhere are often uncertain, contradictory, and in flux. In addition, in October 2015, the European Court of Justice invalidated a safe harbor agreement between the United States and European Union member states, which addressed how many U.S. companies handle personal information of their European customers. In February 2016, the European Commission announced an agreement with the U. S. Department of Commerce to replace the invalidated Safe Harbor agreement on transatlantic data flows with a new E.U.-U.S. “Privacy Shield.” In July 2016, the European Commission approved the Privacy Shield. Laws governing data privacy and security are constantly evolving. In addition, it is possible that laws may be interpreted and applied in a manner that is inconsistent with our practices. If so, this could result in government-imposed fines or orders requiring that we change our practices, which could adversely affect our business. In addition, these privacy regulations may differ from country to country, and may vary based on whether testing

is performed in the United States or in the local country. Complying with these various laws could cause us to incur substantial costs or require us to change our business practices and compliance procedures in a manner adverse to our business. We can provide no assurance that we are or will remain in compliance with diverse privacy and security requirements in all of the jurisdictions in which we do business. Failure to comply with p rivacy and security requirements could result in civil or criminal penalties, which could have a material adverse effect on our business.

We rely on a limited number of suppliers or, in some cases, sole suppliers, for some of our laboratory instruments and materials, and we may not be able to find replacements or immediately transition to alternative suppliers.

We rely on a limited number of suppliers, or, in some cases, sole suppliers, including Agilent Technologies, Inc., Illumina, Inc., Integrated DNA Technologies Incorporated, Qiagen N.V., Roche Holdings Ltd., and Thermo Fisher Scientific Inc. for certain laboratory substances used in the chemical reactions incorporated into our processes, which we refer to as reagents, as well as sequencers and other equipment and materials which we use in our laboratory operations. We do not have any short- or long-term agreements with our suppliers, and our suppliers could cease supplying these materials and equipment at any time, or fail to provide us with sufficient quantities of materials or materials that meet our specifications. Our laboratory operations could be interrupted if we encounter delays or difficulties in securing these reagents, sequencers or other equipment or materials, and if we cannot obtain an acceptable substitute. Any such interruption could significantly affect our business, financial condition, results of operations and reputation. We rely on Illumina as the sole supplier of next generation sequencers and associated reagents and as the sole provider of maintenance and repair services for these sequencers. Any disruption in Illumina's operations could impact our supply chain and laboratory operations as well as our ability to conduct our tests, and it could take a substantial amount of time to integrate replacement equipment into our laboratory operations.

We believe that there are only a few other manufacturers that are currently capable of supplying and servicing the equipment necessary for our laboratory operations, including sequencers and various associated reagents. The use of equipment or materials provided by these replacement suppliers would require us to alter our laboratory operations. Transitioning to a new supplier would be time consuming and expensive, may result in interruptions in our laboratory operations, could affect the performance specifications of our laboratory operations or could require that we revalidate our tests. We cannot assure you that we will be able to secure alternative equipment, reagents and other materials, and bring such equipment, reagents and materials on line and revalidate them without experiencing interruptions in our workflow. In the case of an alternative supplier for Illumina, we cannot assure you that replacement sequencers and associated reagents will be available or will meet our quality control and performance requirements for our laboratory operations. If we encounter delays or difficulties in securing, reconfiguring or revalidating the equipment and reagents we require for our tests, our business, financial condition, results of operations and reputation could be adversely affected.

If our laboratory in San Francisco becomes inoperable due to an earthquake or for any other reason, we will be unable to perform our tests and our business will be harmed.

We perform all of our tests at our production facility in San Francisco, California, which we transitioned into in the first quarter of 2017. Our laboratory and the equipment we use to perform our tests would be costly to replace and could require substantial lead time to replace and qualify for use. Our laboratory may be harmed or rendered inoperable by natural or man-made disasters, including earthquakes, flooding, fire and power outages, which may render it difficult or impossible for us to perform our tests for some period of time. The inability to perform our tests or the backlog that could develop if our laboratory is inoperable for even a short period of time may result in the loss of customers or harm our reputation. Although we maintain insurance for damage to our property and the disruption of our business, this insurance may not be sufficient to cover all of our potential losses and may not continue to be available to us on acceptable terms, if at all.

The loss of any member or change in structure of our senior management team could adversely affect our business.

Our success depends in large part upon the skills, experience and performance of members of our executive management team and others in key leadership positions. The efforts of these persons will be critical to us as we continue to develop our technologies and test processes and focus on scaling our business. If we were to lose one or more key executives, we may experience difficulties in competing effectively, developing our technologies and implementing our business strategy. All of our executives and employees are at-will, which means that either we or the executive or employee may terminate their employment at any time. We do not carry key man insurance for any of our executives or employees. In addition, we do not have a long-term retention agreement in place with our president and chief executive officer. We also recently announced that our former chief executive officer and chairman of the board was appointed executive chairman and our former president and chief operating officer was appointed president and chief executive officer. We may experience difficulties as our organization adapts to this new leadership structure.

Development of new tests is a complex process, and we may be unabl e to commercialize new tests on a timely basis, or at all.

We cannot assure you that we will be able to develop and commercialize new tests on a timely basis. Before we can commercialize any new tests, we will need to expend significant funds in order to:

- conduct research and development;
- further develop and scale our laboratory processes; and
- further develop and scale our infrastructure to be able to analyze increasingly larger and more diverse amounts of data.

Our testing service development process involves risk, and development efforts may fail for many reasons, including:

- failure of any test to perform as expected;
- lack of validation or reference data; or
- failure to demonstrate utility of a test.

As we develop tests, we will have to make significant investments in development, marketing and selling resources. In addition, competitors may develop and commercialize competing tests faster than we are able to do so.

We depend on our information technology systems, and any failure of these systems could harm our business.

We depend on information technology and telecommunications systems for significant elements of our operations, including our laboratory information management system, our bioinformatics analytical software systems, our database of information relating to genetic variations and their role in disease process and drug metabolism, our clinical report optimization systems, our customer-facing web-based software, our customer reporting, and our family history and risk assessment tools. We have installed, and expect to expand, a number of enterprise software systems that affect a broad range of business processes and functional areas, including for example, systems handling human resources, financial controls and reporting, customer relationship management, regulatory compliance, and other infrastructure operations. In addition, we intend to extend the capabilities of both our preventative and detective security controls by augmenting the monitoring and alerting functions, the network design, and the automatic countermeasure operations of our technical systems. These information technology and telecommunications systems support a variety of functions, including laboratory operations, test validation, sample tracking, quality control, customer service support, billing and reimbursement, research and development activities, scientific and medical curation, and general administrative activities, including financial reporting.

Information technology and telecommunications systems are vulnerable to damage from a variety of sources, including telecommunications or network failures, malicious human acts and natural disasters. Moreover, despite network security and back-up measures, some of our servers are potentially vulnerable to physical or electronic break-ins, computer viruses, and similar disruptive problems. Despite the precautionary measures we have taken to prevent unanticipated problems that could affect our information technology and telecommunications systems, failures or significant downtime of our information technology or telecommunications systems or those used by our third-party service providers could prevent us from conducting tests, preparing and providing reports to clinicians, billing payers, processing reimbursement appeals, handling physician or patient inquiries, conducting research and development activities, and managing the administrative and financial aspects of our business. Any disruption or loss of information technology or telecommunications systems on which critical aspects of our operations depend could have an adverse effect on our business.

Any technical problems that may arise in connection with our data and systems, including those that are hosted by third-party providers, could result in interruptions in our business and operations. These types of problems may be caused by a variety of factors, including infrastructure changes, human or software errors, viruses, security attacks, fraud, spikes in customer usage and denial of service issues. From time to time, large third-party web hosting providers have experienced outages or other problems that have resulted in their systems being offline and inaccessible. Such outages could materially impact our business and operations.

Ethical, legal and social concerns related to the use of genetic information could reduce demand for our tests.

Genetic testing has raised ethical, legal, and social issues regarding privacy and the appropriate uses of the resulting information. Governmental authorities could, for social or other purposes, limit or regulate the use of genetic information or genetic testing or prohibit testing for genetic predisposition to certain conditions, particularly for those that have no known cure. Similarly, these concerns may lead patients to refuse to use, or clinicians to be reluctant to order, genomic tests even if permissible. These and other ethical, legal and social concerns may limit market acceptance of our tests or reduce the potential markets for our tests, either of which could have an adverse effect on our business, financial condition, or results of operations.

Our i nternational business exposes us to business, regulatory, political, operational, financial, and economic risks associated with doing business outside of the United States.

We currently have distribution arrangements in several countries. Doing business internationally involves a number of risks, including:

- multiple, conflicting and changing laws and regulations such as privacy regulations, tax laws, export and import restrictions, employment laws, regulatory requirements, and other governmental approvals, permits and licenses;
- failure by us or our distributors to obtain regulatory approvals for the use of our tests in various countries;
- complexities and difficulties in obtaining protection and enforcing our intellectual property;
- difficulties in staffing and managing foreign operations;
- complexities associated with managing multiple payer reimbursement regimes, government payers, or patient self-pay systems;
- logistics and regulations associated with shipping blood samples, including infrastructure conditions and transportation delays;
- limits on our ability to penetrate international markets if we do not to conduct our tests locally;
- financial risks, such as longer payment cycles, difficulty collecting accounts receivable, the impact of local and regional financial conditions on demand and payment for our tests, and exposure to foreign currency exchange rate fluctuations;
- natural disasters, political and economic instability, including wars, terrorism, and political unrest, outbreak of disease, boycotts, curtailment of trade and other business restrictions; and
- regulatory and compliance risks that relate to maintaining accurate information and control over activities that may fall within the purview of the U.S. Foreign Corrupt Practices Act, or FCPA, its books and records provisions, or its anti-bribery provisions.

Any of these factors could significantly harm our international operations and, consequently, our revenue and results of operations.

In addition, applicable export or import laws and regulations such as prohibitions on the export of blood imposed by countries outside of the United States, or international privacy or data restrictions that are different or more stringent than those of the United States, may require that we build additional laboratories or engage in joint ventures or other business partnerships in order to offer our tests internationally in the future. Any such restrictions would impair our ability to offer our tests in such countries and could have an adverse effect on our business, financial condition and results of operations.

Risks related to government regulation

If the FDA regulates our tests as medical devices, we could incur substantial costs and our business, financial condition, and results of operations could be adversely affected.

We provide our tests as laboratory-developed tests, or LDTs. The Centers for Medicare and Medicaid Services, or CMS, and certain state agencies regulate the performance of LDTs (as authorized by the Clinical Laboratory Improvement Amendments of 1988, or CLIA, and state law, respectively).

Historically, the U.S. Food and Drug Administration, or FDA, has exercised enforcement discretion with respect to most LDTs and has not required laboratories that furnish LDTs to comply with the agency's requirements for medical devices (e.g., establishment registration, device listing, quality systems regulations, premarket clearance or premarket approval, and post-market controls). In recent years, however, the FDA has stated it intends to end its policy of general enforcement discretion and regulate certain LDTs as medical devices. To this end, on October 3, 2014, the FDA issued two draft guidance documents, entitled "Framework for Regulatory Oversight of Laboratory Developed Tests (LDTs)" and "FDA Notification and Medical Device Reporting for Laboratory Developed Tests (LDTs)", respectively, that set forth a proposed risk-based regulatory framework that would apply varying levels of FDA oversight to LDTs. Subsequently, on January 13, 2017, the FDA published a "discussion paper" in which it outlined a substantially revised "possible approach" to the oversight of LDTs. In March 2017, a draft bill titled "The Diagnostics Accuracy and Innovation Act" was released for discussion. The bill proposes a risk-based approach to regulate LDTs and creates a new in vitro clinical test category, which includes LDTs, and a regulatory structure under the FDA. As proposed, the bill grandfathers existing tests and gives companies five years to augment test development pipelines to ensure new tests have the data necessary for FDA approval. We cannot predict if this draft bill will become legislation and cannot quantify the effect of this draft bill on our business.

Legislative proposals addressing the FDA's oversight of LDTs have been introduced in previous Congresses, and we expect that new legislative proposals will be introduced from time-to-time. The likelihood that Congress will pass such legislation and the extent to which such legislation may affect the FDA's plans to regulate certain LDTs as medical devices is difficult to predict at this time.

If the FDA ultimately regulates certain LDTs as medical devices, whether via final guidance, final regulation, or as instructed by Congress, our tests may be subject to certain additional regulatory requirements. Complying with the FDA's requirements for medical devices can be expensive, time-consuming, and subject us to significant or unanticipated delays. Insofar as we may be required to obtain premarket clearance or approval to perform or continue performing an LDT, we cannot assure you that we will be able to obtain such authorization. Even if we obtain regulatory clearance or approval where required, such authorization may not be for the intended uses that we believe are commercially attractive or are critical to the commercial success of our tests. As a result, the application of the FDA's medical device requirements to our tests could materially and adversely affect our business, financial condition, and results of operations.

Failure to comply with applicable FDA regulatory requirements may trigger a range of enforcement actions by the FDA including warning letters, civil monetary penalties, injunctions, criminal prosecution, recall or seizure, operating restrictions, partial suspension or total shutdown of operations, and denial of or challenges to applications for clearance or approval, as well as significant adverse publicity.

In addition, in November 2013, the FDA issued final guidance regarding the distribution of products labeled for research use only. Certain of the reagents and other products we use in our tests are labeled as research use only products. Certain of our suppliers may cease selling research use only products to us and any failure to obtain an acceptable substitute could significantly and adversely affect our business, financial condition and results of operations.

If we fail to comply with federal, state and foreign laboratory licensing requirements, we could lose the ability to perform our tests or experience disruptions to our business.

We are subject to CLIA, a federal law that regulates clinical laboratories that perform testing on specimens derived from humans for the purpose of providing information for the diagnosis, prevention, or treatment of disease. CLIA regulations establish specific standards with respect to personnel qualifications, facility administration, proficiency testing, quality control, quality assurance, and inspections. CLIA certification is also required in order for us to be eligible to bill state and federal healthcare programs, as well as many private third-party payers, for our tests. We have current CLIA certification to conduct our tests at our laboratory in San Francisco. To renew this certification, we are subject to survey and inspection every two years. Moreover, CLIA inspectors may make random inspections of our clinical reference laboratory.

We are also required to maintain a license to conduct testing in California. California laws establish standards for day-to-day operation of our clinical reference laboratory in San Francisco, including the training and skills required of personnel and quality control. We also maintain out-of-state laboratory licenses to conduct testing on specimens from Florida, Maryland, New York, Pennsylvania and Rhode Island. In addition to having a laboratory license in New York, our clinical reference laboratories are approved on test-specific bases by the New York State Department of Health, or NYDOH. Other states may adopt similar licensure requirements in the future, which may require us to modify, delay or stop our operations in such jurisdictions. We may also be subject to regulation in foreign jurisdictions as we seek to expand international utilization of our tests or such jurisdictions adopt new licensure requirements, which may require review of our tests in order to offer them or may have other limitations such as restrictions on the transport of human blood necessary for us to perform our tests that may limit our ability to make our tests available outside of the United States. Complying with licensure requirements in new jurisdictions may be expensive, time-consuming, and subject us to significant and unanticipated delays.

Failure to comply with applicable clinical laboratory licensure requirements may result in a range of enforcement actions, including license suspension, limitation, or revocation, directed plan of action, onsite monitoring, civil monetary penalties, criminal sanctions, and cancellation of the laboratory's approval to receive Medicare and Medicaid payment for its services, as well as significant adverse publicity. Any sanction imposed under CLIA, its implementing regulations, or state or foreign laws or regulations governing clinical laboratory licensure, or our failure to renew our CLIA certificate, a state or foreign license, or accreditation, could have a material adverse effect on our business, financial condition and results of operations. Even if we were able to bring our laboratory back into compliance, we could incur significant expenses and potentially lose revenue in doing so.

The College of American Pathologists, or CAP, maintains a clinical laboratory accreditation program. CAP asserts that its program is "designed to go well beyond regulatory compliance" and helps laboratories achieve the highest standards of excellence to positively impact patient care. While not required to operate a CLIA-certified laboratory, many private insurers require CAP accreditation as a condition to contracting with clinical laboratories to cover their tests. In addition, some countries outside the United States require CAP accreditation as a condition to permitting clinical laboratories to test samples taken from their citizens. In November 2014, we obtained CAP accreditation for our San Francisco laboratory. Failure to maintain CAP accreditation could have a material adverse effect on the sales of our tests and the results of our operations.

Complying with numerous statutes and regulati ons pertaining to our business is an expensive and time-consuming process, and any failure to comply could result in substantial penalties.

Our operations are subject to other extensive federal, state, local and foreign laws and regulations, all of which are subject to change. These laws and regulations currently include, among others:

- HIPAA, which established comprehensive federal standards with respect to the privacy and security of protected health information and requirements for the use of certain standardized electronic transactions;
- amendments to HIPAA under HITECH, which strengthen and expand HIPAA privacy and security compliance requirements, increase penalties for violators and expand vicarious liability, extend enforcement authority to state attorneys general, and impose requirements for breach notification;
- amendments to HIPAA under HITECH, which strengthen and expand HIPAA privacy and security compliance requirements, increase penalties for violators and expand vicarious liability, extend enforcement authority to state attorneys general, and impose requirements for breach notification;
- the federal Anti-Kickback Statute, which prohibits knowingly and willfully offering, paying, soliciting, or receiving remuneration, directly or indirectly, overtly or covertly, in cash or in kind, in return for or to induce such person to refer an individual, or to purchase, lease, order, arrange for, or recommend purchasing, leasing or ordering, any good, facility, item or service that is reimbursable, in whole or in part, under a federal healthcare program;
- the federal Stark physician self-referral law, which prohibits a physician from making a referral for certain designated health services covered by the Medicare program, including laboratory and pathology services, if the physician or an immediate family member has a financial relationship with the entity providing the designated health services, and prohibits that entity from billing or presenting a claim for the designated health services furnished pursuant to the prohibited referral, unless an exception applies;
- the federal false claims laws, which impose liability on any person or entity that, among other things, knowingly presents, or causes to be presented, a false or fraudulent claim for payment to the federal government;
- the federal Civil Monetary Penalties Law, which prohibits, among other things, the offering or transfer of remuneration to a Medicare or state healthcare program beneficiary if the person knows or should know it is likely to influence the beneficiary's selection of a particular provider, practitioner, or supplier of services reimbursable by Medicare or a state healthcare program, unless an exception applies;
- the HIPAA fraud and abuse provisions, which created new federal criminal statutes that prohibit, among other things, defrauding healthcare programs, willfully obstructing a criminal investigation of a healthcare offense and falsifying or concealing a material fact or making any materially false statements in connection with the payment for healthcare benefits, items or services;
- other federal and state fraud and abuse laws, such as anti-kickback laws, prohibitions on self-referral, fee-splitting restrictions, insurance fraud laws, anti-markup laws, prohibitions on the provision of tests at no or discounted cost to induce physician or patient adoption, and false claims acts, which may extend to services reimbursable by any third-party payer, including private insurers;
- the prohibition on reassignment of Medicare claims, which, subject to certain exceptions, precludes the reassignment of Medicare claims to any other party;
- state laws that prohibit other specified practices, such as billing clinicians for testing that they order; waiving coinsurance, copayments, deductibles, and other amounts owed by patients; billing a state Medicaid program at a price that is higher than what is charged to one or more other payers; and
- similar foreign laws and regulations that apply to us in the countries in which we operate or may operate in the future.

We have adopted policies and procedures designed to comply with these laws and regulations. In the ordinary course of our business, we conduct internal reviews of our compliance with these laws. Our compliance is also subject to governmental review. The growth of our business and our expansion outside of the United States may increase the potential of violating these laws or our internal policies and procedures. The risk of our being found in violation of these or other laws and regulations is further increased by the fact that many have not been fully interpreted by the regulatory authorities or the courts, and their provisions are open to a variety of interpretations. Any action brought against us for violation of these or other laws or regulations, even if we successfully defend against it, could cause us to incur significant legal expenses and divert our management's attention from the operation of our business. If our operations are found to be in violation of any of these laws and regulations, we may be subject to any applicable penalty associated with the violation, including administrative, civil and criminal penalties, damages, fines, individual imprisonment, exclusion from participation in Federal healthcare programs, refunding of payments received by us, and curtailment or cessation of our operations. Any of the foregoing consequences could seriously harm our business and our financial results.

Healthcare policy changes, including legislation reforming the U.S. healthcare system, may have a material adv erse effect on our financial condition, results of operations and cash flows.

In March 2010, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act, collectively referred to as the Affordable Care Act, was enacted in the United States, which made a number of substantial changes in the way healthcare is financed by both governmental and private insurers. Among other things, the Affordable Care Act:

- requires each medical device manufacturer to pay a sales tax equal to 2.3% of the price for which such manufacturer sells its medical devices, and applied to sales of taxable medical devices from January 1, 2013 through December 31, 2015. The medical device tax has been suspended for 2016 and 2017, but is scheduled to return beginning in 2018. It is unclear at this time when, or if, the provision of our LDTs will trigger the medical device tax if the FDA ends its policy of general enforcement discretion and regulates certain LDTs as medical devices. It is possible, however, that this tax will apply to some or all of our tests or tests that are in development.
- establishes an Independent Payment Advisory Board, or IPAB, to reduce the per capita rate of growth in Medicare spending if expenditures exceed certain targets. At this point, the triggers for IPAB proposals have not been met; it is unclear when such triggers may be made met in the future and when any IPAB-proposed reductions to payments could take effect.

Many of the Current Procedure Terminology, or CPT, procedure codes that we use to bill our tests were revised by the American Medical Association, effective January 1, 2013. Moreover, effective January 1, 2015, the AMA released several new codes to report genomic sequencing procedures. In a final determination under the Medicare Clinical Laboratory Fee Schedule, or CLFS, published in November 2014, CMS set the 2015 payment rate for these codes by the gap-fill process. Under the gap-fill process, local Medicare Administrative Contractors, or MACs, establish rates for those codes that each MAC believes meet the criteria for Medicare coverage and considering laboratory charges and discounts to charges, resources, amounts paid by other payers for the tests, and amounts paid by the MAC for similar tests. In 2015, gap-filled payment rates were established for some, but not all, of the above-described codes. For those codes for which local gap-filled rate(s) were established in 2015, a national limitation amount for Medicare was established for 2016. Codes for which local gap-filled rates were not established in 2015 were priced by the local MACs in 2016 insofar as an individual MAC determines that such codes should be covered. Where available, the national limitation amount serves as a cap on the Medicare and Medicaid payment rates for a test procedure.

The AMA also released several CPT codes effective January 1, 2016 that may be appropriate to report certain of our tests. In a November 2015 final determination, CMS set the calendar year 2016 CLFS payment rate for these new codes by the gap-fill process. CMS and the local MACs went through the gap-fill process in 2016 and announced final gap-filled rates for 2017 on September 30, 2016. The calendar year 2017 national limitation amounts for certain codes are significantly less than the rates at which we have historically offered our tests.

In April 2014, Congress passed the Protecting Access to Medicare Act of 2014, or PAMA, which included substantial changes to the way in which clinical laboratory services will be paid under Medicare. Under the final rule that implements PAMA, which was promulgated by CMS in June 2016, clinical laboratories must report to CMS private payer rates beginning in 2017 and every three years thereafter for clinical diagnostic laboratory tests that are not advanced diagnostic laboratory tests and every year for advanced diagnostic laboratory tests.

We do not believe that our tests meet the definition of advanced diagnostic laboratory tests, but in the event that we seek designation for one or more of our tests as an advanced diagnostic laboratory test and the tests are determined by CMS to meet these criteria or new criteria developed by CMS, we would be required to report private payer data for those tests annually. Otherwise, we will be required to report private payer rates for our tests on an every three years basis. Laboratories that fail to timely report the required payment information may be subject to substantial civil money penalties.

As set forth in the PAMA final rule, for tests furnished on or after January 1, 2018, Medicare payments for clinical diagnostic laboratory tests will be paid based upon these reported private payer rates. For clinical diagnostic laboratory tests that are assigned a new or substantially revised code, initial payment rates for clinical diagnostic laboratory tests that are not advanced diagnostic laboratory tests will be assigned by the cross-walk or gap-fill methodology, similar to prior law. Initial payment rates for new advanced diagnostic laboratory tests will be based on the actual list charge for the laboratory test. In April 2016, we announced that CMS had begun providing payments for our multi-gene tests for hereditary breast cancer-related disorders at an interim payment per test of $622.53. On October 3, 2016, we announced that CMS had set final pricing for our multi-gene tests for hereditary breast cancer-related disorders at $925.00 per test.

PAMA also authorized the adoption of new, temporary billing codes and/or unique test identifiers for FDA-cleared or approved tests as well as advanced diagnostic laboratory tests. The CPT® Editorial Panel approved a proposal to create a new section of billing codes to facilitate implementation of this section of PAMA, but it is unclear how this new section of billing codes will be adopted by CMS, and it is unclear how these codes would apply to our tests.

We cannot predict whether future healthcare initiatives will be implemented at the federal or state level, or how any future legislation or regulation may affect us . For instance, the payment reductions imposed by the Affordable Care Act and the expansion of the federal and state governments' role in the U.S. healthcare industry as well as changes to the reimbursement amounts paid by payers for our tests and future t ests or our medical procedure volumes may reduce our profits and have a materially adverse effect on our business, financial condition, results of operations, and cash flows. Moreover, Congress has proposed on several occasions to impose a 20% coinsurance on patients for clinical laboratory tests reimbursed under the clinical laboratory fee schedule, which would increase our billing and collecting costs and decrease our revenue.

If we use hazardous materials in a manner that causes injury, we could be liable for resulting damages.

Our activities currently require the use of hazardous chemicals and biological material. We cannot eliminate the risk of accidental contamination or injury to employees or third parties from the use, storage, handling, or disposal of these materials. In the event of contamination or injury, we could be held liable for any resulting damages, and any liability could exceed our resources or any applicable insurance coverage we may have. Additionally, we are subject on an ongoing basis to federal, state, and local laws and regulations governing the use, storage, handling and disposal of these materials and specified waste products. The cost of compliance with these laws and regulations may become significant, and our failure to comply may result in substantial fines or other consequences, and either could negatively affect our operating results.

We could be adversely affected by violations of the FCPA and other worldwide anti-bribery laws.

We are subject to the FCPA, which prohibits companies and their intermediaries from making payments in violation of law to non-U.S. government officials for the purpose of obtaining or retaining business or securing any other improper advantage. Our reliance on independent distributors to sell our tests internationally demands a high degree of vigilance in maintaining our policy against participation in corrupt activity, because these distributors could be deemed to be our agents, and we could be held responsible for their actions. Other U.S. companies in the medical device and pharmaceutical fields have faced criminal penalties under the FCPA for allowing their agents to deviate from appropriate practices in doing business with these individuals. We are also subject to similar anti-bribery laws in the jurisdictions in which we operate, including the United Kingdom's Bribery Act of 2010, which also prohibits commercial bribery and makes it a crime for companies to fail to prevent bribery. These laws are complex and far-reaching in nature, and, as a result, we cannot assure you that we would not be required in the future to alter one or more of our practices to be in compliance with these laws or any changes in these laws or the interpretation thereof. Any violations of these laws, or allegations of such violations, could disrupt our operations, involve significant management distraction, involve significant costs and expenses, including legal fees, and could result in a material adverse effect on our business, prospects, financial condition, or results of operations. We could also incur severe penalties, including criminal and civil penalties, disgorgement, and other remedial measures.

Risks related to our intellectual property

Litigation or other proceedings or third-party claims of intellectual property infringement or misappropriation may require us to spend significant time and money, and could in the future prevent us from selling our tests or impact our stock price.

Our commercial success will depend in part on our avoiding infringement of patents and proprietary rights of third parties, including for example the intellectual property rights of competitors. As we continue to commercialize our tests in their current or an updated form, launch different and expanded tests, and enter new markets, competitors might claim that our tests infringe or misappropriate their intellectual property rights as part of business strategies designed to impede our successful commercialization and entry into new markets. Our activities may be subject to claims that we infringe or otherwise violate patents or other intellectual property rights owned or controlled by third parties. We cannot assure you that our operations do not, or will not in the future, infringe existing or future patents. We may be unaware of patents that a third party, including for example a competitor in the genetic testing market, might assert are infringed by our business. There may also be patent applications that, if issued as patents, could be asserted against us. Third parties making claims against us for infringement or misappropriation of their intellectual property rights may seek and obtain injunctive or other equitable relief, which could effectively block our ability to perform our tests. Further, if a patent infringement suit were brought against us, we could be forced to stop or delay our development or sales of any tests or other activities that are the subject of such suit. Defense of these claims, regardless of merit, could cause us to incur substantial expenses and be a substantial diversion of our employee resources. Any adverse ruling or perception of an adverse ruling in defending ourselves could have a material adverse impact on our business and stock price. In the event of a successful claim of infringement against us by a third party, we may have to (1) pay substantial damages, possibly including treble damages and attorneys' fees if we are found to have willfully infringed patents; (2) obtain one or more licenses, which may not be available on commercially reasonable terms (if at all); (3) pay royalties; and/or (4) redesign any infringing tests or other activities, which may be impossible or require substantial time and monetary expenditure, all of which could have a material adverse impact on our cash position and business and financial condition.

If licenses to third-party intellectual property rights are or become required for us to engage in our business, we may be unable to obtain them at a reasonable cost, if at all. Even if such licenses are available, we could incur substantial costs related to royalty

payments for licenses obtained from third parties, which could negatively affect our gross margins. Moreover, we could encounter delays in the introduction of tests while we attempt to develop alternatives. Defense of any lawsuit or failure to obtain any of these licenses on favorable terms could prevent us from commercializing tests, which could materially affect our ability to grow and thus adversely affect our business and financial condition.

Developments in patent law could have a negative impact on our business.

Although we view current U.S. Supreme Court precedent to be aligned with our belief that naturally occurring DNA sequences and detection of natural correlations between observed facts (such as patient genetic data) and an understanding of that fact's implications (such as a patient's risk of disease associated with certain genetic variations) should not be patentable, it is possible that subsequent determinations by the U.S. Supreme Court or other federal courts could limit, alter or potentially overrule current law. Moreover, from time to time the U.S. Supreme Court, other federal courts, the United States Congress or the U.S. Patent and Trademark Office, or USPTO, may change the standards of patentability, and any such changes could run contrary to, or otherwise be inconsistent with, our belief that naturally occurring DNA sequences and detection of natural correlations between observed facts and an understanding of that fact's implications should not be patentable, which could result in third parties newly claiming that our business practices infringe patents drawn from categories of patents which we currently view to be invalid as directed to unpatentable subject matter.

Our inability to effectively protect our proprietary technologies, including the confidentiality of our trade secrets, could harm our competitive position.

We currently rely upon trade secret protection and copyright, as well as non-disclosure agreements and invention assignment agreements with our employees, consultants and third-parties, and to a limited extent patent protection, to protect our confidential and proprietary information. Although our competitors have utilized and are expected to continue utilizing similar methods and have aggregated and are expected to continue to aggregate similar databases of genetic testing information, our success will depend upon our ability to develop proprietary methods and databases and to defend any advantages afforded to us by such methods and databases relative to our competitors. If we do not protect our intellectual property adequately, competitors may be able to use our methods and databases and thereby erode any competitive advantages we may have.

We will be able to protect our proprietary rights from unauthorized use by third parties only to the extent that our proprietary technologies are covered by valid and enforceable patents or are effectively maintained as trade secrets. In this regard, we have applied, and we intend to continue applying, for patents covering such aspects of our technologies as we deem appropriate. However, we expect that potential patent coverage we may obtain will not be sufficient to prevent substantial competition. In this regard, we believe it is probable that others will independently develop similar or alternative technologies or design around those technologies for which we may obtain patent protection. In addition, any patent applications we file may be challenged and may not result in issued patents or may be invalidated or narrowed in scope after they are issued. Questions as to inventorship or ownership may also arise. Any finding that our patents or applications are unenforceable could harm our ability to prevent others from practicing the related technology, and a finding that others have inventorship or ownership rights to our patents and applications could require us to obtain certain rights to practice related technologies, which may not be available on favorable terms, if at all. If we initiate lawsuits to protect or enforce our patents, or litigate against third party claims, which would be expensive, and, if we lose, we may lose some of our intellectual property rights. Furthermore, these lawsuits may divert the attention of our management and technical personnel.

We expect to rely primarily upon trade secrets and proprietary know-how protection for our confidential and proprietary information, and we have taken security measures to protect this information. These measures, however, may not provide adequate protection for our trade secrets, know-how, or other confidential information. Among other things, we seek to protect our trade secrets and confidential information by entering into confidentiality agreements with employees and consultants. There can be no assurance that any confidentiality agreements that we have with our employees and consultants will provide meaningful protection for our trade secrets and confidential information or will provide adequate remedies in the event of unauthorized use or disclosure of such information. Accordingly, there also can be no assurance that our trade secrets will not otherwise become known or be independently developed by competitors. Enforcing a claim that a party illegally disclosed or misappropriated a trade secret can be difficult, expensive, and time-consuming, and the outcome is unpredictable. In addition, trade secrets may be independently developed by others in a manner that could prevent legal recourse by us. If any of our confidential or proprietary information, such as our trade secrets, were to be disclosed or misappropriated, or if any such information was independently developed by a competitor, our competitive position could be harmed.

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

The laws of some foreign countries do not protect proprietary rights to the same extent as the laws of the United States, and many companies have encountered significant challenges in establishing and enforcing their proprietary rights outside of the United States. These challenges can be caused by the absence of rules and methods for the establishment and enforcement of intellectual

property rights outside of the United States. In addition, the legal systems of some countries, particularly developing countri es, do not favor the enforcement of patents and other intellectual property protection, especially those relating to healthcare. This could make it difficult for us to stop the infringement of our patents, if obtained, or the misappropriation of our other intellectual property rights. For example, many foreign countries have compulsory licensing laws under which a patent owner must grant licenses to third parties. In addition, many countries limit the enforceability of patents against third parties, includi ng government agencies or government contractors. In these countries, patents may provide limited or no benefit. Patent protection must ultimately be sought on a country-by-country basis, which is an expensive and time-consuming process with uncertain outc omes. Accordingly, we may choose not to seek patent protection in certain countries, and we will not have the benefit of patent protection in such countries. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial cost s and divert our efforts and attention from other aspects of our business. Accordingly, our efforts to protect our intellectual property rights in such countries may be inadequate. In addition, changes in the law and legal decisions by courts in the United States and foreign countries may affect our ability to obtain adequate protection for our technology and the enforcement of intellectual property.

Third parties may assert that our employees or consultants have wrongfully used or disclosed confidential information or misappropriated trade secrets.

We employ individuals who were previously employed at universities or genetic testing, diagnostic or other healthcare companies, including our competitors or potential competitors. Although we try to ensure that our employees and consultants do not use the proprietary information or know-how of others in their work for us, we may be subject to claims that we or our employees or consultants have inadvertently or otherwise used or disclosed intellectual property, including trade secrets or other proprietary information, of a former employer or other third parties. Further, we may be subject to ownership disputes in the future arising, for example, from conflicting obligations of consultants or others who are involved in developing our intellectual property. Litigation may be necessary to defend against these claims. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management and other employees.

Risks related to being a public company

We incur increased costs and demands on management as a result of compliance with laws and regulations applicable to public companies, which could harm our operating results.

As a public company, we incur significant legal, accounting and other expenses that we did not incur as a private company, including costs associated with public company reporting requirements. In addition, the Sarbanes-Oxley Act of 2002, or the Sarbanes-Oxley Act, as well as rules implemented by the SEC and the New York Stock Exchange, or NYSE, impose a number of requirements on public companies, including with respect to corporate governance practices. The SEC and other regulators have continued to adopt new rules and regulations and make additional changes to existing regulations that require our compliance. In July 2010, the Dodd-Frank Wall Street Reform and Consumer Protection Act, or the Dodd-Frank Act, was enacted. There are significant corporate governance and executive-compensation-related provisions in the Dodd-Frank Act that require the SEC to adopt additional rules and regulations in these areas. Our management and other personnel need to devote a substantial amount of time to these compliance and disclosure obligations. If these requirements divert the attention of our management and personnel from other aspects of our business concerns, they could have a material adverse effect on our business, financial condition and results of operations. Moreover, these rules and regulations applicable to public companies substantially increase our legal, accounting and financial compliance costs, require that we hire additional personnel and make some activities more time-consuming and costly. It may also be more expensive for us to obtain director and officer liability insurance.

If we are unable to maintain effective internal control over financial reporting, investors may lose confidence in the accuracy and completeness of our reported financial information and the market price of our common stock may be negatively affected.

We are required to maintain internal control over financial reporting and to report any material weaknesses in such internal controls. Section 404 of the Sarbanes-Oxley Act requires that we evaluate and determine the effectiveness of our internal control over financial reporting and provide a management report on our internal control over financial reporting. If we have a material weakness in our internal control over financial reporting, we may not detect errors on a timely basis and our financial statements may be materially misstated. We have only recently compiled the system and process documentation necessary to perform the evaluation needed to comply with Section 404 of the Sarbanes-Oxley Act. We will need to maintain and enhance these processes and controls as we grow and we may require additional personnel and resources to do so.

During the evaluation and testing process, if we identify one or more material weaknesses in our internal controls, our management will be unable to conclude that our internal control over financial reporting is effective. Moreover, when we are no longer an emerging growth company, our independent registered public accounting firm will be required to issue an attestation report on the effectiveness of our internal control over financial reporting. Even if our management concludes that our internal control over

financial reporting is effective, our independent registered public accounting firm may conclude that there are material weaknesses with respect to our internal controls or the level at which our internal controls are documented, designed, impl emented or reviewed.

If we are unable to conclude that our internal control over financial reporting is effective, or when we are no longer an emerging growth company, if our auditors were to express an adverse opinion on the effectiveness of our internal control over financial reporting because we had one or more material weaknesses, investors could lose confidence in the accuracy and completeness of our financial disclosures, which could cause the price of our common stock to decline. Internal control deficiencies could also result in the restatement of our financial results in the future.

We are an emerging growth company and may elect to comply with reduced public company reporting requirements applicable to emerging growth companies, which could make our common stock less attractive to investors.

We are an emerging growth company, as defined under the Securities Act of 1933, or the Securities Act. We will remain an emerging growth company until December 31, 2020, although if our revenue exceeds $1 billion in any fiscal year before that time, we would cease to be an emerging growth company as of the end of that fiscal year. In addition, if the market value of our common stock that is held by non-affiliates exceeds $700 million as of the last business day of our second fiscal quarter of any fiscal year before the end of that five-year period, we would cease to be an emerging growth company as of December 31 of that year. As an emerging growth company, we may choose to take advantage of exemptions from various reporting requirements applicable to certain other public companies, including not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act, reduced financial statement and financial-related disclosures, reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements, and exemptions from the requirement of holding a nonbinding advisory vote on executive compensation and obtaining stockholder approval of any golden parachute payments not previously approved by our stockholders. We cannot predict whether investors will find our common stock less attractive if we choose to rely on any of these exemptions. If investors find our common stock less attractive as a result of any choices to reduce future disclosure we may make, there may be a less active trading market for our common stock and our stock price may be more volatile.

Risks related to our common stock

Our stock price may be volatile, and you may not be able to sell shares of our common stock at or above the price you paid.

Prior to our initial public offering in February 2015, there was no public market for our common stock, and an active and liquid public market for our stock may not develop or be sustained. In addition, the trading price of our common stock is likely to be highly volatile and could be subject to wide fluctuations in response to various factors, some of which are beyond our control. These factors include:

- actual or anticipated fluctuations in our operating results;
- competition from existing tests or new tests that may emerge;
- announcements by us or our competitors of significant acquisitions, strategic partnerships, joint ventures, collaborations, or capital commitments;
- failure to meet or exceed financial estimates and projections of the investment community or that we provide to the public;
- issuance of new or updated research or reports by securities analysts or changed recommendations for our stock;
- our focus on long-term goals over short-term results;
- the timing of our investments in the growth of our business;
- actual or anticipated changes in regulatory oversight of our business;
- additions or departures of key management or other personnel;
- disputes or other developments related to our intellectual property or other proprietary rights, including litigation;
- changes in reimbursement by current or potential payers; and
- general economic and market conditions.

In addition, the stock market in general, and the market for stock of life sciences companies in particular, has experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of those companies. Broad market and industry factors may seriously affect the market price of our common stock, regardless of our actual operating performance. In addition, in the past, following periods of volatility in the overall market and the market price of a particular company's securities, securities class action litigation has often been instituted against these companies. This litigation, if instituted against us, could result in substantial costs and a diversion of our management's attention and resources.

If securities or industry analysts issue an adverse opinion regarding our stock or do not publish research or reports about our company, our stock price and trading volume could decline.

The trading market for our common stock will depend in part on the research and reports that equity research analysts publish about us and our business. We do not control these analysts or the content and opinions included in their reports. Securities analysts may elect not to provide research coverage of our company and such lack of research coverage may adversely affect the market price of our common stock. The price of our common stock could also decline if one or more equity research analysts downgrade our common stock or issue other unfavorable commentary or cease publishing reports about us or our business. If one or more equity research analysts cease coverage of our company, we could lose visibility in the market, which in turn could cause our stock price to decline.

Insiders will exercise significant control over our company and will be able to influence corporate matters.

At June 30, 2017, directors, executive officers, 5% or greater stockholders and their affiliates beneficially owned, in the aggregate, 60% of our outstanding capital stock. As a result, these stockholders will be able to exercise significant influence over all matters submitted to our stockholders for approval, including the election of directors and approval of significant corporate transactions, such as a merger or sale of our company or its assets. This concentration of ownership may have the effect of delaying or preventing a third party from acquiring control of our company and could adversely affect the market price of our common stock.

Our ability to use our net operating loss carryforwards and certain other tax attributes may be limited.

At June 30, 2017, our total gross deferred tax assets were $94.0 million. Due to our lack of earnings history and uncertainties surrounding our ability to generate future taxable income, the net deferred tax assets have been fully offset by a valuation allowance. The deferred tax assets were primarily comprised of federal and state tax net operating losses and tax credit carryforwards. Furthermore, under Section 382 of the Internal Revenue Code of 1986, as amended, or the Internal Revenue Code, if a corporation undergoes an "ownership change," the corporation's ability to use its pre-change net operating loss carryforwards, or NOLs, and other pre-change tax attributes (such as research tax credits) to offset its future taxable income may be limited. In general, an "ownership change" occurs if there is a cumulative change in our ownership by "5% shareholders" that exceeds 50 percentage points over a rolling three-year period. Our existing NOLs and tax credit carryovers may be subject to limitations arising from previous ownership changes, and if we undergo one or more ownership changes in connection with future transactions in our stock, our ability to utilize NOLs and tax credit carryovers could be further limited by Section 382 of the Internal Revenue Code. As a result, if we earn net taxable income, our ability to use our pre-change net operating loss and tax credit carryforwards to offset U.S. federal taxable income may be subject to limitations, which could potentially result in increased future tax liability to us. The annual limitation may result in the expiration of certain net operating loss and tax credit carryforwards before their utilization. In addition, at the state level, there may be periods during which the use of NOLs is suspended or otherwise limited, which could accelerate or permanently increase state taxes owed.

We have never paid dividends on our capital stock and we do not anticipate paying dividends in the foreseeable future.

We have never paid dividends on any of our capital stock and currently intend to retain any future earnings to fund the growth of our business. In addition, our loan agreement prohibits us from paying dividends on our common stock. Any determination to pay dividends in the future will be at the discretion of our board of directors and will depend on our financial condition, operating results, capital requirements, general business conditions and other factors that our board of directors may deem relevant. As a result, capital appreciation, if any, of our common stock will be the sole source of gain for the foreseeable future.

Anti-takeover provisions in our charter documents and under Delaware law could discourage, delay or prevent a change in control and may affect the trading price of our common stock.

Provisions in our restated certificate of incorporation and our amended and restated bylaws may have the effect of delaying or preventing a change of control or changes in our management. Our restated certificate of incorporation and amended and restated bylaws include provisions that:

- authorize our board of directors to issue, without further action by the stockholders, up to 20,000,000 shares of undesignated preferred stock;
- require that any action to be taken by our stockholders be effected at a duly called annual or special meeting and not by written consent;
- specify that special meetings of our stockholders can be called only by our board of directors, our chairman of the board, or our chief executive officer;
- establish an advance notice procedure for stockholder approvals to be brought before an annual meeting of our stockholders, including proposed nominations of persons for election to our board of directors;

- establish that our board of directors is divided into three classes, Class I, Class II and Class III, with each class serving staggered terms;
- provide that our directors may be removed only for cause;
- provide that vacancies on our board of directors may, except as otherwise required by law, be filled only by a majority of directors then in office, even if less than a quorum; and
- require a super-majority of votes to amend certain of the above-mentioned provisions as well as to amend our bylaws generally.

In addition, we are subject to the provisions of Section 203 of the Delaware General Corporation Law regulating corporate takeovers. Section 203 generally prohibits us from engaging in a business combination with an interested stockholder subject to certain exceptions.

Our certificate of incorporation designates the Court of Chancery of the State of Delaware as the sole and exclusive forum for certain types of actions and proceedings that may be initiated by 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 certificate of incorporation provides that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware shall be the sole and exclusive forum for:

- any derivative action or proceeding brought on our behalf;
- any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers, or other employees to us or our stockholders;
- any action asserting a claim arising pursuant to any provision of the Delaware General Corporation Law; or
- any action asserting a claim against us governed by the internal affairs doctrine.

Any person or entity purchasing or otherwise acquiring any interest in shares of our capital stock shall be deemed to have notice of and consented to the provisions of our certificate of incorporation described above. This 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. Alternatively, if a court were to find these provisions of our certificate of incorporation inapplicable to, or unenforceable in respect of, one or more of the specified types of actions or proceedings, we may incur additional costs associated with resolving such matters in other jurisdictions, which could adversely affect our business, financial condition or results of operations.

ITEM 5 . Other Information

On August 4, 2017, we completed the acquisition of Good Start Genetics, Inc. In connection with the acquisition, we will issue up to 1,694,597 shares of our common stock, subject to a hold back of approximately 25% of such shares for up to 13 months to cover potential indemnification liabilities. The shares of common stock to be issued in the Good Start merger are being issued in reliance upon the exemption from registration afforded by Section 4(a)(2) of the Securities Act of 1933, as amended, in reliance, in part, on certain representations made by the securityholders of Good Start Genetics.

ITEM 6. Exhibits.

Exhibit Number	Description
2.1@	Form of Stock Exchange Agreement dated as of June 11, 2017 by and among Invitae Corporation, each of the selling Stockholders listed on Schedule 1 thereto, and the sellers' agent (incorporated by reference to Exhibit 2.1 to the Company's Current Report on Form 8-K filed with the SEC on June 13, 2017).
10.1#	Offer Letter, dated May 19, 2017, between Invitae Corporation and Shelly Guyer (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed with the SEC on June 1, 2017).
31.1	Principal Executive Officer's Certifications Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Principal Financial Officer's Certifications Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1*	Certification Pursuant to 18 U.S.C. § 1350 (Section 906 of Sarbanes-Oxley Act of 2002).
32.2*	Certification Pursuant to 18 U.S.C. § 1350 (Section 906 of Sarbanes-Oxley Act of 2002).
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema
101.CAL	XBRL Taxonomy Extension Calculation Linkbase
101.DEF	XBRL Taxonomy Extension Definition Linkbase
101.LAB	XBRL Taxonomy Extension Label Linkbase
101.PRE	XBRL Taxonomy Extension Presentation Linkbase

@ The schedules and exhibits to this agreement have been omitted pursuant to Item 601(b)(2) of Regulation S-K. A copy of any omitted schedule and/or exhibit will be furnished to the SEC upon request.

# Indicates management contract or compensatory plan or arrangement.

* In accordance with Item 601(b)(32)(ii) of Regulation S-K and SEC Release No. 34-47986, the certifications furnished in Exhibits 32.1 and 32.2 hereto are deemed to accompany this Form 10-Q and will not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934 (the "Exchange Act") or deemed to be incorporated by reference into any filing under the Exchange Act or the Securities Act of 1933 except to the extent that the registrant specifically incorporates it by reference.

SIGNA TURES

Pursuant to the requirements of Section 13 or 15(d) 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.

INVITAE CORPORATION

By: /s/ SEAN E. GEORGE, PH.D.
Sean E. George, Ph.D.
President and Chief Executive Officer
Principal Executive Officer

By: /s/ SHELLY D. GUYER
Shelly D. Guyer
Chief Financial Officer
Principal Financial Officer

Date: August 8, 2017

Exhibit 31.1

PRINCIPAL EXECUTIVE OFFICER'S CERTIFICATION PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Sean E. George, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Invitae Corporation for the period ended June 30, 2017;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a—15(e) and 15d—15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 8, 2017

/s/ Sean E. George, Ph.D.
Sean E. George, Ph.D.
Chief Executive Officer and Director
(Principal Executive Officer)

Exhibit 31.2

PRINCIPAL FINANCIAL OFFICER'S CERTIFICATION PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Shelly D. Guyer, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Invitae Corporation for the period ended June 30, 2017;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a—15(e) and 15d—15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 8, 2017

/s/ Shelly D. Guyer
Shelly D. Guyer
Chief Financial Officer
Principal Financial Officer

Exhibit 32.1

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

In connection with the quarterly report of Invitae Corporation (the "Company") on Form 10-Q for the period ended June 30, 2017, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), the undersigned officer of the Company certifies, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to such officer's knowledge:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; 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: August 8, 2017

/s/ Sean E. George, Ph.D.
Sean E. George, Ph.D.
Chief Executive Officer and Director
(Principal Executive Officer)

Exhibit 32.2

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

In connection with the quarterly report of Invitae Corporation (the "Company") on Form 10-Q for the period ended June 30, 2017, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), the undersigned officer of the Company certifies, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to such officer's knowledge:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; 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: August 8, 2017

/s/ Shelly D. Guyer
Shelly D. Guyer
Chief Financial Officer
(Principal Financial Officer)