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, 2019

or

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

For the transition period from to

Commission file number: 001-36536

CAREDX, INC.

(Exact name of registrant as specified in its charter)

Delaware	**94-3316839**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification Number)**

3260 Bayshore Boulevard
Brisbane, California 94005
(Address of principal executive offices and zip code)

(415) 287-2300
(Registrant's telephone number, including area code)

N/A
(Former name, former address and former fiscal year, if changed since last report)

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

Title of Each Class	**Trading Symbol**	**Name of Each Exchange on Which Registered**
Common Stock, par value $0.001 per share	CDNA	The Nasdaq Stock Market LLC

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

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

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

Large accelerated filer	☐	Accelerated filer	☒
Non-accelerated filer	☐	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 ☒

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

There were 42,383,761 shares of the registrant's Common Stock issued and outstanding as of July 30, 2019.

CareDx, Inc.
TABLE OF CONTENTS

PART I. FINANCIAL INFORMATION

ITEM 1. UNAUDITED CONDENSED CONSOLIDATED FINANCIAL STATEMENTS

CareDx, Inc.
Condensed Consolidated Balance Sheets
(Unaudited)
(In thousands, except share data)

	June 30, 2019	December 31, 2018
Assets		
Current assets:		
Cash and cash equivalents	$ 43,469	$ 64,616
Accounts receivable	17,052	9,760
Inventory	5,341	4,943
Prepaid and other current assets	2,462	1,795
Total current assets	68,324	81,114
Property and equipment, net	3,508	4,134
Operating leases right-of-use assets	2,657	—
Intangible assets, net	45,604	33,252
Goodwill	22,559	12,005
Restricted cash	255	192
Total assets	$ 142,907	$ 130,697
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable	$ 7,380	$ 4,711
Accrued compensation	7,490	9,156
Accrued and other liabilities	13,750	5,637
Total current liabilities	28,620	19,504
Deferred tax liability	2,310	2,968
Common stock warrant liability	11,286	10,003
Deferred payments for intangible assets	4,930	—
Other liabilities	2,595	2,294
Total liabilities	49,741	34,769
Commitments and contingencies (Note 8)		
Stockholders' equity:		
Preferred stock: $0.001 par value; 10,000,000 shares authorized at June 30, 2019 and December 31, 2018; no shares issued and outstanding at June 30, 2019 and December 31, 2018	—	—
Common stock: $0.001 par value; 100,000,000 shares authorized at June 30, 2019 and December 31, 2018; 42,306,432 shares and 41,384,960 shares issued and outstanding at June 30, 2019 and December 31, 2018, respectively	42	41
Additional paid-in capital	425,418	412,010
Accumulated other comprehensive loss	(5,071)	(4,278)
Accumulated deficit	(327,223)	(311,845)
Total stockholders' equity	93,166	95,928
Total liabilities and stockholders' equity	$ 142,907	$ 130,697

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

CareDx, Inc.
Condensed Consolidated Statements of Operations
(Unaudited)
(In thousands, except share and per share data)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Revenue:				
Testing services revenue	$ 25,677	$ 13,997	$ 47,195	$ 24,601
Product revenue	4,593	3,550	9,026	6,857
Digital and other revenue	1,184	276	1,215	418
Total revenue	31,454	17,823	57,436	31,876
Cost of revenue	11,512	7,207	21,245	13,591
Gross profit	19,942	10,616	36,191	18,285
Operating expenses:				
Research and development	7,630	3,496	13,244	6,864
Sales and marketing	10,644	5,860	17,569	9,945
General and administrative	8,512	5,596	17,618	10,903
Change in estimated fair value of contingent consideration	—	873	—	1,017
Total operating expenses	26,786	15,825	48,431	28,729
Loss from operations	(6,844)	(5,209)	(12,240)	(10,444)
Other income (expense):				
Interest income (expense), net	300	(424)	642	(3,119)
Debt extinguishment expenses	—	—	—	(2,806)
Change in estimated fair value of common stock warrant liability and derivative liability	(1,351)	(8,768)	(4,360)	(7,447)
Other expense, net	(172)	(42)	(246)	(45)
Total other income (expense)	(1,223)	(9,234)	(3,964)	(13,417)
Loss before income taxes	(8,067)	(14,443)	(16,204)	(23,861)
Income tax benefit	220	381	826	805
Net loss	(7,847)	(14,062)	(15,378)	(23,056)
Net loss attributable to noncontrolling interest	—	—	—	(25)
Net loss attributable to CareDx, Inc.	$ (7,847)	$ (14,062)	$ (15,378)	$ (23,031)
Net loss per share attributable to CareDx, Inc. (Note 3):				
Basic	$ (0.19)	$ (0.40)	$ (0.37)	$ (0.71)
Diluted	$ (0.19)	$ (0.40)	$ (0.37)	$ (0.71)
Weighted-average shares used to compute net loss per share attributable to CareDx, Inc.:				
Basic	42,132,396	35,549,837	41,873,337	32,599,032
Diluted	42,132,396	35,549,837	41,873,337	32,599,032

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

CareDx, Inc.
Condensed Consolidated Statements of Comprehensive Loss
(Unaudited)
(In thousands)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Net loss	$ (7,847)	$ (14,062)	$ (15,378)	$ (23,056)
Other comprehensive loss:				
Foreign currency translation adjustments, net of tax	(69)	(1,625)	(793)	(1,762)
Net comprehensive loss	(7,916)	(15,687)	(16,171)	(24,818)
Comprehensive loss attributable to noncontrolling interest, net of tax	—	—	—	(25)
Comprehensive loss attributable to CareDx, Inc.	$ (7,916)	$ (15,687)	$ (16,171)	$ (24,793)

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

CareDx, Inc.
Condensed Consolidated Statements of Stockholders' Equity
(Unaudited)
(In thousands, except share data)

	Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Loss	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount				
Balance at December 31, 2018	41,384,960	$ 41	$ 412,010	$ (4,278)	$ (311,845)	$ 95,928
Issuance of common stock under ESPP	31,184	—	341	—	—	341
RSU settlements, net of shares withheld	146,159	—	(2,378)	—	—	(2,378)
Issuance of common stock for services	2,112	—	51	—	—	51
Issuance of common stock for cash upon exercise of stock options	253,347	—	1,365	—	—	1,365
Issuance of common stock for cash upon exercise of warrants	94,707	—	2,569	—	—	2,569
Share-based compensation expense	—	—	6,001	—	—	6,001
Foreign currency translation adjustment	—	—	—	(724)	—	(724)
Net loss	—	—	—	—	(7,531)	(7,531)
Balance at March 31, 2019	41,912,469	$ 41	$ 419,959	$ (5,002)	$ (319,376)	$ 95,622
Changes in estimated offering costs	—	—	50	—	—	50
RSU settlements, net of shares withheld	112,760	—	(1,597)	—	—	(1,597)
Issuance of common stock for services	1,663	—	52	—	—	52
Issuance of common stock for cash upon exercise of stock options	240,734	1	1,404	—	—	1,405
Issuance of common stock for cash upon exercise of warrants	38,806	—	612	—	—	612
Share-based compensation expense	—	—	4,938	—	—	4,938
Foreign currency translation adjustment	—	—	—	(69)	—	(69)
Net loss	—	—	—	—	(7,847)	(7,847)
Balance at June 30, 2019	42,306,432	$ 42	$ 425,418	$ (5,071)	$ (327,223)	$ 93,166

CareDx, Inc.
Condensed Consolidated Statements of Stock and Stockholders' Equity
(Unaudited)
(In thousands, except share data)

	Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Loss	Accumulated Deficit	Noncontrolling Interests	Total Stockholders' Equity (Deficit)
	Shares	Amount					
Balance at December 31, 2017	28,825,019	$ 29	$ 264,204	$ (2,346)	$ (268,022)	$ 180	$ (5,955)
Adoption of ASC 606	—	—	—	—	2,933	—	2,933
Reclassification of warrants from liability to equity	—	—	6,550	—	—	—	6,550
Conversion of convertible debt	6,161,331	6	38,848	—	—	—	38,854
Issuance of common stock under ESPP	34,176	—	32	—	—	—	32
RSU settlements, net of shares withheld	49,330	—	(128)	—	—	—	(128)
Issuance of common stock for services	5,772	—	62	—	—	—	62
Issuance of common stock for cash upon exercise of stock options	142,554	—	80	—	—	—	80
Issuance of common stock for cash upon exercise of warrants	22,600	—	153	—	—	—	153
Share-based compensation expense	—	—	634	—	—	—	634
Acquisition of noncontrolling interests	—	—	(537)	—	—	(155)	(692)
Foreign currency translation adjustment	—	—	—	(137)	—	—	(137)
Net loss	—	—	—	—	(8,969)	(25)	(8,994)
Balance at March 31, 2018	35,240,782	$ 35	$ 309,898	$ (2,483)	$ (274,058)	$ —	$ 33,392
RSU settlements, net of shares withheld	24,306	—	(570)	—	—	—	(570)
Issuance of common stock for services	12,147	—	72	—	—	—	72
Issuance of common stock for cash upon exercise of stock options	24,934	—	98	—	—	—	98
Issuance of common stock for cash upon exercise of warrants	445,576	—	5,724	—	—	—	5,724
Share-based compensation expense	—	—	2,449	—	—	—	2,449
Issuance of common stock for contingent consideration	227,848	1	2,689	—	—	—	2,690
Issuance of warrants in connection with Perceptive debt	—	—	784	—	—	—	784
Foreign currency translation adjustment	—	—	—	(1,625)	—	—	(1,625)
Net loss	—	—	—	—	(14,062)	—	(14,062)
Balance at June 30, 2018	35,975,593	$ 36	$ 321,144	$ (4,108)	$ (288,120)	$ —	$ 28,952

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

CareDx, Inc.
Condensed Consolidated Statements of Cash Flows
(Unaudited)
(In thousands)

	Six Months Ended June 30,	
	2019	**2018**
Operating activities:		
Net loss	$ (15,378)	$ (23,056)
Adjustments to reconcile net loss to net cash used in operating activities:		
Stock-based compensation	11,045	3,217
Revaluation of common stock warrant liability and derivative liability to estimated fair value	4,360	7,447
Depreciation and amortization	2,380	2,025
Loss on the write-off of fixed assets	150	
Non-cash lease expense	201	—
Amortization of inventory fair market value adjustment	—	189
Loss on conversion of JGB Debt to shares of common stock	—	2,806
Amortization of debt discount and noncash interest expense	—	2,132
Revaluation of contingent consideration to estimated fair value	—	1,017
Changes in operating assets and liabilities:		
Accounts receivable	(5,956)	(2,280)
Inventory	(551)	333
Prepaid and other assets	(219)	(296)
Operating leases liabilities	(418)	—
Accounts payable	3,285	195
Accrued compensation	(1,881)	686
Accrued and other liabilities	1,208	73
Change in deferred taxes	(517)	(892)
Net cash used in operating activities	(2,291)	(6,404)
Investing activities:		
Acquisition of business	(16,037)	—
Acquisition of intangible assets	(1,124)	(5,202)
Acquisition of noncontrolling interests, net of cash acquired	—	(692)
Purchase of property and equipment, net	(561)	(461)
Net cash used in investing activities	(17,722)	(6,355)
Financing activities:		
Proceeds from Perceptive term loan, net of issuance costs	—	14,282
Proceeds from issuance of common stock under employee stock purchase plan	341	32
Taxes paid related to net share settlement of restricted stock units	(3,975)	(142)
Proceeds from exercise of warrants	105	524
Proceeds from exercise of stock options	2,769	179
Principal payments on debt and finance lease obligations	(84)	(11,349)
Contingent payments related to the acquisition of Conexio Genomics Pty Ltd.	(116)	(91)
Change in short term credit facility	—	(677)
Net cash (used in) provided by financing activities	(960)	2,758
Effect of exchange rate changes on cash and cash equivalents	(111)	(50)
Net decrease in cash, cash equivalents and restricted cash	(21,084)	(10,051)
Cash, cash equivalents, and restricted cash at beginning of period	64,808	26,474
Cash, cash equivalents, and restricted cash at end of period	$ 43,724	$ 16,423
Supplemental disclosure of cash flow information:		
Deferred payments for intangible assets	$ 6,954	—
Operating leases right-of-use assets	2,657	—
Accrued purchase consideration	111	—

Cash, Cash Equivalents and Restricted Cash as of:	**June 30, 2019**	**December 31, 2018**
Cash and cash equivalents	$ 43,469	$ 64,616
Restricted cash	255	192
Total cash, cash equivalents and restricted cash at the end of period	$ 43,724	$ 64,808

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

1. ORGANIZATION AND DESCRIPTION OF BUSINESS

CareDx, Inc. ("CareDx" or the "Company") together with its subsidiaries, is a leading precision medicine company focused on the discovery, development and commercialization of clinically differentiated, high-value healthcare solutions for transplant patients and caregivers. The Company's headquarters are in Brisbane, California. The primary operations are in Brisbane, California; Omaha, Nebraska; Fremantle, Australia and Stockholm, Sweden.

The Company's commercially available testing services consist of AlloMap® Heart, which is a gene expression solution for heart transplant patients, and AlloSure® Kidney, which is a donor-derived cell-free DNA ("dd-cfDNA") solution for kidney transplant patients. The Company also offers high quality products that increase the chance of successful transplants by facilitating a better match between a donor and a recipient of stem cells and organs.

On May 7, 2019, the Company completed the acquisition of 100% of the outstanding equity of OTTR Complete Transplant Management ("OTTR"). OTTR's solutions enable integration with electronic medical records ("EMR") systems, providing patient surveillance management tools and outcomes data to transplant centers. See Note 5 for further details.

Testing Services

AlloMap Heart is a covered service for Medicare beneficiaries since January 1, 2006. In 2018, the Medicare reimbursement rate for AlloMap Heart was set at $3,240, which remains applicable for 2019. AlloMap Heart has also received positive coverage decisions from many of the largest U.S. private payers.

In October 2017, the Company commercially launched AlloSure Kidney, its proprietary next generation sequencing-based test that measures dd-cfDNA in kidney transplant recipients. The Medicare reimbursement rate for AlloSure Kidney is currently $2,841. AlloSure Kidney has also received payments from private payers on a case-by-case basis. However, no positive coverage decisions have yet been made for AlloSure Kidney.

In September 2018, the Company initiated the Surveillance HeartCare™ Outcomes Registry ("SHORE"). SHORE is a prospective, multi-center, observational, registry of patients receiving HeartCare for surveillance. HeartCare combines the gene expression profiling technology of AlloMap Heart with the dd-cfDNA analysis of AlloSure® Heart in one surveillance solution.

In February 2019, AlloSure® Lung became available for lung transplant patients through a compassionate use program while the test is undergoing further studies.

In June 2019, the Company announced that it plans to commence the Outcomes of KidneyCare™ on Renal Allografts ("OKRA") study. OKRA is an extension of the Kidney Allograft Outcomes AlloSure Kidney Registry ("K-OAR"). OKRA is a prospective, multi-center, observational, registry of patients receiving KidneyCare for surveillance. KidneyCare combines the dd-cfDNA analysis of AlloSure Kidney with the gene expression profiling technology of AlloMap® Kidney and the predictive artificial intelligence technology of KidneyCare™ iBox in one surveillance solution. The Company has not yet made any applications to payers for reimbursement coverage of AlloMap Kidney or KidneyCare iBox.

Products

Olerup SSP® is used to type Human Leukocyte Antigen ("HLA") alleles, based on the sequence specific primer ("SSP") technology. Olerup SBT™ is a complete product range for sequence-based typing of HLA alleles. QTYPE® enables speed and precision in HLA typing at a low to intermediate resolution for samples that require a fast turn-around-time and uses real-time polymerase chain reaction, or PCR methodology.

In May 2018, the Company entered into a License and Commercialization Agreement (the "License Agreement") with Illumina, Inc. ("Illumina"), which provides the Company with worldwide distribution, development and commercialization rights to Illumina's next generation sequencing ("NGS") product line for use in transplantation diagnostic testing. Pursuant to the License Agreement, the Company is the exclusive worldwide distributor of Illumina's TruSight® HLA v1 and v2 product line. TruSight HLA is a NGS-based high resolution typing solution that provides NGS-level resolution to HLA typing. The Company's suite of AlloSeq products are development-stage NGS-based kitted solutions that the Company acquired as a result of its License Agreement. These products include: AlloSeq™ Tx, a high-resolution HLA typing solution, AlloSeq™ cfDNA, a surveillance solution designed to measure dd-cfDNA in blood to detect active rejection in transplant recipients, and AlloSeq™ HCT, a solution for chimerism testing for stem cell transplant recipients.

Digital

Following the acquisition of OTTR on May 7, 2019, CareDx is a leading provider of transplant patient tracking software ("OTTR sofware"). OTTR software provides comprehensive solutions for transplant patient management, and is currently used in over 60 leading transplant centers in the US. OTTR software enables integration with EMR systems, including Cerner and Epic, providing patient surveillance management tools and outcomes data to transplant centers.

Revenue for OTTR software is included in digital and other revenue in our condensed consolidated statements of operations and was $1.1 million from the acquisition date of May 7, 2019 to June 30, 2019.

Liquidity

The Company has incurred significant losses and negative cash flows from operations since its inception and had an accumulated deficit of $327.2 million at June 30, 2019. As of June 30, 2019, the Company had cash and cash equivalents of $43.5 million.

The Company may require additional financing in the future to fund working capital and pay its obligations as they come due. Additional financing might include issuance of equity securities, debt, cash from collaboration agreements or a combination of these. However, there can be no assurance that the Company will be successful in acquiring additional funding at levels sufficient to fund its operations or on terms favorable to the Company. The Company believes its existing cash balance and expected revenues will be sufficient to meet its anticipated cash requirements for at least the next 12 months.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The significant accounting policies and estimates used in preparation of the unaudited condensed consolidated financial statements are described in the Company's audited consolidated financial statements as of and for the year ended December 31, 2018, and the notes thereto, which are included in the Company's Annual Report on Form 10-K for the year ended December 31, 2018. Material changes to the significant accounting policies previously disclosed in the Company's Annual Report on Form 10-K for the year ended December 31, 2018 are reflected below.

Basis of Presentation

The accompanying unaudited condensed consolidated financial statements have been prepared in conformity with accounting principles generally accepted in the United States of America ("U.S. GAAP"), and follow the requirements of the Securities and Exchange Commission (the "SEC") for interim reporting. As permitted under those rules, certain notes and other financial information that are normally required by U.S. GAAP can be condensed or omitted. These unaudited condensed consolidated financial statements have been prepared on the same basis as the Company's annual consolidated financial statements and, in the opinion of management, reflect all adjustments, consisting only of normal recurring adjustments that are necessary for a fair statement of the Company's financial information. The condensed consolidated balance sheet as of December 31, 2018 has been derived from audited consolidated financial statements as of that date but does not include all of the financial information required by U.S. GAAP for complete financial statements. Operating results for the three and six months ended June 30, 2019 are not necessarily indicative of the results that may be expected for the year ending December 31, 2019.

The accompanying unaudited condensed consolidated financial statements include the accounts of the Company and its subsidiaries. Intercompany transactions have been eliminated.

Reclassifications and Changes in Presentation

Certain prior period amounts have been reclassified to conform with the current period presentation, including: (i) separate presentation of debt extinguishment expenses from other expense, net, (ii) combined presentation of license and other revenue with digital revenue, (iii) combined presentation of cost of testing services and cost of product, and (iv) separate presentation of gross profit. These reclassifications had no effect on the reported results of operations.

Use of Estimates

The preparation of unaudited condensed consolidated 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 assets and liabilities and the reported amounts of revenues and expenses in the unaudited condensed consolidated financial statements and accompanying notes. On an ongoing basis, management evaluates its estimates, including those related to transaction price estimates used for testing services revenue; standalone fair value of digital revenue performance obligations; accrued expenses for clinical studies; inventory valuation; the fair value of issued common stock warrants and embedded derivatives; the fair value of assets and liabilities acquired in a business combination or an assets acquisition (including identifiable intangible assets acquired); the fair value of contingent consideration recorded in connection with a business combination; the grant date fair value assumptions used to estimate

stock-based compensation expense; income taxes; impairment of long-lived assets and indefinite-lived assets (including goodwill); and legal contingencies. Actual results could differ from those estimates.

Concentrations of Credit Risk and Other Risks and Uncertainties

For the six months ended June 30, 2019 and 2018, approximately 54% and 45%, respectively, of total revenue was derived from Medicare. No other payers or customers represented more than 10% of total revenue for these periods.

As of June 30, 2019 and December 31, 2018, approximately 27% and 27%, respectively, of accounts receivable was due from Medicare. No other payer or customer represented more than 10% of accounts receivable on either June 30, 2019 or December 31, 2018.

Leases

Effective January 1, 2019, the Company adopted Accounting Standard Codification ("ASC") Topic 842, *Leases* ("ASC 842"). The Company determines if an arrangement is or contains a lease at contract inception. The Company leases office space and equipment primarily through operating leases with a limited number of finance leases. A right-of-use ("ROU") asset, representing the underlying asset during the lease term, and a lease liability, representing the payment obligation arising from the lease, are recognized on the condensed consolidated balance sheet at lease commencement based on the present value of the payment obligation. For operating leases, expense is recognized on a straight-line basis over the lease term. For finance leases, interest expense on the lease liability is recognized using the effective interest method and amortization of the ROU asset is recognized on a straight-line basis over the shorter of the estimated useful life of the asset or the lease term. Short-term leases with an initial term of 12 months or less are not recorded on the balance sheet.

The present value of lease payments is determined by using the interest rate implicit in the lease, if that rate is readily determinable; otherwise, the Company uses its incremental borrowing rate. The incremental borrowing rate is determined by using the rate of interest that the Company would pay to borrow on a collateralized basis an amount equal to the lease payments for a similar term and in a similar economic environment.

The Company's leases have remaining terms of 1 year to 3.31 years, some of which include options to extend the lease term. The Company's lease terms may include renewal options that are reasonably certain to be exercised and termination options that are reasonably certain not to be exercised. Certain finance leases also include bargain purchase options of the leased equipment.

Recent Accounting Pronouncements

Effective January 1, 2019, the Company adopted ASC 842 using the optional transition method and applied the standard only to leases that existed at that date. Under the optional transition method, the Company does not need to restate the comparative periods in transition and will continue to present financial information and disclosures for periods before January 1, 2019 in accordance with ASC Topic 840. The Company has also chosen to apply the package of practical expedients for existing leases, which provides relief from reassessing: (i) whether a contract is or contains a lease, (ii) lease classification, and (iii) whether initial direct costs (IDCs) can be capitalized. The Company has also made some accounting policy elections to: (i) allow the Company not to separate nonlease components from lease components, and instead to account for those as a single lease component, and (ii) elect not to recognize a ROU asset and a lease liability for leases with a term of 12 months or less ("short-term leases").

Upon adoption of ASC 842 on January 1, 2019, the Company recorded a ROU asset of approximately $3.0 million and a lease liability of approximately $3.8 million. The lease liability was determined based on the present value of the remaining minimum lease payments. The ROU asset was determined based on the value of the lease liability, adjusted for the deferred rent balances of approximately $0.8 million, which were previously included in accrued and other liabilities as well as deferred rent, net of current portion. See Note 8 for further details.

The standard did not have a material impact on the condensed consolidated statement of cash flows or the condensed consolidated statement of operations.

In February 2018, the Financial Accounting Standards Board ("FASB") issued ASU No. 2018-02, *Income Statement – Reporting Comprehensive Income (ASC Topic 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income* ("ASU 2018-02"). The amendments in ASU 2018-02 allow a reclassification from accumulated other comprehensive income to retained earnings for certain tax effects resulting from the Tax Cuts and Jobs Act (the "Tax Act"). ASU 2018-02 became effective for all interim and annual reporting periods beginning after December 15, 2018 and may be applied retrospectively or as of the beginning of the period of adoption. The Company adopted the standard on January 1, 2019. The adoption of the new standard did not have a material impact on the Company's unaudited condensed consolidated financial statements.

In June 2018, the FASB issued ASU No. 2018-07, *Compensation - Stock Compensation (ASC Topic 718): Improvements to Nonemployee Share Based Payment Accounting* ("ASU 2018-07"). ASU 2018-07 is effective for all interim and annual reporting periods beginning on or after December 15, 2018. The Company adopted ASU 2018-07 on January 1, 2019 applying a modified retrospective approach. On transition, the Company only had nonemployee equity-classified awards with an established measurement date. Accordingly, the Company did not record a cumulative-effect adjustment to retained earnings.

In August 2018, the FASB issued ASU No. 2018-15, *Intangibles – Goodwill and Other – Internal – Use Software (ASC Subtopic 350-40): Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract* ("ASU 2018-15"). ASU 2018-15 is effective for fiscal years beginning after December 15, 2019 and interim periods therein. Early adoption of ASU 2018-15 is permitted including adoption in any interim period. The Company plans to adopt the standard during 2019. The Company expects the new standard will impact its prospective unaudited condensed consolidated financial statements after adoption related to implementation costs in a cloud computing arrangement if and when entered by the Company.

In August 2018, the FASB issued ASU 2018-13, *Fair Value Measurement (ASC Topic 820)*, which modifies, removes and adds certain disclosure requirements on fair value measurements based on the FASB Concepts Statement, Conceptual Framework for Financial Reporting—Chapter 8: Notes to Financial Statements. The ASU is effective for the Company's interim and annual reporting periods during the year ending December 31, 2020, and all annual and interim reporting period thereafter. The amendments on changes in unrealized gains and losses, the range and weighted-average of significant unobservable inputs used to develop Level 3 fair value measurements and the narrative description of measurement uncertainty should be applied prospectively for only the most recent interim or annual period presented in the initial fiscal year of adoption. All other amendments should be applied retrospectively to all periods presented upon their effective date. Early adoption is permitted upon issuance of ASU 2018-13. An entity is permitted to early adopt any removed or modified disclosures upon issuance of ASU 2018-13 and delay adoption of the additional disclosures until their effective date. The Company is in the process of assessing the impact that the ASU will have in its unaudited condensed consolidated financial statements and disclosures. The Company does not believe adoption of the guidance will have a significant impact on its condensed consolidated financial statements.

In June 2016, the FASB issued ASU 2016-13, *Measurement of Credit Losses on Financial Instruments (ASC Topic 326),* which amends the Board's guidance on the impairment of financial instruments. The ASU adds to U.S. GAAP an impairment model known as the current expected credit loss ("CECL") model, which is based on expected losses rather than incurred losses. Under the new guidance, an entity recognizes as an allowance its estimate of lifetime expected credit losses, which the FASB believes will result in more timely recognition of such losses. The new CECL standard is effective for public companies for annual reporting periods beginning after December 15, 2019, and interim periods therein. ASU 2016-13 has a greater impact on banks. However, nonbank entities that have financial instruments or other assets such as trade receivables, contract assets, lease receivables, financial guarantees, loans and loan commitments, and held-to-maturity debt securities are subject to the CECL model. The Company is in the process of evaluating impact of this standard on its' consolidated financial statements.

3. NET LOSS PER SHARE

Basic and diluted net loss per share have been computed by dividing the net loss by the weighted-average number of common shares outstanding during the period, without consideration of common share equivalents as their effect would have been antidilutive.

The following tables set forth the computation of the Company's basic and diluted net loss per share (in thousands, except shares and per share data):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Numerator:				
Net loss attributable to CareDx, Inc. used to compute basic and diluted net loss per share	$ (7,847)	$ (14,062)	$ (15,378)	$ (23,031)
Denominator:				
Weighted-average shares used to compute basic and diluted net loss per share attributable to CareDx, Inc.	42,132,396	35,549,837	41,873,337	32,599,032
Net loss per share attributable to CareDx, Inc.:				
Basic and diluted	$ (0.19)	$ (0.40)	$ (0.37)	$ (0.71)

The following potentially dilutive securities have been excluded from diluted net loss per share as at June 30, 2019 because their effect would be antidilutive:

	Three and Six Months Ended June 30,	
	2019	2018
Shares of common stock subject to outstanding options	2,705,393	2,561,458
Shares of common stock subject to outstanding common stock warrants	466,695	3,328,089
Restricted stock units	1,292,440	896,904
Total common stock equivalents	4,464,528	6,786,451

4. FAIR VALUE MEASUREMENTS

The Company records its financial assets and liabilities at fair value. The carrying amounts of certain financial instruments of the Company, including cash and cash equivalents, prepaid expenses and other current assets, accounts payable and accrued liabilities, approximate fair value due to their relatively short maturities. 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 accounting guidance establishes a three-tiered hierarchy, which prioritizes the inputs used in the valuation methodologies in measuring fair value as follows:

- Level 1: Inputs which include quoted prices in active markets for identical assets and liabilities.
- Level 2: Inputs other than Level 1 that are observable, either directly or indirectly, such as quoted prices for similar assets or liabilities, quoted prices in markets that are not active; or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.
- Level 3: Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

The following table sets forth the Company's financial assets and liabilities measured at fair value on a recurring basis, as of June 30, 2019 and December 31, 2018 (in thousands):

	June 30, 2019			
	Fair Value Measured Using			
	(Level 1)	(Level 2)	(Level 3)	Total Balance
Assets				
Money market funds	$ 5,428	$ —	$ —	$ 5,428
Liabilities				
Common stock warrant liability	$ —	$ —	$ 11,286	$ 11,286

	December 31, 2018			
	Fair Value Measured Using			
	(Level 1)	(Level 2)	(Level 3)	Total Balance
Assets				
Money market funds	$ 59,471	$ —	$ —	$ 59,471
Liabilities				
Common stock warrant liability	$ —	$ —	$ 10,003	$ 10,003

The following table presents the issuances, exercises, changes in fair value and reclassifications of the Company's Level 3 financial instruments that are measured at fair value on a recurring basis (in thousands):

	(Level 3) Common Stock Warrant Liability
Balance as of December 31, 2018	$ 10,003
Exercise of warrants	(3,077)
Change in estimated fair value	4,360
Balance as of June 30, 2019	$ 11,286

The Company recognizes transfers between levels of the fair value hierarchy as of the end of the reporting period. There were no transfers between Level 1, Level 2 and Level 3 categories during the periods presented.

In determining fair value, the Company uses various valuation approaches within the fair value measurement framework. The valuation methodologies used for the Company's instruments measured at fair value and their classification in the valuation hierarchy are summarized below:

- *Money market funds* – Investments in money market funds are classified within Level 1. At June 30, 2019 and December 31, 2018, money market funds were included on the balance sheets in cash and cash equivalents.
- *Common stock warrant liability* – The Company utilizes a binomial-lattice pricing model (the "Monte Carlo Simulation Model") that involves a market condition simulation to estimate the fair value of the warrants. The application of the Monte Carlo Simulation Model requires the use of a number of complex assumptions including the Company's stock price, expected life of the warrants, stock price volatility determined from the Company's historical stock prices and stock prices of peer companies in the diagnostics industry, and risk-free rates based on the implied yield currently available in the U.S. Treasury zero-coupon issues with a remaining term equal to the expected life of the warrants. Increases (decreases) in the assumptions discussed above result in a directionally similar impact to the fair value of the common stock warrant liability.

Common Stock Warrant Liability Valuation Assumptions

	June 30, 2019	December 31, 2018
Private Placement Common Stock Warrant Liability		
Stock Price	$ 35.99	$ 25.14
Exercise Price	$ 1.12	$ 1.12
Remaining term (in years)	3.79	4.29
Volatility	84.00 %	79.00 %
Risk-free interest rate	1.71 %	2.46 %

5. BUSINESS COMBINATIONS

On May 7, 2019, the Company acquired 100% of the outstanding common stock of OTTR for total consideration of $16.1 million. OTTR was formed in 1993 and is a leading provider of organ transplant patient tracking software. Following the acquisition, the company changed OTTR's legal name to "CareDx Transplant Management, Inc."

The OTTR software provides comprehensive solutions for transplant patient management, and is currently used in over 60 leading transplant centers in the U.S. The OTTR software enables integration with EMR systems, including Cerner and Epic, providing patient surveillance management tools and outcomes data to transplant centers.

The Company accounted for the transaction as a business combination using the acquisition method of accounting. Results of operations of OTTR have been included with the Company's results since the date of the acquisition. Acquisition-related costs of $0.6 million associated with the acquisition were expensed as incurred, and classified as part of general and administrative expenses in the condensed consolidated statement of operations.

Goodwill of $10.6 million arising from the acquisition primarily consists of synergies from combining the OTTR software with the current testing solutions offered by the Company. The integration of the OTTR software into transplant center EMR systems may simplify the ordering process for the Company's leading surveillance tests, optimize transplant patient safety, increase efficiency and facilitate compliance. None of the goodwill is expected to be deductible for income tax purposes. All of the goodwill has been assigned to the Company's existing operating segment.

The following table summarizes the consideration paid for OTTR and the provisional amounts of the assets acquired and liabilities assumed recognized at their estimated fair value at the acquisition date:

	Total (In Thousands)
Consideration	
Cash	$ 16,037
Accrued purchase consideration	111
Total Consideration	$ 16,148
Recognized amounts of identifiable assets acquired and liabilities assumed	
Current assets	$ 1,525
Fixed assets	35
Identifiable intangible assets	6,600
Current liabilities	(2,566)
Total identifiable net assets acquired	5,594
Goodwill	10,554
	$ 16,148

The allocation of the purchase price to assets acquired and liabilities assumed, was based on the Company's best estimate of the fair value of such assets and liabilities as of the acquisition date.

The fair value of the acquired current liabilities includes $2.3 million of deferred revenue. Such amount is preliminary and it will be adjusted in subsequent periods upon completion of a detailed analysis of revenue contracts.

At the acquisition date the Company estimated net deferred tax assets of approximately $0.2 million arising from temporary differences related to assets acquired and liabilities assumed. The Company estimated that OTTR had net operating losses ("NOLs") carryforward of approximately $6.9 million, $4.3 million of which will begin to expire in year 2033, and the remaining $2.6 million will be carried forward indefinitely. A full valuation allowance of $0.2 million was recognized as of the acquisition date resulting in no impact from deferred taxes to OTTR's opening balance. An Internal Revenue Code Section 382 study ("Section 382 study") for NOLs is expected to be finalized by the Company during the third quarter of 2019 and therefore deferred taxes acquired are preliminary amounts as of June 30, 2019.

The following table summarizes the fair values of the intangible assets acquired as of the acquisition date (in thousands):

	Estimated Fair Value	Estimated Useful Lives (Years)
Customer relationships	$ 4,200	15
Developed technology	2,300	10
Trademark	100	2
Total	$ 6,600	

Customer relationships acquired by the Company represent the fair value of future projected revenue that is expected to be derived from sales of OTTR's products to existing customers. The customer relationships' fair value has been estimated utilizing a multi-period excess earnings method under the income approach, which reflects the present value of the projected cash flows that are expected to be generated by the customer relationships, less charges representing the contribution of other assets to those cash flows that use projected cash flows with and without the intangible asset in place. The economic useful life was determined based on the distribution of the present value of the cash flows attributable to the intangible asset.

The acquired developed technology represents the fair value of OTTR's proprietary software. The trademark acquired consists primarily of the OTTR brand and markings. Both the developed technology and the trademark were fair valued using the relief-from-royalty method under the income approach. This method considers the value of the asset is the value of the royalty payments from which the Company is relieved due to its ownership of the asset. The royalty rates of 15% and 1% were used to estimate the fair value the developed technology and the trademark, respectively.

The Company utilized a discount rate of 14.5% in estimating the fair value of these three intangible assets.

As of June 30, 2019, OTTR's digital revenue and net loss of $1.1 million and $0.1 million, respectively were included in the Company's condensed consolidated statement of operations from the acquisition date of May 7, 2019. Unaudited supplemental pro forma information is not disclosed because it is considered immaterial.

6. GOODWILL AND INTANGIBLE ASSETS

Goodwill

Goodwill is recorded when the purchase price of an acquisition exceeds the fair value of the net tangible and identified intangible assets acquired.

Goodwill is tested annually for impairment at the reporting unit level during the fourth quarter or earlier upon the occurrence of certain events or substantive changes in circumstances. There were no indicators of impairment in the three and six months ended June 30, 2019.

	Total
Balance as of January 1, 2019	$ 12,005
Goodwill acquired	10,554
Balance as of June 30, 2019	$ 22,559

Intangible Assets

The following tables present details of the Company's intangible assets as of June 30, 2019 (in thousands):

	June 30, 2019				
	Gross Carrying Amount	Accumulated Amortization	Foreign Currency Translation	Net Carrying Amount	Weighted Average Remaining Useful Life (In Years)
Intangible assets with finite lives:					
Customer relationships: Allenex	$ 12,650	$ (2,573)	$ (1,489)	$ 8,588	11.5
Customer relationships: Conexio	28	(11)	(2)	15	1.5
Customer relationships: TruSight HLA	380	(160)	—	220	1.8
Developed technology: Olerup SSP	11,650	(3,588)	(1,246)	6,816	6.5
Acquired technology: QTYPE	4,510	(809)	(519)	3,182	11.5
Acquired technology: Olerup SBT	127	(51)	(6)	70	1.5
Acquired technology: dd-cfDNA	6,650	(889)	—	5,761	11.6
Trademarks	2,360	(529)	(195)	1,636	6.7
Customer relationships: OTTR	4,200	(47)	—	4,153	14.8
Developed technology: OTTR	2,300	(38)	—	2,262	9.8
Commercialization rights of Cibiltech	8,079	—	—	8,079	9.9
Total intangible assets with finite lives	$ 52,934	$ (8,695)	$ (3,457)	$ 40,782	
Acquired in-process technology: AlloSeq Tx	2,719	—	—	2,719	—
Acquired in-process technology: AlloSeq HCT	2,103	—	—	2,103	—
Total intangible assets	$ 57,756	$ (8,695)	$ (3,457)	$ 45,604	

Acquisition of intangible assets

Illumina License and Commercialization Agreement

On May 4, 2018, the Company entered into the License Agreement with Illumina, which provides the Company with certain worldwide distribution, development and commercialization rights to Illumina's NGS product line for use in the field of bone marrow and solid organ transplantation diagnostic testing (the "Field"). As a result, from June 1, 2018, the Company is the exclusive worldwide distributor of Illumina's TruSight HLA v1 and v2 product line. In addition, the Company was also granted the exclusive right to develop and commercialize other NGS product lines for use in the Field.

The License Agreement required the Company to make a $5.0 million initial cash payment to Illumina and further requires the Company to pay royalties in the mid-single to low-double digits on sales of future commercialized products. Pursuant to the License Agreement, the Company is obligated to complete timely development and commercialization of other NGS product lines for use in the Field, and has agreed to minimum purchase commitments of finished products and raw materials from Illumina through 2023.

As the License Agreement did not meet the definition of a business combination under ASC Topic 805, *Business Combinations,* the Company accounted for the transaction as an asset acquisition. In an asset acquisition goodwill is not recognized, but rather any excess consideration transferred over the fair value of the net assets acquired is allocated on a relative fair value basis to the identifiable assets acquired.

Costs relating to the assets acquired were $5.2 million, comprising of the cash consideration of $5.0 million and associated transaction costs of $0.2 million. A deferred tax balance was not required to be established on the License Agreement date as the book and tax basis of the intangible assets was equivalent to the amount paid.

The allocation of the purchase price to identified intangible assets acquired was based on the Company's best estimate of the fair value of such assets as of the acquisition date. Significant assumptions utilized in the valuation of identified intangible assets were based on company-specific information and projections, which are not observable in the market and are thus considered Level 3 measurements as defined by U.S. GAAP. The Company determined the estimated fair values using Level 3 inputs after review and consideration of relevant information, including discounted cash flows, quoted market prices and estimates made by management.

Customer relationships represent the fair value of future projected revenue that is expected to be derived from sales of TruSight HLA products to existing customers of Illumina. The customer contracts and related relationships value has been estimated utilizing a multi-period excess earnings method under income approach, which reflects the present value of the projected cash flows that are expected to be generated by the customer relationships less charges representing the contribution of other assets to those cash flows that use projected cash flows with and without the intangible asset in place. The economic useful life was determined based on the life of the products, assuming that the existing customers will remain with the Company until the products becomes obsolete. The Company utilized a discount rate of 18% in estimating the fair value of the customer relationships.

The acquired in-process technology represents the fair value of products in development that have not reached commercial production at the date of acquisition. The fair value of the products was also determined using the multi-period excess earnings method under income approach. A rate of 30% and 40% for the AlloSeq Tx acquired in-process technology and the AlloSeq HCT acquired in-process technology, respectively, was utilized to discount the cash flows to the present value. The acquired in-process technology will not be amortized until completion of the related products, which is determined to occur when the products commence commercial production. Upon completion, each acquired in-process technology product will be amortized over its estimated useful life.

The following table summarizes the fair values of the intangible assets acquired as of the closing date (in thousands):

	Estimated Fair Value	Estimated Useful Lives (Years)
Customer relationships: TruSight HLA	$ 380	2.6
Acquired in-process technology: AlloSeq Tx	2,719	—
Acquired in-process technology: AlloSeq HCT	2,103	—
Total	$ 5,202	

Cibiltech License and Commercialization Agreement

Effective April 30, 2019, the Company entered into a license and commercialization agreement (the "Cibiltech Agreement") with Cibiltech SAS ("Cibiltech"). Cibiltech is a French company engaged in the development and support of predictive medicine and artificial intelligence software, services and technology, with an emphasis on personalized patient care and clinical research, including its proprietary software and service offering known as Predigraft (or KidneyCare iBox in the U.S.) for the predictive analysis of post-

transplantation kidney allograft loss. The Cibiltech Agreement provides the Company with an irrevocable, non-transferable right to commercialize Cibiltech's proprietary software in the field of transplantation in the U.S. for a period of ten years. The Company estimated the fair value of the acquired commercialization rights intangible asset based on expected contractual payments discounted to present value using a discount rate of 6%.

On July 26, 2019, pursuant to the Cibiltech Agreement, the Company purchased $1.0 million of convertible preferred shares of Cibiltech and does not have a significant influence on Cibiltech's operations.

The following table present details of the Company's intangible assets as of December 31, 2018 (in thousands):

	December 31, 2018				
	Gross Carrying Amount	Accumulated Amortization	Foreign Currency Translation	Net Carrying Amount	Weighted Average Remaining Useful Life (In Years)
Intangible assets with finite lives:					
Customer relationships: Allenex	$ 12,650	$ (2,198)	$ (1,129)	$ 9,323	12.0
Customer relationships: Conexio	28	(6)	(2)	20	2.0
Customer relationships: TruSight HLA	380	(86)	—	294	2.0
Developed technology: Olerup SSP	11,650	(3,065)	(998)	7,587	7.0
Acquired technology: QTYPE	4,510	(671)	(407)	3,432	12.0
Acquired technology: Olerup SBT	127	(28)	(6)	93	2.0
Acquired technology: dd-cfDNA	6,650	(635)	—	6,015	11.8
Trademarks	2,260	(454)	(140)	1,666	12.0
Total intangible assets with finite lives	$ 38,255	$ (7,143)	$ (2,682)	$ 28,430	
Acquired in-process technology: AlloSeq Tx	2,719	—	—	2,719	—
Acquired in-process technology: AlloSeq HCT	2,103	—	—	2,103	—
Total intangible assets	$ 43,077	$ (7,143)	$ (2,682)	$ 33,252	

Amortization expense was $0.7 million and $0.6 million for the three months ended June 30, 2019 and 2018, respectively. For the three months ended June 30, 2019, expenses of $0.4 million and $0.3 million were amortized to cost of product and sales and marketing expense, respectively. For the three months ended June 30, 2018, expenses of $0.4 million and $0.2 million were amortized to cost of product and sales and marketing expense, respectively. Amortization expense was $1.3 million and $1.2 million for the six months ended June 30, 2019 and 2018, respectively. For the six months ended June 30, 2019, expenses of $0.7 million and $0.6 million were amortized to cost of product and sales and marketing expense, respectively. For the six months ended June 30, 2018, expenses of $0.7 million and $0.5 million were amortized to cost of product and sales and marketing expense, respectively.

The following table summarizes the Company's estimated future amortization expense of intangible assets with finite lives as of June 30, 2019 (in thousands):

Years Ending December 31,	Cost of Revenue	Sales and Marketing	Total
Remainder of 2019	$ 1,392	$ 687	$ 2,079
2020	2,918	1,373	4,291
2021	2,871	1,183	4,054
2022	2,871	1,166	4,037
2023	2,871	1,166	4,037
Thereafter	13,245	9,039	22,284
Total future amortization expense	$ 26,168	$ 14,614	$ 40,782

The Company evaluates the carrying value of the intangible assets, not subject to amortization, related to acquired in-process technology assets, which are considered to be indefinite-lived until the completion or abandonment of the associated research and development efforts. Accordingly, amortization of the acquired in-process technology assets will not occur until the products reach commercialization. During the period the assets are considered indefinite-lived, they are tested for impairment on an annual basis, as well as between annual tests if the Company becomes aware of any events occurring or changes in circumstances that would indicate that the fair values of the acquired in-process technology assets are less than their carrying amounts. An impairment loss would be recorded when the fair value of an acquired in-process technology assets is less than its carrying value. If and when development is

complete, which generally occurs when the products are made commercially available, the associated acquired in-process technology asset will be deemed definite-lived and will then be amortized based on its estimated useful life.

7. BALANCE SHEET COMPONENTS

Inventory

Inventory consisted of the following (in thousands):

	June 30, 2019	December 31, 2018
Finished goods	$ 2,519	$ 2,506
Work in progress	940	651
Raw materials	1,882	1,786
Total inventory	$ 5,341	$ 4,943

Accrued and other liabilities

Accrued and other liabilities consisted of the following (in thousands):

	June 30, 2019	December 31, 2018
Deferred revenue	$ 3,624	$ 39
Short-term lease liability	2,034	—
Deferred payments for intangible assets	2,000	—
Clinical studies	1,993	1,815
Test sample processing fees	782	657
Accrued royalty	696	285
Professional fees	596	822
Other accrued expenses	2,025	2,019
Total accrued and other liabilities	$ 13,750	$ 5,637

8. COMMITMENTS

Leases

The Company leases its operating and office facilities for various terms under long-term, non-cancelable operating lease agreements in Brisbane, California; West Chester, Pennsylvania; Omaha, Nebraska; Fremantle, Australia and Stockholm, Sweden. The lease for the Company's facility in Vienna, Austria is on a month-to-month basis. The facility leases expire at various dates through 2022. In the normal course of business, it is expected that these leases will be renewed or replaced by leases on other properties.

The following table summarizes the lease cost for the three and six months ended June 30, 2019 (in thousands):

	Three Months ended June 30, 2019	Six Months ended June 30, 2019
Operating lease cost	$ 455	$ 905
Finance lease cost	55	110
Total lease cost	$ 510	$ 1,015

Other information:	
Weighted-average remaining lease term - Operating leases (in years)	1.7
Weighted-average remaining lease term - Finance leases (in years)	1.9
Weighted-average discount rate - Operating leases (%)	10.5 %
Weighted-average discount rate - Finance leases (%)	6.5 %

Rent expense under the non-cancelable operating leases was $0.5 million and $0.4 million for the three months ended June 30, 2019 and 2018, respectively. Rent expense under the non-cancelable operating leases $0.9 million for each of the six months ended June 30, 2019 and 2018. Future minimum lease commitments under these operating and finance leases as of June 30, 2019, are as follows (in thousands):

Years Ending December 31,	Finance Leases	Operating Leases
Remainder of 2019	$ 105	$ 1,140
2020	209	2,310
2021	71	223
2022	—	97
Total future minimum lease payments	$ 385	$ 3,770

The current portion of obligations under finance leases is included in accrued and other liabilities on the condensed consolidated balance sheets. The long-term portion is included in other liabilities on the condensed consolidated balance sheets.

Royalty Commitments

The Board of Trustees of the Leland Stanford Junior University ("Stanford")

In June 2014, the Company entered into a license agreement with Stanford (the "Stanford License"), which granted the Company an exclusive license to a patent relating to the diagnosis of rejection in organ transplant recipients using dd-cfDNA. Under the terms of the Stanford License, the Company is required to pay an annual license maintenance fee, six milestone payment amounts and royalties in the low single digits of net sales of products incorporating the licensed technology. The license maintenance fee may be offset against earned royalty payments due on net sales in that year. The Company incurred royalties of $0.3 million and $0.4 million in the three and six months ended June 30, 2019, respectively.

Illumina

On May 4, 2018, the Company entered into the License Agreement with Illumina. The License Agreement requires the Company to pay royalties in the mid-single to low-double digits on sales of future commercialized products. In the three and six months ended June 30, 2019, the Company paid no royalties to Illumina.

Cibiltech Commitments

Pursuant to the Cibiltech Agreement, as discussed in Note 6, the Company will share an agreed percentage of revenue with Cibiltech, if and when revenues are generated from KidneyCare iBox.

Other Commitments

Pursuant to the License Agreement with Illumina, the Company is obligated to complete timely development and commercialization of other NGS product lines for use in the Field, and has agreed to minimum purchase commitments of finished products and raw materials from Illumina through 2023.

Litigation

From time to time, the Company may become involved in litigation and other legal actions. The Company estimates the range of liability related to any pending litigation where the amount and range of loss can be estimated. The Company records its best estimate of a loss when the loss is considered probable. Where a liability is probable and there is a range of estimated loss with no best estimate in the range, the Company records a charge equal to at least the minimum estimated liability for a loss contingency when both of the following conditions are met: (i) information available prior to issuance of the financial statements indicates that it is probable that a liability had been incurred at the date of the financial statements and (ii) the range of loss can be reasonably estimated.

In the normal course of business, the Company enters into contracts and agreements that contain a variety of representations and warranties and provide for indemnification for certain liabilities. The exposure under these agreements is unknown because it involves claims that may be made against the Company in the future but have not yet been made. To date, the Company has not paid any claims or been required to defend any action related to its indemnification obligations. However, the Company may record charges in the future as a result of these indemnification obligations. The Company also has indemnification obligations to its directors and executive officers for specified events or occurrences, subject to some limits, while they are serving at the Company's request in such capacities. There have been no claims to date and the Company believes the fair value of these indemnification agreements is minimal. Accordingly, the Company has not recorded any liabilities for these agreements as of June 30, 2019 and as of December 31, 2018.

9. DEBT

The Company did not have any outstanding debt as of June 30, 2019 or December 31, 2018.

Perceptive Credit Agreement

On April 17, 2018, the Company entered into a credit agreement with Perceptive Credit Holdings II, LP (the "Perceptive Credit Agreement") for an initial term loan of $15.0 million. On November 20, 2018, the Company paid off all obligations owing under, and terminated, the Perceptive Credit Agreement. The Perceptive Credit Agreement debt extinguishment resulted in a $3.0 million loss that was included in debt extinguishment expenses, in the condensed consolidated statements of operations.

JGB Debt

In February and March 31, 2018, JGB Collateral LLC and certain of its affiliates ("JGB") converted the remaining $26.7 million of principal and accrued interest of the Company's convertible debt (the "JGB Debt") into an aggregate of 6,161,331shares of the Company's common stock. In connection with these conversions in the three months ended March 31, 2018, the Company recognized $6,000 to common stock and $38.8 million to additional paid in capital; the unamortized debt discount of $2.7 million was extinguished; and the compound derivative liability of $12.1 million was also extinguished. The JGB Debt conversion resulted in a $2.8 million loss on debt extinguishment that was included in debt extinguishment expenses in the condensed consolidated statements of operations for the three months ended March 31, 2018.

Danske Bank Term Loan and Credit Facility

The Company repaid the full outstanding amount of SEK 47,000,000 (approximately $5.6 million) plus accrued interest of SEK 142,000 (approximately $17,000), under the Danske Term Loan and Credit Facility on April 17, 2018.

FastPartner Subordinated Promissory Notes

The Company repaid the full amount outstanding of SEK 21,300,000 (approximately $2.5 million), including accrued interest of SEK 1,600,000 (approximately $0.2 million), under the FastPartner Note Agreement on April 17, 2018.

Mohammed Al Amoudi Subordinated Promissory Note

The Company repaid the full amount outstanding of SEK 15,700,000 (approximately $1.9 million), including accrued interest of SEK 1,200,000 (approximately $0.1 million) under the Al Amoudi Note Agreement on April 17, 2018.

Loan Agreement with SSP Primers Aktieboulag

The Company repaid the full loan amount outstanding of SEK 10,000,000 (approximately $1.2 million), including accrued interest of SEK 650,000 (approximately $0.1 million) on February 26, 2018.

10. STOCKHOLDERS' EQUITY

Contingent Consideration Liability

The Company had a contingent obligation to issue 227,845 shares of the Company's common stock to the former owners of ImmuMetrix, Inc. ("IMX"), in conjunction with its acquisition of IMX in June 2014. The shares were issuable upon the Company completing 2,500 commercial tests involving the measurement of dd-cfDNA in organ transplant recipients in the United States by June 10, 2020. The Company achieved the contingent consideration milestone of 2,500 commercial tests and issued the 227,848 shares in May 2018.

2018 Public Offering

On November 16, 2018, the Company sold in the 2018 Public Offering an aggregate of 2,300,000 shares of its common stock, including 300,000 shares sold pursuant to the underwriters' full exercise of their option to purchase additional shares at a public offering price of $24.50 per share. Total net proceeds received were $52.9 million net of underwriter's fees and issuance costs.

11. 401(K) PLAN

The Company sponsors a 401(k) defined contribution plan covering all U.S. employees under the Internal Revenue Code of 1986, as amended. Employee contributions are voluntary and are determined on an individual basis subject to the maximum allowable under federal tax regulations. On January 1, 2018, the Company began to make contributions to the employee plan. The Company incurred

expenses related to contributions to the plan of $0.1 million for each of the three months ended June 30, 2019 and 2018, respectively. The Company incurred expenses related to contributions to the plan of $0.3 million and $0.1 million for the six months ended June 30, 2019 and 2018, respectively.

12. WARRANTS

The Company issues common stock warrants in connection with debt or equity financings to a lender, a placement agent or an investor. Issued warrants are considered standalone financial instruments and the terms of each warrant are analyzed for equity or liability classification in accordance with U.S. GAAP. Warrants that are classified as liabilities usually have various features that would require net-cash settlement by the Company. Warrants that are not liabilities, derivatives and/or meet the exception criteria are classified as equity. Warrants liabilities are remeasured at fair value at each period end with changes in fair value recorded in the condensed consolidated statements of operations until expired or exercised. The Company utilizes the Monte Carlo Simulation Model to estimate the fair value of its warrants. Refer to Note 4 for further details. Warrants that are classified as equity are valued at fair value on the date of issuance, recorded in additional paid in capital and not remeasured.

In the three months ended June 30, 2019, warrants to purchase approximately 24,000 shares of common stock were exercised for cash payments of less than $0.1 million. During the three months ended June 30, 2019, warrants to purchase approximately 40,000 shares of common stock were exercised on a cashless basis and approximately 15,000 shares were issued pursuant to the exercises. In the six months ended June 30, 2019, warrants to purchase approximately 94,000 shares of common stock were exercised for cash payments of $0.1 million. During the six months ended June 30, 2019, approximately 96,000 warrants were exercised on a cashless basis and approximately 40,000 shares were issued pursuant to the exercises.

In the three months ended June 30, 2018, warrants to purchase approximately 445,000 shares of common stock were exercised for a cash payments of $0.5 million. In the six months ended June 30, 2018, warrants to purchase approximately 468,000 shares of common stock were exercised for a cash payments of $0.5 million.

As of June 30, 2019, outstanding warrants to purchase common stock were:

	Classified as	Original Term	Exercise Price	Number of Shares Underlying Warrants
Original issue date:				
August 2012	Equity	7 years	$ 21.78	111,455
January 2015	Equity	5 years	$ 6.96	34,483
April 2016	Liability	7 years	$ 1.12	320,757
				466,695

13. STOCK INCENTIVE PLANS

Stock Options and Restricted Stock Units ("RSU")

The following table summarizes option and unvested RSU activity under the Company's 2014 Equity Incentive Plan and 2016 Inducement Equity Incentive Plan and related information:

	Shares Available for Grant	Stock Options Outstanding	Weighted-Average Exercise Price	Number of RSU Shares	Weighted-Average Grant Date Fair Value
Balance—December 31, 2018	322,178	2,501,057	$ 9.10	968,364	$ 11.49
Additional options authorized	1,655,398	—	—	—	—
Common stock awards for services	(3,626)	—	—	—	—
RSUs granted	(856,965)	—	—	856,965	27.37
RSUs vested	—	—	—	(439,704)	13.14
Options granted	(831,860)	831,860	28.11	—	—
Options exercised	—	(491,581)	5.64	—	—
Repurchase of common stock under employee incentive plans	133,913	—	—	—	—
RSUs forfeited	93,185	—	—	(93,185)	20.60
Options forfeited	134,504	(134,504)	11.76	—	—
Options expired	1,439	(1,439)	3.86	—	—
Balance—June 30, 2019	648,166	2,705,393		1,292,440	

The total intrinsic value of options exercised was $6.0 million and $12.0 million in the three and six months ended June 30, 2019, respectively.

As of June 30, 2019, the total intrinsic value of outstanding RSUs was approximately $46.5 million and there were $22.6 million of unrecognized compensation costs related to RSUs, which are expected to be recognized over a weighted-average period of 2.94 years.

Options outstanding that have vested and are expected to vest at June 30, 2019 are as follows:

	Number of Shares Issued	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Life (Years)	Aggregate Intrinsic Value (In Thousands)
Vested	903,539	$ 15.44	6.64	$ 26,697
Expected to vest	1,681,317	19.97	9.22	26,984
Total	2,584,856			$ 53,681

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 at June 30, 2019 for stock options that were in-the-money.

The total fair value of options that vested during the three and six months period ended June 30, 2019 was $1.2 million and $1.7 million, respectively. As of June 30, 2019, there were approximately $19.3 million of unrecognized compensation costs related to stock options, which are expected to be recognized over a weighted-average period of 3.42 years.

2014 Employee Stock Purchase Plan

The Company has an Employee Stock Purchase Plan (the "ESPP"), under which employees can purchase shares of its common stock based on a percentage of their compensation, but not greater than 15% of their earnings; provided, however, an eligible employee's right to purchase shares of the Company's common stock may not accrue at a rate which exceeds $25,000 of the fair market value of such shares for each calendar year in which such rights are outstanding. The ESPP has consecutive offering periods of approximately six months in length. The purchase price per share must be equal to the lower of 85% of the fair value of the common stock on the first day of the offering period or on the exercise date.

During the offering period in 2018 that ended on December 31, 2018, 31,184 shares were purchased for aggregate proceeds of $0.3 million from the issuance of shares, which occurred on January 2, 2019. During the offering period in 2019 that ended on June 30, 2019, 20,528 shares were purchased for aggregate proceeds of $0.4 million from the issuance of shares, which occurred on July 1, 2019.

Valuation Assumptions

The estimated fair values of employee stock options and ESPP shares were estimated using the Black-Scholes option-pricing model based on the following weighted-average assumptions:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Employee stock options				
Expected term (in years)	6.0	6.0	6.0	6.0
Expected volatility	71.00%	66.00%	70.72%	68.75%
Risk-free interest rate	2.34%	2.76%	2.43%	2.71%
Expected dividend yield	—%	—%	—%	—%
Employee stock purchase plan				
Expected term (in years)	0.50	0.5	0.50	0.5
Expected volatility	76.66%	105.32%	76.66%	105.32%
Risk-free interest rate	2.51%	1.61%	2.51%	1.61%
Expected dividend yield	—%	—%	—%	—%

Risk-free Interest Rate**:** The Company based the risk-free interest rate over the expected term of the award based on the constant maturity rate of U.S. Treasury securities with similar maturities as of the date of grant.

Volatility: The Company used an average historical stock price volatility of its own stock and those comparable public companies that were deemed to be representative of future stock price trends.

Expected Term: The expected term represents the period for which the Company's stock-based compensation awards are expected to be outstanding and is based on analyzing the vesting and contractual terms of the awards and the holders' historical exercise patterns and termination behavior.

Expected Dividends: The Company has not paid and does not anticipate paying any dividends in the near future.

Stock-based Compensation Expense

The following table summarizes stock-based compensation expense relating to employee and nonemployee stock-based awards for the three and six months ended June 30, 2019 and 2018, included in the condensed consolidated statements of operations as follows (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Cost of revenue	$ 508	$ 191	$ 1,280	$ 252
Research and development	1,441	462	2,273	675
Sales and marketing	940	466	1,671	529
General and administrative	2,103	1,393	5,821	1,761
Total	$ 4,992	$ 2,512	$ 11,045	$ 3,217

No tax benefit was recognized related to share-based compensation expense since the Company has never reported taxable income and has established a full valuation allowance to offset all of the potential tax benefits associated with its deferred tax assets. In addition, no amounts of stock-based compensation expense were capitalized for the periods presented.

14. INCOME TAXES

The Company's effective tax rate may vary from the U.S. federal statutory tax rate due to the change in the mix of earnings in tax jurisdictions with different statutory rates, benefits related to tax credits and the tax impact of non-deductible expenses and other permanent differences between income before income taxes and taxable income. For the three and six months ended June 30, 2019,

the Company recorded an income tax benefit of $0.2 million and $0.8 million, respectively, compared to $0.4 million and $0.8 million for the three and six month ended June 30, 2018, respectively. The income tax benefit of $0.2 million and $0.8 million for the three and six month ended June 30, 2019, respectively, is primarily attributable to the recognition of deferred tax assets from foreign losses. The Company assesses the realizability of its net deferred tax assets by evaluating all available evidence, both positive and negative, including (i) cumulative results of operations in recent years, (ii) sources of recent losses, (iii) estimates of future taxable income, and (iv) the length of net operating loss carryforward periods. The Company believes that based on the history of its U.S. losses and other factors, the weight of available evidence indicates that it is more likely than not that it will not be able to realize its U.S. net deferred tax assets. Accordingly, the U.S. net deferred tax assets have been offset by a full valuation allowance.

Starting in 2018, companies may be subject to global intangible low tax income ("GILTI"), which is a tax on foreign income in excess of a deemed return on tangible assets of foreign corporations as well as the new base erosion anti-abuse tax ("BEAT") under the Tax Act. GILTI will be effectively taxed at a tax rate of 10.5%. Due to the complexity of the GILTI tax rules, companies are allowed to make an accounting policy choice of either (1) treating taxes due on future U.S. inclusions in taxable income related to GILTI as a current-period expense when incurred or (2) factoring such amounts into a company's measurement of its deferred taxes under SAB 118. The Company has not yet made an election with respect to GILTI and does not believe GILTI will have an impact on the Company's 2019 taxes. The Company will continue to review the GILTI and BEAT rules to determine their applicability to the Company as the rules become effective.

15. SEGMENT REPORTING

Operating segments are defined as components of an enterprise for which separate financial information is available that is evaluated regularly by the Company's Chief Operating Decision Maker ("CODM"), or decision making group, whose function is to allocate resources to and assess the performance of the operating segments. The Company has identified its Chief Executive Officer as the CODM. The Company operates in a single reportable segment.

The OTTR acquisition will be integrated into the Company's single reporting unit.

Revenues by geographic regions are based upon the customers' ship-to address for product revenue and the region of testing for testing services revenue. The following table summarizes reportable revenues by geographic regions (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30, 2018	
	2019	2018	2019	2018
Testing services revenue				
United States	$ 25,499	$ 13,853	$ 46,885	$ 24,313
Rest of the World	178	144	310	288
	$ 25,677	$ 13,997	$ 47,195	$ 24,601
Product revenue				
United States	$ 2,168	$ 1,319	$ 4,000	$ 2,164
Europe	1,906	1,688	3,849	3,661
Rest of the World	519	543	1,177	1,032
	$ 4,593	$ 3,550	$ 9,026	$ 6,857
Digital and other revenue				
United States	$ 1,108	$ 235	$ 1,130	$ 377
Europe	50	41	60	41
Rest of the World	26	—	25	—
	$ 1,184	$ 276	$ 1,215	$ 418
Total United States	$ 28,775	$ 15,407	$ 52,015	$ 26,854
Total Europe	$ 1,956	$ 1,729	$ 3,909	$ 3,702
Total Rest of the World	$ 723	$ 687	$ 1,512	$ 1,320
Total	$ 31,454	$ 17,823	$ 57,436	$ 31,876

The following table summarizes long-lived assets, consisting of property and equipment, net, by geographic regions (in thousands):

	June 30, 2019	December 31, 2018
Long-lived assets:		
United States	$ 2,712	$ 3,235
Europe	498	625
Rest of the World	298	274
Total	$ 3,508	$ 4,134

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

The following discussion and analysis of our financial condition and results of operations should be read together with the unaudited condensed consolidated financial statements and related notes included elsewhere in Item 1 of Part I of this Quarterly Report on Form 10-Q and with the audited consolidated financial statements and the related notes included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2018, filed with the Securities and Exchange Commission, or the SEC, on March 6, 2019.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Quarterly Report on Form 10-Q contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. All statements contained in this Quarterly Report on Form 10-Q other than statements of historical fact, including statements regarding our future results of operations and financial position, our business strategy and plans, and our objectives for future operations, are forward-looking statements. The words "believe," "may," "will," "potentially," "estimate," "continue," "anticipate," "intend," "could," "would," "project," "plan," "expect" and the negative and plural forms of these words and similar expressions are intended to identify forward-looking statements.

These forward-looking statements may include, but are not limited to, statements concerning the following:

- our ability to generate revenue from sales of AlloMap Heart, AlloSure Kidney and future testing services, if any, and our ability to increase the commercial success of these testing services;
- our ability to obtain, maintain and expand reimbursement coverage from payers for AlloMap Heart, AlloSure Kidney and other future testing services, including AlloMap Kidney, AlloSure Heart, AlloSure Lung and KidneyCare iBox, if any;
- our ability to generate revenue from sales of Olerup SSP, Olerup SBT, QTYPE, TruSight HLA and future products, if any, and our ability to increase the commercial success of these products;
- our ability to generate revenue from the license and commercialization agreement, or the License Agreement with Illumina, Inc., or Illumina;
- our ability to generate revenue from the commercialization agreement, or the Cibiltech Agreement, with Cibiltech SAS, or Cibiltech;
- our plans and ability to develop and commercialize new solutions for the surveillance of heart, kidney and other solid organ transplant recipients;
- our plans and ability to continue updating our products, services and technology to maintain our leading position in transplantations;
- the outcome or success of our clinical trial collaborations and registry studies; including Kidney Allograft Outcomes AlloSure Registry, or K-OAR, the Surveillance HeartCare Outcomes Registry, or SHORE, and the Outcomes of KidneyCare on Renal Allografts registry study, or OKRA;
- the favorable review of our testing services and product offerings, and our future solutions, if any, in peer-reviewed publications;
- our ability to obtain additional financing on terms favorable to us, or at all;
- our anticipated cash needs and our anticipated uses of our funds, including our estimates regarding operating expenses and capital requirements;
- our ability to integrate our business with the business of OTTR Complete Transplant Management, or OTTR, and to realize the anticipated benefits of the acquisition;
- anticipated trends and challenges in our business and the markets in which we operate;
- our dependence on certain of our suppliers, service providers and other distribution partners;
- disruptions to our business, including disruptions at our laboratories and manufacturing facilities;
- our ability to retain key members of our management team;
- our ability to make successful acquisitions or investments and to manage the integration of such acquisitions or investments;
- our ability to expand internationally;

- our compliance with federal, state and foreign regulatory requirements;
- our ability to protect and enforce our intellectual property rights, our strategies regarding filing additional patent applications to strengthen our intellectual property rights and our ability to defend against intellectual property claims that may be brought against us;
- our ability to successfully assert or defend against, or settle, any litigation brought by or against us or other legal matters or disputes; and
- our ability to comply with the requirements of being a public company.

These forward-looking statements are subject to a number of risks, uncertainties and assumptions, including those described in the section entitled "Risk Factors" in this Quarterly Report on Form 10-Q and in our Annual Report on Form 10-K for the fiscal year ended December 31, 2018, filed with the SEC on March 6, 2019. Moreover, we operate in a very competitive and rapidly changing environment, and new risks emerge from time to time. It is not possible for us to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially and adversely from those contained in any forward-looking statements we may make. In light of these risks, uncertainties and assumptions, the forward-looking events and circumstances discussed in this report may not occur and actual results could differ materially and adversely from those anticipated or implied in the forward-looking statements.

You should not rely upon forward-looking statements as predictions of future events. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee that the future results, levels of activity, performance or events and circumstances reflected in the forward-looking statements will be achieved or occur. Moreover, neither we nor any other person assumes responsibility for the accuracy and completeness of the forward-looking statements. Except as required by law, we undertake no obligation to update publicly any forward-looking statements for any reason after the date of this report to conform these statements to actual results or to changes in our expectations.

You should read this report and the documents that we reference in this report and have filed with the SEC as exhibits with the understanding that our actual future results, levels of activity, performance and events and circumstances may be materially different from what we expect. We qualify all forward-looking statements by these cautionary statements.

Overview and Recent Highlights

We are a global transplant diagnostics company with product and service offerings along the pre- and post-transplant continuum. We focus on discovery, development and commercialization of clinically differentiated, high-value diagnostic solutions for transplant patients. We also offer high quality products that increase the chance of successful transplants by facilitating a better match between a donor and a recipient of stem cells and organs.

Testing Services

AlloMap Heart

Our first commercialized testing solution, the AlloMap Heart transplant molecular test, or AlloMap Heart, is a gene expression test that helps clinicians monitor and identify heart transplant recipients with stable graft function who have a low probability of moderate-to-severe acute cellular rejection. Since 2008, we have sought to expand the adoption and utilization of our AlloMap Heart solution through ongoing studies to substantiate the clinical utility and actionability of AlloMap Heart, secure positive reimbursement decisions for AlloMap Heart from large private and public payers, develop and enhance our relationships with key members of the transplant community, including opinion leaders at major transplant centers, and explore opportunities and technologies for the development of additional solutions for post-transplant surveillance. We believe the use of AlloMap Heart, in conjunction with other clinical indicators, can help healthcare providers and their patients better manage long-term care following a heart transplant. In particular, we believe AlloMap Heart can improve patient care by helping healthcare providers avoid the use of unnecessary, invasive surveillance biopsies and determine the appropriate dosage levels of immunosuppressants. In 2008, AlloMap Heart received 510(k) clearance from the U.S. Food and Drug Administration, or FDA, for marketing and sale as a test to aid in the identification of recipients with a low probability of moderate or severe acute cellular rejection.

AlloMap Heart received a positive coverage decision for reimbursement from Medicare effective January 1, 2006. The Medicare reimbursement rate for AlloMap Heart was set as $3,240 on January 1, 2018, which remains applicable for 2019. AlloMap Heart has also received positive coverage decisions for reimbursement from many of the largest U.S. private payers, including Aetna, Anthem, Cigna, Health Care Services Corporation (HCSC), Humana, Kaiser Foundation Health Plan, Inc., TRICARE and UnitedHealthcare.

We have also successfully completed a number of landmark clinical trials in the transplant field demonstrating the clinical utility of AlloMap Heart for surveillance of heart transplant recipients. We initially established the analytical and clinical validity of AlloMap Heart on the basis of our Cardiac Allograft Rejection Gene Expression Observational (Deng, M. et al., Am J Transplantation 2006), or CARGO, study, which was published in the American Journal of Transplantation. A subsequent clinical utility trial, Invasive Monitoring Attenuation through Gene Expression (Pham MX et al., N. Eng. J. Med., 2010), or IMAGE, published in The New England Journal of Medicine, demonstrated that clinical outcomes in recipients managed with AlloMap Heart surveillance were equivalent (non-inferior) to outcomes in recipients managed with biopsies. The results of our clinical trials have also been presented at major medical society congresses. AlloMap Heart is now recommended as part of the International Society for Heart and Lung Transplantation, or ISHLT, guidelines.

During the first six months of 2019, there were 8,852 AlloMap Heart patient test results provided to 119 of the approximately 134 heart transplant management centers in the United States.

AlloSure Kidney

AlloSure Kidney, our transplant surveillance solution which was commercially launched in October 2017, applies proprietary next generation sequencing technology to measure donor-derived cell-free DNA, or dd-cfDNA, in the blood stream emanating from the donor kidney. We believe AlloSure Kidney may help clinicians determine rejection-specific activity manifested as cell damage in the transplanted heart, kidney, or other solid organ, irrespective of the type of organ transplanted. We also believe the use of AlloSure Kidney, in conjunction with other clinical indicators, can help healthcare providers and their patients better manage long-term care following a kidney transplant. In particular, we believe AlloSure Kidney can improve patient care by helping healthcare providers to reduce the use of invasive biopsies and determine the appropriate dosage levels of immunosuppressants. Effective October 9, 2017, AlloSure Kidney became available for commercial testing with Medicare coverage and reimbursement. The Medicare reimbursement rate for AlloSure Kidney is $2,841. AlloSure Kidney has also received payment from private payers on a case-by-case basis, but no positive coverage decisions have been made to the date of this filing.

Prior to the commercialization of AlloSure Kidney, we generated a strong body of clinical evidence. In late 2015, we announced the completion of analytical validation of AlloSure Kidney. A report describing the analytical validation of AlloSure Kidney including clinical validation detailing the quality, reality and consistency of analytical results information for heart transplant, appeared in the November 2016 issue of The Journal of Molecular Diagnostics. The Circulating Donor-Derived Cell-Free DNA in Blood for Diagnosing Acute Rejection in Kidney Transplant Recipients, or DART, trial, sponsored by us, was conducted between April 2015 and January 2018. DART is a 14 center observational study of kidney transplant recipients where blood specimens are drawn periodically after transplant during follow up visits and also after treatment for acute rejection. By the time of completion of the first analysis, 384 patients were followed in DART for up to 24 months. The results demonstrated that increased levels of dd-cfDNA, determined by the AlloSure Kidney assay, discriminated active rejection of a kidney transplant more effectively than serum creatinine values. In collaboration with clinical investigators, we published these findings in the scientific peer-reviewed Journal of the American Society of Nephrology and the Journal Applied Laboratory Medicine in March 2017. A total of 2,109 patient visits had been accrued in DART by January 2019. We plan to analyze and report on additional findings from this dataset in 2019 and into the future.

In 2018, we initiated the Kidney Allograft Outcomes AlloSure Kidney Registry, or K-OAR study, to develop further data on the clinical utility of AlloSure Kidney for surveillance of kidney transplant recipients. As of June 30, 2019, 51 centers have been initiated as K-OAR study sites.

During the first six months of 2019, there were 13,065 AlloSure Kidney patient test results provided. In the second quarter of 2019, AlloSure Kidney was ordered by 117 kidney transplant centers in the United States.

HeartCare

In September 2018, we initiated the SHORE study. SHORE is a prospective, multi-center, observational, registry of patients receiving HeartCare for surveillance.

HeartCare combines the gene expression profiling technology of AlloMap Heart with the dd-cfDNA analysis of AlloSure Heart in one surveillance solution. An approach to surveillance using HeartCare provides information from two complementary measures: (i) AlloMap Heart – a measure of immune activity, and (ii) AlloSure Heart – monitors graft injury. HeartCare provides robust information about distinct biological processes, such as immune quiescence, active injury, Acute Cellular Rejection, or ACR and Antibody Mediated Rejection, or AMR. We have not yet made any applications to private payers for reimbursement coverage of AlloSure Heart except for Medicare.

KidneyCare

In June 2019, we announced our plans to commence the OKRA study. OKRA is an extension of the K-OAR study. OKRA is a prospective, multi-center, observational, registry of patients receiving KidneyCare for surveillance. KidneyCare combines the dd-cfDNA analysis of AlloSure Kidney with the gene expression profiling technology of AlloMap Kidney and the predictive artificial intelligence technology of KidneyCare iBox in one surveillance solution. We have not yet made any applications to payers for reimbursement coverage of AlloMap Kidney or KidneyCare iBox.

AlloSure Lung

In February 2019, AlloSure Lung became available for lung transplant patients through a compassionate use program while the test is undergoing further studies. AlloSure Lung applies proprietary next generation sequencing, or NGS, technology to measure dd-cfDNA in the blood stream emanating from the donor lung to monitor graft injury. We have not yet made any applications to payers for reimbursement coverage of AlloSure Lung.

Products

We develop, manufacture, market and sell products that increase the chance of successful transplants by facilitating a better match between a donor and a recipient of stem cells and organs.

QTYPE enables speed and precision in Human Leukocyte Antigen, or HLA typing at a low to intermediate resolution for samples that require a fast turn-around-time and uses real-time polymerase chain reaction, or PCR, methodology. QTYPE received CE mark certification on April 10, 2018. Olerup SSP is used to type HLA alleles based on the sequence specific primer, or SSP technology. Olerup SBT is a complete product range for sequence-based typing of HLA alleles.

On May 4, 2018, we entered into the License Agreement with Illumina, which provides us with worldwide distribution, development and commercialization rights to Illumina's NGS product line for use in transplantation diagnostic testing.

As a result, on June 1, 2018, we became the exclusive worldwide distributor of Illumina's TruSight HLA product line. TruSight HLA is a high resolution solution that uses NGS methodology. In addition, we were granted the exclusive right to develop and commercialize other NGS product lines. These products include: AlloSeq Tx, a high-resolution HLA typing solution, AlloSeq cfDNA, our surveillance solution designed to measure dd-cfDNA in blood to detect active rejection in transplant recipients, and AlloSeq HCT, a NGS solution for chimerism testing for stem cell transplant recipients.

Digital

On May 7, 2019, we acquired 100% of the outstanding common stock of OTTR for total consideration of $16.1 million. OTTR was formed in 1993 and is a leading provider of transplant patient tracking software, or the OTTR software. Following the acquisition, we changed OTTR's legal name to "CareDx Transplant Management, Inc.".

The OTTR software provides comprehensive solutions for transplant patient management, and is currently used in over 60 leading transplant centers in the U.S. OTTR software enable integration with electronic medical records, or EMR systems, including Cerner and Epic, providing patient surveillance management tools and outcomes data to transplant centers. Refer to Note 5, Business Combinations, of the notes to the unaudited condensed consolidated financial statements included elsewhere in this Quarterly Report on Form 10-Q.

Recent Highlights

- Accelerated leadership position in transplantation in the second quarter of 2019
  - Provided 7,355 AlloSure Kidney patient results for 5,548 kidney transplant patients
  - Continued progress in AlloSure Kidney Registry (K-OAR) enrollment, with 51 centers initiated and 1,204 patients enrolled as of June 30, 2019
  - Provided 4,572 AlloMap Heart patient results, increasing 11% year-over-year
  - Established new Digital transplant business through acquisition of OTTR, an electronic medical records company used in 60 U.S. Transplant Centers
  - Introduced AlloSeq product line at EFI (European Immunogenetics and Histocompatibility Conference) which will provide more than 1 million worldwide transplant patients access to novel surveillance solutions
- Achieved total revenue of $31.5 million for the second quarter of 2019, increasing 76% year-over-year
  - Testing services revenue of $25.7 million, growth of 83% compared to prior year period

- Product revenue of $4.6 million, an increase of 29% year-over-year
- Digital and other revenue of $1.2 million

Financial Operations Overview

Revenue

We derive our revenue from testing services, products sales and digital and other revenues. Revenue is recorded considering a five-step revenue recognition model that includes identifying the contract with a customer, identifying the performance obligations in the contract, determining the transaction price, allocating the transaction price to the performance obligations and recognizing revenue when, or as, an entity satisfies a performance obligation.

Testing Services Revenue

Our testing services revenue is derived from AlloMap Heart and AlloSure Kidney, which represented 82% of our total revenues for each of the three and six months ended June 30, 2019, and 82% and 77% of our total revenues for the three and six months ended June 30, 2018, respectively. Our testing services revenue depends on a number of factors, including (i) the number of tests performed; (ii) establishment of coverage policies by third-party insurers and government payers; (iii) our ability to collect from payers with whom we do not have positive coverage determination, which often requires that we pursue a case-by-case appeals process; (iv) our ability to recognize revenues on tests billed prior to the establishment of reimbursement policies, contracts or payment histories; (v) our ability to expand into markets outside of the United States; and (vi) how quickly we can successfully commercialize new product offerings.

We currently market testing services to healthcare providers through our direct sales force that targets transplant centers and their physicians, coordinators and nurse practitioners. The healthcare providers that order the tests and on whose behalf we provide our testing services are generally not responsible for the payment of these services. Amounts received by us vary from payer to payer based on each payer's internal coverage practices and policies. We generally bill third-party payers upon delivery of a test result report to the ordering physician. As such, we take the assignment of benefits and the risk of collection from the third-party payer and individual patients.

During the six months ended June 30, 2019, we performed 8,852 commercial AlloMap Heart tests and 13,065 AlloSure Kidney tests that are included in our estimated testing services revenue. All tests for both AlloMap Heart and AlloSure Kidney were performed from our Brisbane, California laboratory.

Product Revenue

Our product revenue is derived primarily from sales of Olerup SSP, QTYPE, Olerup SBT and TruSight products. Product revenue represented 15% and 16% of total revenue for the three and six months ended June 30, 2019, respectively, and 20% and 22% of our total revenues for the three and six months ended June 30, 2018, respectively. We recognize product revenue from the sale of products to end-users, distributors and strategic partners when all revenue recognition criteria are satisfied, which is generally upon either shipping or delivery, as per the terms of the agreement.

Digital and Other Revenue

Our digital and other revenue is mainly derived from sales of our OTTR software licenses and services and other licensing agreements. Digital and other revenue represented 4% and 2% of total revenue for the three and six months ended June 30, 2019, respectively, and 2% and 1% of our total revenues for the three and six months ended June 30, 2018, respectively.

Critical Accounting Policies and Significant Judgments and Estimates

Our management's discussion and analysis of our financial condition and results of operations is based on our unaudited condensed consolidated financial statements, which have been prepared in accordance with United States generally accepted accounting principles. The preparation of these unaudited condensed consolidated 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 unaudited condensed consolidated 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.

We believe that the following critical accounting policies reflect the more significant estimates and assumptions used in the preparation of our financial statements. We believe the following critical accounting policies are affected by significant judgments and estimates used in the preparation of our unaudited condensed consolidated financial statements:

- Revenue recognition;
- Business combination;
- Acquired intangible assets;
- Impairment of goodwill, intangible assets and other long-lived assets;
- Common stock warrant liability; and
- Derivative liability.

There were no material changes in the matters for which we make critical accounting estimates in the preparation of our unaudited condensed consolidated financial statements during the three and six months ended June 30, 2019 as compared to those disclosed in Management's Discussion and Analysis of Financial Condition and Results of Operations included in our annual report on Form 10-K for the year ended December 31, 2018, except that there is no derivative liability outstanding as of December 31, 2018 and June 30, 2019 and the determination of the leases incremental borrowing rate estimate as discussed in Note 2, Summary of Significant Accounting Policies, in the unaudited condensed consolidated financial statements included elsewhere in this Quarterly Report on Form 10-Q.

Recently Issued Accounting Standards

Refer to Note 2, Summary of Significant Accounting Policies - Recent Accounting Pronouncements, of the Notes to the unaudited condensed consolidated financial statements included elsewhere in this Quarterly Report on Form 10-Q for a description of recently issued accounting pronouncements, including the expected dates of adoption and estimated effects on our results of operations, financial position and cash flows.

Results of Operations

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

(In thousands)

	Three Months Ended June 30,		
	2019	2018	Change
Revenue:			
Testing services revenue	$ 25,677	$ 13,997	$ 11,680
Product revenue	4,593	3,550	1,043
Digital and other revenue	1,184	276	908
Total revenue	31,454	17,823	13,631
Cost of revenue	11,512	7,207	4,305
Gross profit	19,942	10,616	9,326
Operating expenses:			
Research and development	7,630	3,496	4,134
Sales and marketing	10,644	5,860	4,784
General and administrative	8,512	5,596	2,916
Change in estimated fair value of contingent consideration	—	873	(873)
Total operating expenses	26,786	15,825	10,961
Loss from operations	(6,844)	(5,209)	(1,635)
Other income (expense):			
Interest income (expense), net	300	(424)	724
Change in estimated fair value of common stock warrant liability and derivative liability	(1,351)	(8,768)	7,417
Other expense, net	(172)	(42)	(130)
Total other income (expense)	(1,223)	(9,234)	8,011
Loss before income taxes	(8,067)	(14,443)	6,376
Income tax benefit	220	381	(161)
Net loss	(7,847)	(14,062)	6,215
Net loss attributable to noncontrolling interest	—	—	—
Net loss attributable to CareDx, Inc.	$ (7,847)	$ (14,062)	$ 6,215

Testing Services Revenue

Testing services revenue increased by $11.7 million, or 83%, for the three months ended June 30, 2019 as compared to the same period in 2018. This increase is mainly due to the 7,355 AlloSure Kidney patient results provided in the three months ended June 30, 2019, compared to 2,300 in the same period in 2018. Additionally, AlloMap Heart patient results increased to 4,572 in the three months ended June 30, 2019, compared to 4,132 in the same period in 2018.

Product Revenue

Product revenue increased by $1.0 million, or 29%, for the three months ended June 30, 2019, compared to the same period in 2018. The increase is primarily due to three months of sales of the TruSight HLA products for the three months ended June 30, 2019 compared to one month of sales for the three months ended June 30, 2018, following the License Agreement with Illumina, which was signed in May 2018. QTYPE sales also increased, partially offset by decreased sales of Olerup SSP products.

Digital and Other Revenue

Digital and other revenue increased by $0.9 million for the three months ended June 30, 2019 compared to the same period in 2018, primarily due to the acquisition of OTTR resulting in $1.1 million digital revenue, partially offset by a decrease in other revenue.

Cost of Revenue and Gross Profit

Cost of revenue increased by approximately $4.3 million, or 60%, for the three months ended June 30, 2019, compared to the same period in 2018, primarily due to a $3.2 million increase in cost of testing services revenue as a result of higher testing volume, a $0.6 million increase in cost of digital and other revenue as a result of the acquisition of OTTR, and a $0.5 million increase in cost of product revenue due to an increase in product sales.

Gross profit increased by $9.3 million, or 47%, for the three months ended June 30, 2019, compared to the same period in 2018, primarily due to an increase in testing services revenue.

Research and Development

Research and development expenses increased by $4.1 million, or 118%, for the three months ended June 30, 2019, compared to the same period in 2018, primarily due to a $1.4 million increase in stock-based compensation expense, a $0.7 million increase in materials, a $0.8 million increase in personnel-related costs, a $0.4 million increase in consulting and professional fees, $0.3 million in OTTR software development expenses, and a $0.2 million increase in clinical studies.

Sales and Marketing

Sales and marketing expenses increased by approximately $4.8 million, or 82%, for the three months ended June 30, 2019, compared to the same period in 2018, primarily due to a $2.0 million increase in tradeshow, events and travel costs, a $1.5 million increase in personnel related costs, a $0.5 million increase in stock-based compensation expense, and a $0.5 million increase in recruiting fees.

General and Administrative

General and administrative expenses increased by $2.9 million, or 52%, for the three months ended June 30, 2019, compared to the same period in 2018. This increase was primarily due to a $0.7 million increase in stock-based compensation, $0.7 million increase in personnel-related costs, a $0.6 million increase in legal fees, and a $0.5 million increase in consulting services for Sarbanes-Oxley and other matters.

Interest Income (Expense), net

For the three months ended June 30, 2019, we recorded net interest income of $0.3 million. This was primarily due to interest generated by our money market accounts.

The net interest expense of $0.4 million in the three months ended June 30, 2018 primarily consisted of interest expense and debt amortization recorded in relation to the credit agreement with Perceptive Credit Holdings II, LP, or the Perceptive Credit Agreement entered into on April 17, 2018.

Change in Estimated Fair Value of Common Stock Warrant Liability and Derivative Liability

The expense for the change in estimated fair value of common stock warrants and derivative liability decreased by $7.4 million, or 85%, for the three months ended June 30, 2019, compared to the same period in 2018. The $1.4 million expense in the three months ended June 30, 2019 is comprised of a $0.1 million remeasurement charge for warrants exercised during the period and a $1.3 million remeasurement charge related to the change in fair value of our common stock warrant liability. These remeasurement charges reflect the increase in the price of shares of our common stock during the three months ended June 30, 2019.

The $8.8 million expense in the three months ended June 30, 2018 consisted of a $5.2 million remeasurement charge for warrants exercised during the period and a $3.6 million remeasurement charge related to the changes in fair value of our remaining common stock warrant liability. These remeasurement charges reflect the increase in the price of shares of our common stock during the three months ended June 30, 2018.

Comparison of Six Months Ended June 30, 2019 and 2018

(In thousands)

	Six Months Ended June 30,		
	2019	2018	Change
Revenue:			
Testing services revenue	$ 47,195	$ 24,601	$ 22,594
Product revenue	9,026	6,857	2,169
Digital and other revenue	1,215	418	797
Total revenue	57,436	31,876	25,560
Cost of revenue	21,245	13,591	7,654
Gross profit	36,191	18,285	17,906
Operating expenses:			
Research and development	13,244	6,864	6,380
Sales and marketing	17,569	9,945	7,624
General and administrative	17,618	10,903	6,715
Change in estimated fair value of contingent consideration	—	1,017	(1,017)
Total operating expenses	48,431	28,729	19,702
Loss from operations	(12,240)	(10,444)	(1,796)
Other income (expense):			
Interest income (expense), net	642	(3,119)	3,761
Debt extinguishment expenses	—	(2,806)	2,806
Change in estimated fair value of common stock warrant liability and derivative liability	(4,360)	(7,447)	3,087
Other expense, net	(246)	(45)	(201)
Total other income (expense)	(3,964)	(13,417)	9,453
Loss before income taxes	(16,204)	(23,861)	7,657
Income tax benefit	826	805	21
Net loss	(15,378)	(23,056)	7,678
Net loss attributable to noncontrolling interest	—	(25)	25
Net loss attributable to CareDx, Inc.	$ (15,378)	$ (23,031)	$ 7,653

Testing Services Revenue

Testing services revenue increased by $22.6 million, or 92%, for the six months ended June 30, 2019, compared to the same period in 2018. This increase is mainly due to an increase in volume of AlloSure Kidney patient results, with 13,065 AlloSure Kidney patient results provided in the six months ended June 30, 2019, compared to 3,351 in the same period in 2018. Additionally, AlloMap Heart patient results increased to 8,852 in the six months ended June 30, 2019, compared to 7,979 in the same period in 2018.

Product Revenue

Product revenue increased by $2.2 million, or 32%, for the six months ended June 30, 2019, compared to the same period in 2018, primarily due to six months of sales of the TruSight HLA products for the six months ended June 30, 2019 compared to one month of sales of the TruSight HLA products for the six months ended June 30, 2018 following the License Agreement with Illumina which was signed in May 2018. QTYPE sales also increased, partially offset by decreased sales of Olerup SSP products.

Digital and Other Revenue

Digital and other revenue increased by $0.8 million for the six months ended June 30, 2019, compared to the same period in 2018, due to the acquisition of OTTR resulting in $1.1 million of digital revenue, partially offset by a reduction of other revenue.

Cost of Revenue and Gross Profit

Cost of revenue increased by $7.7 million, or 56%, for the six months ended June 30, 2019 due to an increase in the cost of testing service revenue of $5.9 million as a result of higher testing volume, an increase in cost of product revenue of $1.1 million due to increased product sales, and an increase in cost of digital and other revenue of $0.6 million as a result of the acquisition of OTTR.

Gross profit increased by $17.9 million, or 98%, for the six months ended June 30, 2019, compared to the same period in 2018, primarily due to an increase in testing services revenue.

Research and Development

Research and development expenses increased by $6.4 million, or 93%, for the six months ended June 30, 2019, compared to the same period in 2018. This increase is due to a $3.7 million increase in personnel-related costs, a $1.6 million increase in stock-based compensation expense, a $0.5 million increase in consulting and professional costs, and a $0.2 million increase in clinical studies.

Sales and Marketing

Sales and marketing expenses increased by $7.6 million, or 77%, for the six months ended June 30, 2019, compared to the same period in 2018, primarily due to an increase in personnel-related costs of $3.0 million, tradeshow and marketing costs of $2.1 million, and stock-based compensation costs of $1.2 million.

General and Administrative

General and administrative expenses increased by $6.7 million, or 62%, for the six months ended June 30, 2019, compared to the same period in 2018. This increase is primarily due to a $4.1 million increase in stock-based compensation expense, a $1.8 million increase in personnel-related costs, a $0.9 million increase in legal fees, and a $0.8 million increase in consulting services for Sarbanes-Oxley Act compliance and other matters.

Change in Estimated Fair Value of Contingent Consideration

We estimated the contingent consideration liability fair value at each period end based on our common stock price at the end of the period and a probability of meeting the contractual milestone related to the number of patient results by June 2020, in accordance with the ImmuMetrix, Inc. ("IMX") acquisition agreement. The contingent consideration liability was settled in the six months ended June 30, 2018, with the achievement of the contractual milestone of 2,500 AlloSure Kidney patient results. The $1.0 million expense reflected an increase in our share price from January 1, 2018 to the date of the issuance of the 227,848 shares and the settlement of the liability.

Interest Income (Expense), net

For the six months ended June 30, 2019, we recorded interest income of $0.6 million related to interest earned by our money market accounts.

For the six months ended June 30, 2018, interest expense of $3.1 million consisted of $2.5 million of interest expense and debt discount amortization related to our convertible debt (the "JGB Debt"), $0.4 million of interest expense and debt amortization recorded in relation to the Perceptive Credit Agreement entered into on April 17, 2018 and $0.2 million of interest expense recorded on the Allenex Notes, the Danske Bank Term Loan and the SSP Primers Loan.

Debt Extinguishment Expenses

Debt extinguishment expense has decreased by $2.8 million, or 100%, for the six months ended June 30, 2019, compared to the same period in 2018. The decrease is related to a loss recorded in the six months ended June 30, 2018 on the conversion of the JGB Debt, calculated as the difference between the value of the shares of common stock issued on the days of conversion and the amount of principal debt converted on those days, net of the allocated debt discount and derivative liability balances. There is no outstanding debt for the six months ended June 30, 2019.

Change in Estimated Fair Value of Common Stock Warrant Liability and Derivative Liability

The expense for the change in estimated fair value of common stock warrants decreased by $3.1 million, or 41%, for the six months ended June 30, 2019, compared to the same period in 2018. The $4.4 million expense in the six months ended June 30, 2019 is comprised of a $1.0 million remeasurement charge for warrants exercised during the period and a $3.4 million remeasurement charge related to the change in fair value of our common stock warrant liability.

The $7.4 million expense in the six months ended June 30, 2018 consisted of a $5.4 million remeasurement charge for warrants exercised during the period and a $4.6 million remeasurement charge related to the changes in fair value of our remaining common stock warrant liability. These remeasurement charges reflect the increase in the price of shares of our common stock during the six months ended June 30, 2018. These expenses were partially offset by a $2.5 million gain recorded for the changes in fair value of the JGB debt embedded derivative between January 1, 2018 and the conversion date of March 27, 2018.

Other Expense, net

Other expense, net increased by $0.2 million for the six months ended June 30, 2019, compared to the same period in 2018. The decrease is primarily related to an additional foreign currency loss of $0.1 million in the three months ended June 30, 2019, offset by a gain of $0.1 million in the six months ended June 30, 2018 for insurance reimbursement on damaged product.

Cash Flows for the Six Months Ended June 30, 2019 and 2018

The following table summarizes the primary sources and uses of cash for the periods presented:

	Six Months Ended June 30,	
	2019	2018
	(in thousands)	
Net cash (used in) provided by:		
Operating activities	$ (2,291)	$ (6,404)
Investing activities	(17,722)	(6,355)
Financing activities	(960)	2,758
Effect of exchange rate changes on cash, cash equivalents and restricted cash	(111)	(50)
Net decrease in cash, cash equivalents and restricted cash	$ (21,084)	$ (10,051)

Operating Activities

Net cash used in operating activities consists of net loss, adjusted for certain noncash items in the condensed consolidated statement of operations and changes in operating assets and liabilities.

Cash used in operating activities for the six months ended June 30, 2019 was $2.3 million. Our net loss of $15.4 million was our primary use of cash in operating activities and included a number of noncash items. Our noncash items included a $11.0 million stock-based compensation expense, a $4.4 million loss on the revaluation of common stock warrant and derivative liabilities to estimated fair value, a $2.4 million of depreciation and amortization expense and a $0.2 million of non-cash lease expense, and an impairment expense of $0.1 million. Net operating assets decreased by $5.0 million.

Cash used in operating activities for the six months ended June 30, 2018 was $6.4 million. Our net loss of $23.1 million was our primary use of cash in operating activities and included a number of noncash items. Our noncash items included a $7.4 million loss on revaluation of common stock warrant and derivative liabilities to estimated fair value, a $3.2 million stock-based compensation expense, a $2.8 million loss on the conversion of debt to shares of our common stock, $2.1 million amortization expense related to the JGB Debt discount, $2.0 million of depreciation and amortization expense, and $1.0 million contingent consideration revaluation expense. Net operating assets decreased by $2.2 million.

Investing Activities

For the six months ended June 30, 2019, net cash used in investing activities of $17.7 million consisted of $16.0 million related to the acquisition of OTTR, $1.1 million related to the license and commercialization agreement with Cibiltech, and $0.6 million related to the purchases of property and equipment.

For the six months ended June 30, 2018, net cash used in investing activities was $6.4 million and consisted of $5.2 million related to the acquisition of intangible assets per the Illumina License Agreement, $0.7 million for the acquisition of the Allenex AB minority interest and $0.5 million for purchases of property and equipment.

Financing Activities

For the six months ended June 30, 2019, net cash used in financing activities of $1.0 million was primarily related to taxes paid related to net share settlement of restricted stock units of $4.0 million, partially offset by proceeds from exercise of stock options of $2.8 million, and proceeds from issuance of common stock under employee stock purchase plan of $0.3 million.

For the six months ended June 30, 2018, net cash provided by financing activities of $2.8 million was primarily related to the $14.3 million net proceeds from the Perceptive Credit Agreement and cash proceeds of $0.5 million on the exercise of warrants, partially offset by $11.3 million of principal payments of the promissory notes issued to FastPartner AB and Mohammed Al Amoudi,, Danske Term Loan, and the SSP Primers Loan, and $0.7 million repayment of the Danske Credit Facility.

Liquidity and Capital Resources

We have incurred significant losses and negative cash flows from operations since our inception and had an accumulated deficit of $327.2 million at June 30, 2019. As of June 30, 2019, we had cash and cash equivalents of $43.5 million and no debt outstanding.

Factors Affecting Our Performance

The Number of AlloMap Heart and AlloSure Kidney Tests We Receive and Report

The growth of our testing services business is tied to the number of AlloMap Heart and AlloSure Kidney patient samples we receive and patient results we report. We incur costs in connection with collecting and shipping all samples and a portion of the costs when we cannot ultimately issue a report. As a result, the number of patient samples received largely correlates directly to the number of patient results reported.

The Number of Diagnostic Products We Sell

The growth of our product revenues is tied to the sales of the Olerup SSP, QTYPE, Olerup SBT and TruSight HLA product lines. The product sales organizations are located in Stockholm, Sweden; Vienna, Austria; Fremantle, Australia and West Chester, Pennsylvania. Products are sold directly to customers in 14 countries. We also use distributors to sell products in approximately 60 countries.

Continued Adoption of and Reimbursement for AlloMap Heart

AlloMap Heart test volume and the corresponding reimbursement revenue has generally increased over time since the launch of AlloMap Heart, as Medicare provided reimbursement and payers adopt coverage policies and fewer payers consider AlloMap Heart to be experimental and investigational. The rate at which our tests are covered and reimbursed has, and is expected to continue to vary by payer. Revenue growth depends on our ability to maintain Medicare reimbursement, achieve broader reimbursement from third party payers and to expand the number of tests per patient and the base of healthcare providers.

The Protecting Access to Medicare Act of 2014, or PAMA, includes a substantial new payment system for clinical laboratory tests under the Clinical Laboratory Fee Schedule, or CLFS. Under PAMA, laboratories that receive the majority of their Medicare revenues from payments made under the CLFS would report initially and then on a subsequent three-year basis thereafter (or annually for advanced diagnostic laboratory tests, or ADLTs), private payer payment rates and volumes for their tests. The final PAMA ruling was issued June 17, 2016 indicating that data for reporting for the new PAMA process would begin in 2017 and the new market based rates took effect on January 1, 2018. Effective January 1, 2018, Medicare reimburses us $3,240 for AlloMap Heart testing of Medicare beneficiaries, an increase from the 2017 reimbursement rate of $2,840. AlloMap Heart has also received positive coverage decisions for reimbursement from many of the largest U.S. private payers, including Aetna, Anthem, Cigna, Health Care Services Corporation (HCSC), Humana, Kaiser Foundation Health Plan, Inc., TRICARE and UnitedHealthcare.

Reimbursement for AlloSure Kidney

On September 26, 2017 we received notice that the MolDX Program developed by Palmetto GBA had set AlloSure Kidney reimbursement at $2,841. Effective October 9, 2017, AlloSure Kidney was made available for commercial testing with Medicare coverage and reimbursement. We believe the use of AlloSure Kidney, in conjunction with other clinical indicators, can help healthcare providers and their patients better manage long-term care following a kidney transplant. In particular, we believe AlloSure Kidney can improve patient care by helping healthcare providers to reduce the use of invasive biopsies and determine the appropriate dosage levels of immunosuppressants.

Continued Growth of Product Sales

We develop, manufacture, market and sell products that increase the chance of successful transplants by facilitating a better match between a donor and a recipient of stem cells and organs. Olerup SSP is used to type HLA alleles based on SSP technology. Olerup SBT is a complete product range for sequence-based typing of HLA alleles. QTYPE enables speed and precision in HLA typing at a low to intermediate resolution for samples that require a fast turn-around time and uses real-time PCR methodology. QTYPE received CE mark certification on April 10, 2018.

In May 2018, we entered into the License Agreement with Illumina, which provides us with worldwide distribution, development and commercialization rights to Illumina's NGS product line for use in transplantation diagnostic testing. As a result, from June 1, 2018, we are the exclusive worldwide distributor of Illumina's TruSight HLA v1 and v2 product line. In addition, we were also granted the exclusive right to develop and commercialize other NGS product lines for use in the Field, as defined in the agreement.

Continued Growth of Software Sales

The growth of our digital revenues is tied to the successful implementation of our OTTR software business, as well as continued support and maintenance of existing OTTR customers. OTTR software is currently implemented in multiple locations in the U.S. and Canada. The OTTR software implementation and support teams are based in Omaha, Nebraska.

Development of Additional Products

We rely on sales of AlloMap Heart, AlloSure Kidney, Olerup SSP, Olerup SBT, QTYPE, TruSight HLA and our proprietary OTTR software to generate the majority of our revenue. Our development pipeline includes other transplant diagnostic solutions to help clinicians and transplant centers make personalized treatment decisions throughout a transplant patient's lifetime, including HeartCare and KidneyCare. We expect to invest in research and development in order to develop additional products. Our success in developing new products and services will be important in our efforts to grow our business by expanding the potential market for our products and diversifying our sources of revenue.

Timing of Research and Development Expenses

Our spending on research and development may vary substantially from quarter to quarter. We also expend funds to secure clinical samples that can be used in discovery, product development, clinical validation, utility and outcome studies. The timing of these research and development activities is difficult to predict. If a substantial number of clinical samples are acquired in a given quarter or if a high-cost experiment is conducted in one quarter versus the next, the timing of these expenses will affect our financial results. We conduct clinical studies to validate our new products, as well as on-going clinical and outcome studies to further the published evidence to support our commercialized tests. Spending on research and development for both experiments and studies may vary significantly by quarter depending on the timing of these various expenses.

Contractual Obligations

We are a smaller reporting company, as defined by Rule 12b-2 of the Securities Exchange Act of 1934, as amended, or the Exchange Act, and are not required to provide the information required under this item.

Off-Balance Sheet Arrangements

As of June 30, 2019, we had no off-balance sheet arrangements as defined under Regulation S-K 303(a)(4) of the Exchange Act, and the instructions thereto.

JOBS Act Accounting Election

We are an emerging growth company, as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act. Under the JOBS Act, emerging growth companies can delay adopting new or revised accounting standards issued subsequent to the enactment of the JOBS Act until such time as those standards apply to private companies. We have irrevocably elected not to avail ourselves of this exemption from new or revised accounting standards and, therefore, we will be subject to the same new or revised accounting standards as other public companies that are not emerging growth companies.

Foreign Operations

The accompanying condensed consolidated balance sheets contain certain recorded assets in foreign countries, namely Stockholm, Sweden, Vienna, Austria and Fremantle, Australia. Although these countries are considered economically stable and we have experienced no notable burden from foreign exchange transactions, export duties or government regulations, unanticipated events in foreign countries could have a material adverse effect on our operations.

ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Interest Rate Risk

We are exposed to market risks in the ordinary course of our business. We had cash and cash equivalents of $43.5 million and $64.6 million at June 30, 2019 and December 31, 2018, respectively, which consisted of bank deposits and money market funds. However, we have not been exposed to, nor do we anticipate being exposed to, material risks due to changes in interest rates.

Foreign Currency Exchange Risk

We have operations in Sweden, Austria, Australia and sell to other countries throughout the world. As a result, we are subject to significant foreign currency risks, including transacting in foreign currencies, investment in a foreign entity, as well as assets and debts denominated in foreign currencies. Our testing services revenue is primarily denominated in U.S. dollars. Our product revenue is denominated primarily in Euro and U.S. dollars. Consequently, our revenue denominated in foreign currency is subject to foreign currency exchange risk. A portion of our operating expenses are incurred outside of the U.S. and are denominated in Swedish Krona, the Euro, and the Australian Dollar, which are also subject to fluctuations due to changes in foreign currency exchange rates. An unfavorable 10% change in foreign currency exchange rates for our assets and liabilities denominated in foreign currencies at June 30, 2019, would have negatively impacted our financial results for the six months ended June 30, 2019 by $0.1 million and our product

revenue by $0.5 million. Currently, we do not have any near-term plans to enter into a formal hedging program to mitigate the effects of foreign currency volatility. We will continue to reassess our approach to managing our risk relating to fluctuations in foreign currency exchange rates.

ITEM 4. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

Management, including our Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(b) and 15d-15(e) promulgated under the Exchange Act), as of the end of the period covered by this Quarterly Report on Form 10-Q. In designing and evaluating the disclosure controls and procedures, management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives. In addition, the design of disclosure controls and procedures must reflect the fact that there are resource constraints and that we are required to apply our judgment in evaluating the benefits of possible controls and procedures relative to our costs. Based on such evaluation, the Chief Executive Officer and Chief Financial Officer concluded that, as of the end of the period covered by this Quarterly Report on Form 10-Q, our disclosure controls and procedures were effective at the reasonable assurance level and are effective to provide reasonable assurance that information required to be disclosed in the reports we file and submit under the Exchange Act, is (i) recorded, processed, summarized and reported as and when required and (ii) accumulated and communicated to our management, including the Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely discussion regarding required disclosure.

Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting identified in connection with the evaluation required by Rule 13a-15(d) and 15d-15(d) of the Exchange Act that occurred during the six months ended June 30, 2019 that have materially affected or are reasonably likely to materially affect, our internal control over financial reporting.

PART II. OTHER INFORMATION

ITEM 1. LEGAL PROCEEDINGS

From time to time, we may become subject to legal proceedings and claims that arise in the ordinary course of business. Although we do not believe that any matters presently pending will have a material adverse effect, individually or in the aggregate, on our financial position, results of operations or liquidity, legal matters and proceedings are inherently unpredictable and subject to significant uncertainties, some of which are beyond our control. As such, there can be no assurance that the final outcome of these matters will not materially and adversely affect our financial position, results of operations or liquidity.

ITEM 1A. RISK FACTORS

Our Annual Report on Form 10-K for the year ended December 31, 2018, filed with the SEC on March 6, 2019, Part I –Item 1A, Risk Factors, describes important risk factors that could cause our business, financial condition, results of operations and growth prospects to differ materially from those indicated or suggested by forward-looking statements made in this Quarterly Report on Form 10-Q or presented elsewhere by management from time to time. There have been no material changes in the risk factors that appear in Part I - Item 1A of our Annual Report on Form 10-K for the year ended December 31, 2018, filed with the SEC on March 6, 2019, other than those listed below. Additional risks and uncertainties not currently known to us or that we currently deem to be immaterial may also materially and adversely affect our business.

We may not be able to successfully integrate our business with the business of OTTR Complete Transplant Management, or OTTR, and we may not be able to achieve the anticipated strategic benefits from our acquisition of OTTR.

The integration of OTTR will be a time-consuming process. The integration process will require substantial management time and attention, which may divert attention and resources from other important areas, including our existing business. In addition, we may not be able to fully realize the anticipated strategic benefits of the combination, which includes the complementary OTTR software and significant cross-selling opportunities. The failure to successfully integrate the combined operations, including retention of key employees, could impact our ability to realize the full benefits of our acquisition of OTTR. If we are not able to achieve the anticipated strategic benefits of the combination, it could adversely affect our business, financial condition and results of operations, and could adversely affect the market price of our common stock if the integration or the anticipated financial and strategic benefits of the acquisition are not realized as rapidly as, or to the extent anticipated by investors and analysts. Failure to achieve these anticipated benefits could result in increased costs and decreases in future revenue and/or net income following the acquisition.

Our License and Commercialization Agreement, or Cibiltech Agreement, with Cibiltech SAS, or Cibiltech, may not result in material benefits to our business.

The Cibiltech Agreement provides us an exclusive right to commercialize their proprietary software Predigraft (or KidneyCare iBox in the US). KidneyCare iBox will be initially provided to patients as part of the commencement of the Outcomes of KidneyCare on Renal Allografts study, or OKRA. OKRA is a prospective, multi-center, observational, registry of patients receiving KidneyCare for surveillance. KidneyCare combines the dd-cfDNA analysis of AlloSure Kidney with the gene expression profiling technology of AlloMap Kidney and the predictive artificial intelligence technology of KidneyCare iBox in one surveillance solution. We have not yet made any applications to payers for reimbursement coverage of AlloMap Kidney or KidneyCare iBox. The failure to get reimbursement coverage from payers for KidneyCare iBox could result in material amounts of revenue not being recognized, and failure to successfully integrate predictive artificial intelligence technology with our existing tests.

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

Issuer Purchases of Equity Securities

We satisfy certain U.S. federal and state tax withholding obligations due upon the vesting of restricted stock unit awards by automatically withholding from the shares being issued in connection with such award a number of shares of our common stock with an aggregate fair market value on the date of vesting equal to the minimum tax withholding obligations. The following table sets forth information with respect to shares of our common stock repurchased by us to satisfy certain tax withholding obligations during the three months ended June 30, 2019:

	(a) Total Number of Shares (or Units) Purchased		(b) Average Price Paid per Share (or Unit)
April 1, 2019 - April 30, 2019	6,427	(1)	$ 2.20
May 1, 2019 - May 31, 2019	—		—
June 1, 2019 - June 30, 2019	43,563	(1)	3.98
Total	49,990		—

(1) Represents shares of our common stock withheld from employees for the payment of taxes.

ITEM 3. DEFAULTS UPON SENIOR SECURITIES

None.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

ITEM 5. OTHER INFORMATION

None.

ITEM 6. EXHIBITS

Exhibit Number	
3.1(1)	Amended and Restated Certificate of Incorporation.
3.2(2)	Amended and Restated Bylaws.
4.1(3)	Form of Registrant's common stock certificate.
4.2(4)	Sixth Amended and Restated Investors Rights Agreement, dated July 1, 2009, as amended on March 29, 2012, June 10, 2014, and July 14, 2014, between the Registrant and certain holders of the Registrant's capital stock named therein.
4.3(5)#	1998 Equity Incentive Plan and forms of agreements thereunder.
4.4(6)#	2008 Equity Incentive Plan and forms of agreement thereunder.
4.5(7)#	ImmuMetrix, Inc. 2013 Equity Plan
4.6(8)#	2014 Equity Incentive Plan, as amended.
4.7(9)#	Form of Option Agreement under the 2014 Equity Incentive Plan for New Options.
4.8(10)#	2014 Employee Stock Purchase Plan and forms of agreements thereunder.
4.9(11)#	2016 Inducement Equity Incentive Plan.
4.10(12)#	Form of Warrant.

31.1*	Certification of Periodic Report by Chief Executive Officer under Section 302 of the Sarbanes-Oxley Act of 2002.
31.2*	Certification of Periodic Report by Chief Financial Officer under Section 302 of the Sarbanes-Oxley Act of 2002.
32.1**	Certification of Chief Executive Officer and Chief Financial Officer Pursuant to 18 U.S.C. Section 1350 as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.INS*	XBRL Instance Document
101.SCH*	XBRL Taxonomy Extension Schema Document
101.CAL*	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF*	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB*	XBRL Taxonomy Extension Label Linkbase Document
101.PRE*	XBRL Taxonomy Extension Presentation Linkbase Document

(1) Incorporated by reference to Exhibit 3.1 to the Registrant's Form 10-Q filed with the Securities and Exchange Commission (the "SEC") on August 28, 2014.
(2) Incorporated by reference to Exhibit 3.4 to the Registrant's Form 10-Q filed with the SEC on August 28, 2014.
(3) Incorporated by reference to Exhibit 4.1 to the Registrant's Form 10-K filed with the SEC on March 31, 2015.
(4) Incorporated by reference to Exhibit 4.2 to the Registrant's Form 10-K filed with the SEC on March 31, 2015.
(5) Incorporated by reference to Exhibit 10.2 to the Registrant's Form S-1 filed with the SEC on June 3, 2014.
(6) Incorporated by reference to Exhibit 10.3 to the Registrant's Form S-1 filed with the SEC on June 3, 2014.
(7) Incorporated by reference to Exhibit 10.19 to the Registrant's Form S-1 filed with the SEC on June 3, 2014.
(8) Incorporated by reference to Exhibit 4.4 to the Registrant's Form S-8 filed with the SEC on July 18, 2014.
(9) Incorporated by reference to Exhibit 99(d)(3) to the Registrant's Form SC TO-I filed with the SEC on October 12, 2017.
(10) Incorporated by reference to Exhibit 4.5 to the Registrant's Form S-8 filed with the SEC on July 18, 2014.
(11) Incorporated by reference to Exhibit 4.1 to the Registrant's Form S-8 filed with the SEC on May 23, 2016.
(12) Incorporated by reference to Exhibit 10.3 to the Registrant's Form 8-K filed with the SEC on April 14, 2016.

# Indicates management contract or compensatory plan or arrangement.
* Filed herewith.
** Furnished herewith.

SIGNATURES

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

CAREDX, INC.
(Registrant)

Date: August 1, 2019

By: /s/ PETER MAAG
Peter Maag
Chief Executive Officer
(Principal Executive Officer)

By: /s/ MICHAEL BELL
Michael Bell
Chief Financial Officer
(Principal Accounting and Financial Officer)

Exhibit 31.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER PURSUANT TO RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934, AS ADOPTED SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Peter Maag, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of CareDx, Inc.;

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

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

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

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

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

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

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

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

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

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

Date: August 1, 2019

By: /s/ Peter Maag
Peter Maag
Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATION OF CHIEF FINANCIAL OFFICER PURSUANT TO RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934, AS ADOPTED SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Michael Bell, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of CareDx, Inc.;

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

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

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

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

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

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

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

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

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

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

Date: August 1, 2019

By: /s/ Michael Bell
Michael Bell
Chief Financial Officer
(Principal Accounting and Financial Officer)

Exhibit 32.1

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

In connection with the Quarterly Report on Form 10-Q of CareDx, Inc. (the "Company") for the period ended June 30, 2019 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), the undersigned hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, to their knowledge that:

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

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

By: /s/ Peter Maag
Peter Maag
Chief Executive Officer
(Principal Executive Officer)
August 1, 2019

By: /s/ Michael Bell
Michael Bell
Chief Financial Officer
(Principal Accounting and Financial Officer)
August 1, 2019

A signed original of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

This certification accompanies the Report, is not deemed filed for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or otherwise subject to the liability of that section, nor shall it be deemed incorporated by reference into any filing under the Securities Act of 1933, as amended, or the Exchange Act (whether made before or after the date of the Report), irrespective of any general incorporation language contained in such filing.