

**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, DC 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 SEPTEMBER 30, 2018

**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: 001-38613

**Bionano Genomics, Inc.**

(Exact name of registrant as specified in its charter)

**Delaware**

(State or Other Jurisdiction of Incorporation or Organization)

**26-1756290**

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

**9640 Towne Centre Drive, Suite 100,  
San Diego, CA**

(Address of Principal Executive Offices)

**92121**

(Zip Code)

**(858) 888-7600**

(Registrant's Telephone Number, Including Area Code)

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

Indicate by check mark whether the registrant has submitted electronically 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

Non-accelerated filer

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

As of November 2, 2018, the registrant had 10,032,687 shares of Common Stock (\$0.0001 par value) outstanding.

**BIONANO GENOMICS, INC.**  
**TABLE OF CONTENTS**

<u>PART I. FINANCIAL INFORMATION</u>	3
<u>Item 1. Financial Statements</u>	3
<u>Condensed Consolidated Balance Sheets as of September 30, 2018 (Unaudited) and December 31, 2017</u>	3
<u>Condensed Consolidated Statements of Operations for the three and nine months ended September 30, 2018 and 2017 (Unaudited)</u>	4
<u>Condensed Consolidated Statements of Convertible Preferred Stock and Stockholders' Deficit</u>	5
<u>Condensed Consolidated Statements of Cash Flows for the nine months ended September 30, 2018 and 2017 (Unaudited)</u>	6
<u>Notes to Condensed Consolidated Financial Statements (Unaudited)</u>	7
<u>Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations</u>	24
<u>Item 3. Quantitative and Qualitative Disclosures about Market Risk</u>	32
<u>Item 4. Controls and Procedures</u>	32
<u>PART II. OTHER INFORMATION</u>	34
<u>Item 1. Legal Proceedings</u>	34
<u>Item 1A. Risk Factors</u>	34
<u>Item 2. Unregistered Sales of Equity Securities and Use of Proceeds</u>	34
<u>Item 3. Defaults Upon Senior Securities</u>	34
<u>Item 4. Mine Safety Disclosures</u>	34
<u>Item 5. Other Information</u>	34
<u>Item 6. Exhibits</u>	35
<u>SIGNATURES</u>	37

## PART I. FINANCIAL INFORMATION

## ITEM 1. FINANCIAL STATEMENTS

BIONANO GENOMICS, INC.  
Condensed Consolidated Balance Sheets

	September 30, 2018	December 31, 2017
<b>Assets</b>		
Current assets:		
Cash and cash equivalents	\$ 20,657,038	\$ 1,021,897
Accounts receivable, net	4,000,924	3,352,214
Inventory	2,614,812	1,693,742
Prepaid expenses and other current assets	1,347,774	1,071,512
Total current assets	28,620,548	7,139,365
Property and equipment, net	2,049,256	3,005,788
Total assets	<u>\$ 30,669,804</u>	<u>\$ 10,145,153</u>
<b>Liabilities and stockholders' equity (deficit)</b>		
Current liabilities:		
Accounts payable	\$ 2,363,752	\$ 2,302,964
Accrued expenses	2,815,290	3,508,894
Deferred revenue	335,604	211,697
Preferred stock warrant liability	-	3,898,944
Current portion of long-term debt	-	6,729,752
Total current liabilities	5,514,646	16,652,251
Long-term debt, net of current portion	9,008,337	-
Long-term deferred revenue	144,602	142,929
Other non-current liabilities	767,197	567,047
Total liabilities	15,434,782	17,362,227
Commitments and contingencies (Note 9)		
Series A convertible preferred stock, \$0.0001 par value; no shares and 418,767 shares authorized as of September 30, 2018 and December 31, 2017, respectively; no shares and 345,587 shares issued and outstanding as of September 30, 2018 and December 31, 2017, respectively	-	61,847
Series B convertible preferred stock, \$0.0001 par value; no shares and 8,101,042 shares authorized as of September 30, 2018 and December 31, 2017, respectively; no shares and 8,058,170 shares issued and outstanding as of September 30, 2018 and December 31, 2017, respectively	-	842,845
Series B-1 convertible preferred stock, \$0.0001 par value; no shares and 7,523,734 shares authorized as of September 30, 2018 and December 31, 2017, respectively; no shares and 3,437,950 shares issued and outstanding as of September 30, 2018 and December 31, 2017, respectively	-	359,593
Series C convertible preferred stock, \$0.0001 par value; no shares and 23,357,047 shares authorized as of September 30, 2018 and December 31, 2017, respectively; no shares and 23,357,047 shares issued and outstanding as of September 30, 2018 and December 31, 2017, respectively	-	5,547,841
Series D convertible preferred stock, \$0.0001 par value; no shares and 52,835,720 shares authorized as of September 30, 2018 and December 31, 2017, respectively; no shares and 20,652,486 shares issued and outstanding as of September 30, 2018 and December 31, 2017, respectively	-	4,838,379

Series D-1 convertible preferred stock, \$0.0001 par value; no shares and 125,808,667 shares authorized as of September 30, 2018 and December 31, 2017, respectively; no shares and 66,141,257 shares issued and outstanding as of September 30, 2018 and December 31, 2017, respectively	-	31,359,632
Stockholders' equity (deficit):		
Preferred stock, \$0.0001 par value; 10,000,000 shares authorized; no shares issued and outstanding as of September 30, 2018 and December 31, 2017	-	-
Common stock, \$0.0001 par value, 200,000,000 and 243,160,120 shares authorized at September 30, 2018 and December 31, 2017, respectively; 10,032,687 and 77,257 shares issued and outstanding at September 30, 2018 and December 31, 2017, respectively	1,002	8
Additional paid-in capital	81,584,992	4,038,817
Accumulated deficit	(66,350,972)	(54,266,036)
Total stockholders' equity (deficit)	<u>15,235,022</u>	<u>(50,227,211)</u>
Total liabilities, convertible preferred stock, and stockholders' equity (deficit)	<u>\$ 30,669,804</u>	<u>\$ 10,145,153</u>

See accompanying notes to the condensed consolidated financial statements

**BIONANO GENOMICS, INC.**  
**Condensed Consolidated Statements of Operations**  
(Unaudited)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	2017	2018	2017
<b>Revenues:</b>				
Product revenue	\$ 2,700,162	\$ 2,604,215	\$ 7,618,407	\$ 6,213,496
Other revenue	128,542	138,841	368,791	446,424
<b>Total revenue</b>	<b>2,828,704</b>	<b>2,743,056</b>	<b>7,987,198</b>	<b>6,659,920</b>
<b>Cost of revenue:</b>				
Cost of product revenue	3,064,661	1,643,504	5,708,704	4,462,365
Cost of other revenue	3,671	46,719	14,507	71,975
<b>Total cost of revenue</b>	<b>3,068,332</b>	<b>1,690,223</b>	<b>5,723,211</b>	<b>4,534,340</b>
<b>Operating expense:</b>				
Research and development	2,505,137	2,967,073	6,962,696	9,551,687
Selling, general and administrative	3,224,075	3,116,922	9,617,814	10,553,348
<b>Total operating expense</b>	<b>5,729,212</b>	<b>6,083,995</b>	<b>16,580,510</b>	<b>20,105,035</b>
<b>Loss from operations</b>	<b>(5,968,840)</b>	<b>(5,031,162)</b>	<b>(14,316,523)</b>	<b>(17,979,455)</b>
<b>Other income (expense):</b>				
Interest expense	(404,437)	(145,308)	(1,114,053)	(431,403)
Change in fair value of preferred stock warrants and expirations	1,520,159	154,469	3,991,081	1,108,362
Other expense	(75,957)	(68,189)	(639,137)	(125,324)
<b>Total other income (expense)</b>	<b>1,039,765</b>	<b>(59,028)</b>	<b>2,237,891</b>	<b>551,635</b>
<b>Loss before income taxes</b>	<b>(4,929,075)</b>	<b>(5,090,190)</b>	<b>(12,078,632)</b>	<b>(17,427,820)</b>
Benefit (provision) for income taxes	2,978	4,738	(6,304)	(17,620)
<b>Net loss</b>	<b>\$ (4,926,097)</b>	<b>\$ (5,085,452)</b>	<b>\$ (12,084,936)</b>	<b>\$ (17,445,440)</b>
Net loss per share, basic and diluted	\$ (0.63)	\$ (1.74)	\$ (1.99)	\$ (6.68)
<b>Weighted-average common shares outstanding basic and diluted</b>	<b>7,778,605</b>	<b>2,920,839</b>	<b>6,079,285</b>	<b>2,609,863</b>

See accompanying notes to the condensed consolidated financial statements.

**BIONANO GENOMICS, INC.**  
**Condensed Consolidated Statements of Convertible Preferred Stock and Stockholders' Equity (Deficit)**

	Series A Convertible Preferred Stock		Series B Convertible Preferred Stock		Series B-1 Convertible Preferred Stock		Series C Convertible Preferred Stock		Series D Convertible Preferred Stock		Series D-1 Convertible Preferred Stock		Additional			Total	
	Common Stock		Paid-in Capital		Accumulated Deficit		Stockholders'										
	Shares	Amount	Shares	Amount	Shares	Amount	Shares	Amount	Shares	Amount	Shares	Amount	Shares	Amount	Capital	Deficit	Deficit
<b>Balance at January 1, 2017</b>	345,587	\$ 61,847	8,058,170	\$ 842,845	3,437,950	\$ 359,593	23,357,047	\$ 5,547,841	20,652,486	\$ 4,838,379	29,166,671	\$ 13,766,022	70,178	\$ 7	\$ 3,641,693	\$ (30,900,672)	\$ (27,258,972)
Issuance of Series D-1 convertible preferred stock, net of issuance cost of \$154,191	-	-	-	-	-	-	-	-	-	-	36,974,586	17,593,610	-	-	-	-	-
Stock option exercises	-	-	-	-	-	-	-	-	-	-	-	-	7,079	1	14,294	-	14,295
Stock-based compensation expense	-	-	-	-	-	-	-	-	-	-	-	-	-	-	382,830	-	382,830
Net loss	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(23,365,364)	(23,365,364)
<b>Balance at December 31, 2017</b>	345,587	\$ 61,847	8,058,170	\$ 842,845	3,437,950	\$ 359,593	23,357,047	\$ 5,547,841	20,652,486	\$ 4,838,379	66,141,257	\$ 31,359,632	77,257	\$ 8	\$ 4,038,817	\$ (54,266,036)	\$ (50,227,211)
Stock option exercises	-	-	-	-	-	-	-	-	-	-	-	-	1,856	-	3,499	-	3,499
IPO Units	-	-	-	-	-	-	-	-	-	-	-	-	3,864,000	386	19,389,592	-	19,389,978
Conversion of preferred stock upon IPO	(345,587)	(61,847)	(8,058,170)	(842,845)	(3,437,950)	(359,593)	(23,357,047)	(5,547,841)	(20,652,486)	(4,838,379)	(66,141,257)	(31,359,632)	2,850,280	285	43,009,852	-	43,010,137
Conversion of convertible note upon IPO	-	-	-	-	-	-	-	-	-	-	-	-	3,239,294	323	14,898,004	-	14,898,327
Conversion of preferred stock warrants into common stock warrants	-	-	-	-	-	-	-	-	-	-	-	-	-	-	84,676	-	84,676
Stock-based compensation expense	-	-	-	-	-	-	-	-	-	-	-	-	-	-	160,551	-	160,551
Net loss	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(12,084,936)	(12,084,936)
<b>Balance at September 30, 2018</b>	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	10,032,687	\$ 1,002	\$ 81,584,992	\$ (66,350,972)	\$ 15,235,022

See accompanying notes to the condensed consolidated financial statements

**BIONANO GENOMICS, INC.**  
**Condensed Consolidated Statements of Cash Flows**  
(Unaudited)

	Nine Months Ended September 30,	
	2018	2017
<b>Operating activities:</b>		
Net loss	\$ (12,084,936)	\$ (17,445,440)
Adjustments to reconcile net loss to net cash used by operating activities:		
Depreciation and amortization expense	1,169,801	964,932
Change in fair value of preferred stock warrants and expirations	(3,991,081)	(1,108,362)
Stock-based compensation	160,551	241,971
Provision for bad debt expense	(262,000)	-
Inventory write-off	1,287,000	364,437
Accretion of debt discount	121,984	66,241
Loss on debt extinguishment	342,164	-
Changes in operating assets and liabilities:		
Accounts receivable	(386,710)	(692,637)
Inventory	(2,101,453)	(442,849)
Prepaid expenses and other current assets	(276,263)	241,032
Accounts payable	60,788	320,184
Accrued expenses and other liabilities	106,476	(518,298)
Net cash used in operating activities	(15,853,679)	(18,008,789)
<b>Investing activities:</b>		
Purchases of property and equipment	(319,885)	(736,063)
Net used in investing activities	(319,885)	(736,063)
<b>Financing activities:</b>		
Repayment of notes payable	(7,447,571)	-
Proceeds from issuance of long-term debt, net of offering costs	9,532,957	-
Proceeds from issuance of convertible note, net of offering costs	14,329,843	-
Proceeds from issuance of preferred stock and warrants, net of offering costs	-	16,131,764
Proceeds from Initial Public Offering, net of offering costs	19,389,978	-
Proceeds from option exercises	3,499	1,500
Net cash provided by financing activities	35,808,706	16,133,264
Net increase (decrease) in cash and cash equivalents	19,635,142	(2,611,589)
Cash and cash equivalents at beginning of period	1,021,897	5,249,620
Cash and cash equivalents at end of period	<u>\$ 20,657,038</u>	<u>\$ 2,633,904</u>
<b>Supplemental schedule on non-cash transactions:</b>		
Conversion of Convertible Note into Common Stock	\$ 14,898,326	-
Conversion of Preferred Stock warrants into Common Stock and Common Stock Warrants	\$ 84,676	-
Transfer of instruments to property and equipment from inventory	\$ 106,617	-
Fair value of warrants issued with debt classified as a liability	\$ 176,813	-
Final payment fee due in connection with the repayment of debt classified within other long-term liabilities	\$ 400,000	-

See accompanying notes to the condensed consolidated financial statements

**BIONANO GENOMICS, INC.**  
**NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS**  
**(Unaudited)**

## **1. Organization and Basis of Presentation**

### ***Description of Business***

Bionano Genomics, Inc. (the “Company”) formed in January 2003 as BioNanomatrix LLC, a Delaware limited liability company. In August 2007, the Company became BioNanomatrix Inc., a Delaware corporation. In October 2011, the Company changed its name to BioNano Genomics, Inc., and in July 2018, it changed its name to Bionano Genomics, Inc.

The Company is a life sciences instrumentation company in the genome analysis space. The Company currently develops and markets the Saphyr system, a platform for ultra-sensitive and ultra-specific structural variation detection that enables researchers and clinicians to accelerate the search for new diagnostics and therapeutic targets and to streamline the study of changes in chromosomes, which is known as cytogenetics.

### ***Initial Public Offering***

In August 2018, the Company completed its initial public offering (the “IPO”), in which it sold an aggregate of 3,864,000 units (each unit consisting of one share of the Company’s common stock and one warrant to purchase one share of the Company’s common stock) at a public offering price of \$6.125 per unit, which included the sale of 504,000 units pursuant to the exercise of the underwriters’ over-allotment option. The Company received net cash proceeds of \$19.4 million, after deducting underwriters’ discounts and commissions of \$2.2 million and other offering expenses of \$2.1 million.

In addition, each of the following occurred in connection with the completion of the IPO in August 2018:

- The conversion of all outstanding shares of convertible preferred stock into an aggregate 2,850,280 shares of common stock.
- The automatic adjustment of preferred stock warrants into common stock warrants; the entire \$84,676 balance of preferred stock warrant liability was reclassified as additional paid-in-capital. In addition, the Company issued warrants to the IPO underwriters to purchase up to 115,920 shares of its common stock at fair value of \$0.4 million.
- The conversion of an aggregate of \$14.9 million of outstanding convertible promissory notes and accrued interest into an aggregate of 3,239,294 shares of common stock.

Each unit offered in the IPO consisted of one share of common stock and one warrant to purchase one share common stock. Each warrant to purchase common stock contained in the unit entitled the holder to purchase one share of common stock at an initial exercise price of \$6.125 per share (100% of the offering price per unit), subject to adjustment. The warrants and shares of common stock traded together as units for 30 days following the IPO. After 30 days of trading, the units automatically separated and the common stock and warrants began trading separately.

The units, common stock, and warrants are listed on the Nasdaq Stock Market LLC under the symbols “BNGOU,” “BNGO” and “BNGOW,” respectively.

### ***Reverse Stock Splits***

On July 16, 2018, the Company effected a one-for-21.4 reverse stock split of its issued and outstanding shares of common stock and a proportional adjustment to the existing conversion ratios for each series of the Company’s redeemable convertible preferred stock, and on August 15, 2018, the Company effected an additional one-for-two reverse stock split of its issued and outstanding shares of common stock and a proportional adjustment to the existing conversion ratios for each series of the Company’s redeemable convertible preferred stock. Accordingly, all share and per share amounts for all periods presented in the accompanying financial statements and notes thereto have been adjusted retroactively, where applicable, to reflect these reverse stock splits and adjustments of the preferred stock conversion ratios.

### ***Basis of Presentation***

The accompanying unaudited condensed consolidated financial statements have been prepared in accordance with U.S. generally accepted accounting principles (“GAAP”) for interim financial information. Accordingly, certain information and



note disclosures normally included in financial statements prepared in accordance with GAAP have been condensed or omitted pursuant to the applicable rules and regulations of the Securities and Exchange Commission (“SEC”). Therefore, these unaudited condensed consolidated interim financial statements should be read in conjunction with the Company’s audited consolidated financial statements and footnotes thereto as of and for the year ended December 31, 2017 included in the Company’s final prospectus dated August 21, 2018 included in its Registration Statement on Form S-1 (File No. 333-225970), as filed with the Securities and Exchange Commission pursuant to Rule 424(b)(4) under the Securities Act of 1933, as amended.

The unaudited interim condensed consolidated financial statements included in this report have been prepared on the same basis as the Company’s audited consolidated financial statements and include all adjustments (consisting only of normal recurring adjustments) necessary for a fair statement of the financial position, results of operations, cash flows, and statement of convertible preferred stock and stockholders’ deficit for the periods presented. The condensed consolidated balance sheet as of December 31, 2017, presented herein, has been derived from the Company’s audited consolidated financial statements as of and for the year-ended December 31, 2017. The preparation of financial statements requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenue, and expense, and related disclosure of contingent assets and liabilities. Actual results could differ from those estimates.

In the accompanying condensed consolidated statements of operations, subtotal categories for cost of revenue and operating expenses have been inserted.

## 2. Summary of Significant Accounting Policies

### Accounts Receivable

The Company extends credit to its customers in the normal course of business based upon an evaluation of each customer’s credit history, financial condition, and other factors. Estimates of allowances for doubtful accounts are determined by evaluating individual customer circumstances, historical payment patterns, length of time past due, and economic and other factors. Bad debt expense is recorded as necessary to maintain an appropriate level of allowance for doubtful accounts in selling, general and administrative expense.

The following table reflects the activity related to the Company’s allowance for doubtful accounts:

	September 30, 2018	December 31, 2017
Accounts receivable	\$ 4,000,924	\$ 3,614,214
Provision	—	(262,000)
Accounts receivable, net	<u>\$ 4,000,924</u>	<u>\$ 3,352,214</u>

For the nine months ended September 30, 2018 and the year ended December 31, 2017, Ultravision Technology Ltd. represented 16% and 21% and BioStar Company represented 0% and 15%, respectively, of the Company’s accounts receivable balance.

### Inventory

Inventory is stated at the lower of cost or net realizable value, on a first-in, first-out basis. Inventory includes raw materials and finished goods that may be used in the research and development process and such items are expensed as consumed or expired. Provisions for slow-moving, excess, and obsolete inventories are estimated based on product life cycles, historical experience, and usage forecasts.

The components of inventories are as follows (unaudited):

	September 30, 2018	December 31, 2017
Materials and supplies	\$ 242,783	\$ 203,085
Finished Goods	2,372,029	1,490,657
Total	<u>\$ 2,614,812</u>	<u>\$ 1,693,742</u>

During the year ended December 31, 2017, in connection with the market launch of the Company’s next generation product, the Saphyr system, the Company determined that its first generation Irys instruments on hand had net realizable

values below carrying value. Accordingly, the Company recorded a charge of \$0.4 million included in cost of product revenue to write-down these instruments to net realizable value of \$1.3 million.

After considering the weight of evidence that accumulated during the three months ended September 2018, including the strategic shift towards minimal selling efforts of the Irys instruments, the Company determined that the Irys instruments on hand had net realizable values below their carrying value. Accordingly, the Company recorded a charge of \$1.3 million included in cost of product revenue to write-down these instruments to \$0 net realizable value.

## ***Revenue Recognition***

### ***Product Revenue***

Product revenue represents the sale of the Company's instruments and consumables to third parties. Timing of revenue recognition on instrument sales is based upon when delivery has occurred, the price is fixed or determinable, and collectability is reasonably assured.

The majority of the Company's instruments contain embedded operating systems and other software which is included in the purchase price of the instrument. The software is deemed incidental to the system as a whole as it is not sold or marketed separately and its production costs are minor compared to those of the hardware system. Hardware and software elements are both delivered when ownership is transferred to the customer. Hardware upgrades, which are made available to customers for purchase, are recognized as revenue when delivered and all revenue recognition criteria noted above have been met.

Installation services for direct sale customers are performed at the same time or shortly after the product is delivered and require only a minimal effort to complete. The Company believes installation is a perfunctory service and is not material to its obligations in the contract.

### ***Other Revenue***

Other revenue includes revenue from extended service contracts and other services that may be performed. Revenue for extended warranty contracts is recognized ratably over the service period. Revenue for other services is generally recognized based on proportional performance of the contract, when the Company's ability to complete project requirements is reasonably assured. Deferred revenue represents amounts received in advance for on-going service arrangements. Most of these services are completed in a short period of time from the receipt of the customer's order. When significant risk exists in the Company's ability to fulfill project requirements, revenue is recognized upon completion of the contract.

### ***Multiple Element Arrangements***

The Company regularly enters into contracts where revenue is derived from multiple deliverables, including products or services. These contracts typically include an instrument, consumables, and extended service contracts. Revenue recognition for contracts with multiple deliverables is based on the individual units of accounting determined to exist in the contract. A delivered item is considered a separate unit of accounting when the delivered item has value to the customer on a stand-alone basis. Items are considered to have stand-alone value when they are sold separately by any vendor or when the customer could resell the item on a stand-alone basis.

For transactions with multiple deliverables, consideration is allocated at the inception of the contract to all deliverables based on their relative selling price. The relative selling price for each deliverable is determined using vendor-specific objective evidence ("VSOE") of selling price or third-party evidence of selling price if VSOE does not exist. If neither VSOE nor third-party evidence exists, the Company uses its best estimate of the selling price using average selling prices over an appropriate period coupled with an assessment of current market conditions. If the product or service has no history of sales or if the sales volume is not sufficient, the Company considers its approved standard prices adjusted for applicable discounts.

In order to establish VSOE of selling price, the Company must regularly sell the product or service on a standalone basis with a substantial majority priced within a relatively narrow range. In cases where there is not a sufficient number of standalone sales and VSOE of selling price cannot be determined, then the Company utilizes third-party evidence to establish selling price.

### Distributor Transactions

In certain markets, the Company sells products and provides services to customers through distributors that specialize in life sciences products. In cases where the product is delivered to a distributor, revenue recognition generally occurs when title transfers to the distributor. The terms of sales transactions through distributors are generally consistent with the terms of direct sales to customers and do not contain return rights. Distributor sales transactions typically differ from direct customer sales as they do not require the Company's services to install the instrument at the end customer or perform the services for the customer that are beyond the standard warranty in the first year following the sale. These transactions are accounted for in accordance with the Company's revenue recognition policy described herein.

### Offering Costs

The offering costs associated with the IPO consist of legal, accounting and filing fees. The Company had \$4,659,369 of IPO costs as of September 30, 2018. These costs have been recorded as a reduction of the gross proceeds from the IPO in stockholder's equity. Included in these costs is the fair value, valued at \$382,347 as of the date of the IPO, of warrants to purchase 115,290 shares of common stock issued to the underwriters as partial compensation for services rendered in connection with the IPO. The warrants are exercisable for common stock at a price of \$9.1875 per share at any time beginning on August 20, 2019 through and including August 20, 2023, the expiration date.

### Convertible Preferred Stock Warrants

The Company previously accounted for outstanding warrants to purchase shares of convertible preferred stock as liabilities in the balance sheets under preferred stock warrant liability. The convertible preferred stock warrants were subject to remeasurement at each reporting period, with changes in fair value recorded as change in fair value of warrants and expirations in the condensed consolidated statements of operations. In connection with the IPO, all outstanding warrants previously exercisable for shares of preferred stock either expired or were adjusted to exercisable for shares of common stock. As of September 30, 2018, there were no outstanding warrants to purchase shares of convertible preferred stock due to this adjustment.

### Segment Reporting

Operating segments are identified as components of an enterprise about which separate discrete financial information is available for evaluation by the chief operating decision-maker in making decisions regarding resource allocation and assessing performance. The Company and its chief operating decision-maker, the Chief Executive Officer, views the Company's operations and manages its business in one operating segment.

### Net Loss Per Share

Basic net loss per share is calculated by dividing the net loss by the weighted-average number of common shares outstanding for the period. Diluted net loss per share is computed by dividing the net loss by the weighted average number of common shares and common share equivalents outstanding for the period. Common stock equivalents are only included when their effect is dilutive. The Company's potentially dilutive securities which include outstanding stock options under the Company's equity incentive plan have been excluded from the computation of diluted net loss per share as they would be anti-dilutive to the net loss per share. For all periods presented, there is no difference in the number of shares used to calculate basic and diluted shares outstanding due to the Company's net loss position.

Potentially dilutive securities not included in the calculation of diluted net loss per share attributable to common stockholders because to do so would be anti-dilutive are as follows (in common stock equivalent shares) (unaudited):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	2017	2018	2017
Common Stock Options	415,137	420,678	415,137	420,678
Warrants	4,015,013	855,206	4,015,013	855,206
Total	<u>4,430,150</u>	<u>1,275,884</u>	<u>4,430,150</u>	<u>1,275,884</u>

## Recent Accounting Pronouncements

On April 5, 2012, the Jump-Start Our Business Startups Act (the “JOBS Act”) was signed into law. The JOBS Act contains provisions that, among other things, reduce certain reporting requirements for an emerging growth company. As an emerging growth company, the Company may elect to adopt new or revised accounting standards when they become effective for non-public companies, which typically is later than when public companies must adopt the standards. The Company has elected to take advantage of the extended transition period afforded by the JOBS Act and, as a result, will comply with new or revised accounting standards on the relevant dates on which adoption of such standards is required for emerging growth companies, which are the dates included below.

In May 2014, the FASB issued ASU 2014-09, *Revenue from Contracts with Customers (Topic 606)*. ASU 2014-09 completes the joint effort by the FASB and International Accounting Standards Board to improve financial reporting by creating common revenue recognition guidance for GAAP and International Financial Reporting Standards. ASU 2014-09 applies to all companies that enter into contracts with customers to transfer goods or services. Under the standard, revenue is recognized when a customer obtains control of promised goods or services in an amount that reflects the consideration the entity expects to receive in exchange for those goods or services. In addition, the standard requires disclosure of the nature, amount, timing, and uncertainty of revenue and cash flows arising from contracts with customers. The guidance permits two methods of adoption: retrospectively to each prior reporting period presented (full retrospective method), or retrospectively with the cumulative effect of initially applying the guidance recognized at the date of initial application (modified retrospective method). The guidance is effective for reporting periods beginning after December 15, 2018, and interim periods beginning after December 15, 2019. The Company has evaluated this new guidance and does not expect the adoption to have a material impact on the financial statements.

In February 2015, the FASB issued ASU 2016-02, *Leases (Topic 842)*, which amends the FASB Accounting Standards Codification and creates Topic 842, “Leases.” The new topic supersedes Topic 840, “Leases,” and increases transparency and comparability among organizations by recognizing lease assets and lease liabilities on the balance sheet and requires disclosures of key information about leasing arrangements. The guidance is effective for reporting periods beginning after December 15, 2019, and interim periods within fiscal years beginning after December 15, 2020. ASU 2016-02 mandates a modified retrospective transition method. In July 2018, the FASB issued ASU 2018-11, *Leases (Topic 842): Targeted Improvements* which allows entities the option to adopt this standard prospectively with a cumulative-effect adjustment to opening equity and include required disclosures for prior period. The Company anticipates implementing the standard by taking advantage of the alternative transition method and will apply the transition approach as of the beginning of the period of adoption and will not be restating comparative periods. The Company is in the process of evaluating the impact of adoption of the ASU on the financial statements.

In January 2016, the FASB issued ASU No. 2016-01, *Financial Instruments—Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities (ASU 2016-01)*. This guidance changes how entities measure equity investments that do not result in consolidation and are not accounted for under the equity method. Entities will be required to measure these investments at fair value at the end of each reporting period and recognize changes in fair value in net income. A practicability exception will be available for equity investments that do not have readily determinable fair values, however; the exception requires the Company to consider relevant transactions that can be reasonably known to identify any observable price changes that would impact the fair value. This guidance also changes certain disclosure requirements and other aspects of current GAAP. This guidance is effective for the Company for the year ending December 31, 2019 and for interim periods effective the three months ending March 31, 2020. Early adoption is permitted. The Company is currently evaluating the requirements of ASU 2016-01 and has not yet determined whether the adoption of the standard will have a material impact on the financial statements.

In August 2016, the FASB issued ASU 2016-15, *Classification of Certain Cash Receipts and Cash Payments (Topic 230)*. ASU 2016-15 addresses eight specific cash flow issues with the objective of reducing the existing diversity in practice for certain cash receipts and cash payments. The standard is effective for annual reporting periods beginning after December 15, 2018 and interim periods reporting within fiscal years beginning after December 15, 2019, with early adoption permitted. The Company does not believe the adoption of this guidance will have a material impact on the financial statements.

### 3. Fair Value Measurements

The accounting guidance defines fair value, establishes a consistent framework for measuring fair value and expands disclosure for each major asset and liability category measured at fair value on either a recurring or nonrecurring basis. Fair value is defined as an exit price, representing the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. As such, fair value is a market-based measurement that should be determined based on assumptions that market participants would use in pricing an asset or liability. As a basis for considering such assumptions, the accounting guidance establishes a three-tier fair value hierarchy, which prioritizes the inputs used in measuring fair value as follows:

Level 1: Unadjusted quoted prices in active markets that are accessible at the measurement date for identical, unrestricted assets or liabilities.

Level 2: Quoted prices for similar assets and liabilities in active markets, quoted prices in markets that are not active, or inputs which are observable, either directly or indirectly, for substantially the full term of the asset or liability.

Level 3: Prices or valuation techniques that require inputs that are both significant to the fair value measurement and unobservable (i.e. supported by little or no market activity).

	September 30, 2018	Fair Value Measurement Using		
		Quoted Prices in Active Markets for Identical Assets	Significant Other Observable Inputs	Significant Unobservable Inputs
		Level 1	Level 2	Level 3
<b>Assets</b>				
Cash and cash equivalents	\$ 20,657,038	\$ 20,657,038	\$ —	\$ —
Total assets	\$ 20,657,038	\$ 20,657,038	\$ —	\$ —
<b>Liabilities</b>				
Preferred stock warrant liability	\$ —	\$ —	\$ —	\$ —
Total liabilities	\$ —	\$ —	\$ —	\$ —

	December 31, 2017	Fair Value Measurements Using		
		Quoted Prices in Active Markets for Identical Assets	Significant Other Observable Inputs	Significant Unobservable Inputs
		Level 1	Level 2	Level 3
<b>Assets</b>				
Cash and cash equivalents	\$ 1,021,897	\$ 1,021,897	\$ —	\$ —
Total assets	\$ 1,021,897	\$ 1,021,897	\$ —	\$ —
<b>Liabilities</b>				
Preferred stock warrant liability	\$ 3,898,944	\$ —	\$ —	\$ 3,898,944
Total liabilities	\$ 3,898,944	\$ —	\$ —	\$ 3,898,944

As discussed in Note 2 above, there were no warrants exercisable for the Company's convertible preferred stock following the closing of the IPO. Of the 37.2 million warrants previously exercisable for preferred stock, 35.7 million warrants expired on the effective date of the IPO. The remaining 1.5 million warrants previously exercisable for preferred stock were adjusted to become exercisable for common stock. Prior to the IPO, the Company estimated fair value of the convertible preferred stock warrants at the time of issuance and subsequent remeasurement using the Black-Scholes-Merton model at each reporting date. On the date of the IPO and going forward, all outstanding warrants are accounted for as equity and are not subject to remeasurement.

Estimating fair values of derivative financial instruments, including Level 3 instruments, require the use of significant and subjective inputs that may, and are likely to, change over the duration of the instrument with related changes in internal and external market factors, including changes in the estimated fair value of the Company's equity securities.

The following table summarizes the changes in fair value of the Company's Level 3 liabilities for the year ended December 31, 2017, and the nine months ended September 30, 2018:

	<b>Warrant Liability</b>
Balance at January 1, 2017	\$ 4,650,877
Expiration of Series A warrants	(1,424)
Change in fair value of preferred stock warrants	(750,509)
Balance at December 31, 2017	3,898,944
Issuance of warrants in connection with debt (unaudited)	176,813
Change in fair value of preferred stock warrants (unaudited)	(3,991,081)
Conversion of preferred stock warrants to common stock warrants due to IPO (unaudited)	(84,676)
Balance at September 30, 2018 (unaudited)	<u>\$ —</u>

The warrants to purchase convertible preferred stock were valued at each reporting period using the Black-Scholes-Merton model. This valuation includes observable inputs such as risk-free rate, as well as unobservable inputs for assumed volatility, the expected life of the warrants, and the fair value of the underlying convertible preferred stock. Quantitative information relating to unobservable inputs is disclosed below:

	<b>December 31, 2017</b>
Risk-free interest rate	1.75%
Volatility	54.60%
Expected life (in years)	0.6
Dividend Yield	—
Fair value of Series A preferred stock	\$ 0.66
Fair value of Series B-1 preferred stock	\$ 0.36
Fair value of Series D preferred stock	\$ 0.48
Fair value of Series D-1 preferred stock	\$ 0.48

#### 4. Prepaid Expenses and Other Current Assets

Prepaid expenses and other current assets consist of the following:

	<b>September 30, 2018</b>	<b>December 31, 2017</b>
Prepayment to supplier	\$ 249,071	\$ 492,330
Other current assets	1,098,703	579,182
Total	<u>\$ 1,347,774</u>	<u>\$ 1,071,512</u>

#### 5. Property and Equipment, net

Property and equipment, net consist of the following:

	<b>September 30, 2018</b>	<b>December 31, 2017</b>
Computer and office equipment	\$ 476,402	\$ 476,402
Lab equipment	4,156,519	3,995,731
Service equipment placed at customer sites	594,553	594,553
Leasehold improvements	1,860,667	1,860,667
	7,088,141	6,927,353
Less accumulated depreciation and amortization	(5,038,885)	(3,921,565)
	<u>\$ 2,049,256</u>	<u>\$ 3,005,788</u>

The Company recorded depreciation and amortization expense of \$391,246 and \$240,551 for the three months ended September 30, 2018 and 2017, and \$1,169,801 and \$964,932 for the nine months ended September 30, 2018 and 2017, respectively in operating expenses.

## 6. Accrued Expenses

Accrued expenses consist of the following:

	<u>September 30,</u> <u>2018</u>	<u>December 31,</u> <u>2017</u>
Accrued expenses	\$ 2,185,354	\$ 2,596,137
Accrued bonus	629,936	912,757
Total	<u>\$ 2,815,290</u>	<u>\$ 3,508,894</u>

## 7. Long-Term Debt

### *Western Alliance LSA*

On March 8, 2016, the Company entered into a new term Loan and Security Agreement with Western Alliance Bank (the “Western Alliance LSA”) for \$7.0 million. The loan proceeds were used to repay the outstanding \$5.0 million loan with Square 1 Bank, as required by the twelfth amendment to the Loan and Security Agreement with Square 1 Bank.

The Company paid debt issuance costs and a facility fee totaling \$113,542 at the inception of the loan, which was recorded as a debt discount and was being recognized as additional interest expense over the term of the loan. In addition, upon repayment of the total amounts borrowed, the Company was required to pay an end of term charge equal to 3.25% of the total amount borrowed. Accordingly, an end of term charge of \$227,500 was recorded as debt discount and was included on the balance sheet under current liabilities as December 31, 2017. The end of term charge was being recognized as additional interest expense over the term of the loan.

Additionally, in conjunction with the entry into Western Alliance LSA, the Company issued to Western Alliance Bank a warrant to purchase 510,417 shares of Series D convertible preferred stock at an exercise price of \$0.48 per share. The Company valued the warrant to purchase Series D convertible preferred stock using the Black-Scholes-Merton model, and the initial fair value of the warrant to purchase Series D convertible preferred stock of \$65,384 was recorded as a debt discount and was being amortized to interest expense over the term of the loan. Upon the closing of the IPO in August 2018, the warrants exercisable for shares of Series D convertible preferred stock were adjusted to warrants exercisable for 11,925 shares of common stock for \$20.54 per share. The warrants expire on March 8, 2026.

On December 9, 2016, the Western Alliance LSA was amended, in conjunction with this amendment, the Company issued to Western Alliance Bank a warrant to purchase 291,667 shares of Series D-1 convertible preferred stock. The Company valued the warrant to purchase Series D-1 convertible preferred stock using the Black-Scholes-Merton model, and the initial fair value of the warrant to purchase Series D-1 convertible preferred stock of \$34,300 was recorded as a debt discount and was being amortized to interest expense over the term of the loan. Upon the closing of the IPO in August 2018, the warrants exercisable for shares of Series D convertible preferred stock were adjusted to warrants exercisable for 6,814 shares of common stock for \$20.55 per share. The warrants expire on Dec 9, 2026.

On November 20, 2017, the Western Alliance LSA was amended, in conjunction with this amendment, the Company agreed to pay an amendment fee of \$17,500, which was payable on the earliest to occur of the loan maturity date or the prepayment date. The amount was recorded as a debt discount on the balance sheet and was being recognized as additional interest expense over the remaining term of the loan.

The Company received a notice of default from Western Alliance Bank notifying the Company that as of December 31, 2017 it was in default, as it had failed to secure at least \$15.0 million from the sale or issuance of its equity securities or subordinated debt as set forth in the amended Western Alliance LSA. Based on the notice of default the Company reclassified the total loan balance of \$6.7 million to current liabilities on the consolidated balance sheet as of December 31, 2017, as the loan could be called at any time by Western Alliance Bank.

In February 2018, the Western Alliance LSA was amended requiring the Company to secure \$21,000,000 in funding prior to June 30, 2018. As part of the amendment, Western Alliance Bank agreed to forbear from exercising any of its default remedies set forth in the Western Alliance LSA as a result of the Company's loan default.

On June 13, 2018, the Western Alliance LSA was amended, replacing previously amended funding requirements and requiring the Company to secure \$5.0 million in funding prior to August 3, 2018. Additionally, the amendment restricted Company use of all cash collected from customers, received on and after amendment date, until collecting a total of \$2.5 million. As part of the amendment, Western Alliance Bank waived the existing default.

On June 29, 2018, the Company repaid the Western Alliance LSA as part of the MidCap Financial Credit and Security Agreement discussed below.

### ***MidCap Financial CSA***

On June 29, 2018, the Company entered into a Credit and Security Agreement (CSA) with MidCap Financial Trust which provides a \$15.0 million term loan facility available in three tranches, Tranche 1: \$10.0 million, Tranche 2: \$2.5 million, and Tranche 3: \$2.5 million. The Company borrowed \$10.0 million from Tranche 1 immediately upon closing the agreement; Tranches 2 and 3 are available to draw from after achieving \$12.5 million and \$16.0 million in trailing twelve month revenue, respectively. Proceeds from the loan were used to repay the outstanding \$7.0 million due to Western Alliance LSA.

The MidCap Financial CSA bears interest at an annual rate of one month LIBOR plus 7.5%, subject to a LIBOR floor of 1.5%. The loan has a 60-month term, with interest only for the first 18 months and straight-line amortization of principal and interest for the remaining 42 months. The CSA is secured by substantially all of the assets of the Company and matures on July 1, 2023.

The Company paid issuance fees of approximately \$0.3 million at the inception of the loan, which was recorded as a debt discount and is being recognized as additional interest expense over the term of the loan. Subject to certain limited exceptions, amounts prepaid in relation to the MidCap Financial CSA are subject to a prepayment fee determined by multiplying the amount being prepaid by 4% in the first year of the term, 3% in year two, and 2% thereafter. In addition, upon repayment of the total amounts borrowed, the Company will be required to pay an end of term charge equal to 4% of the total amount borrowed. Accordingly, an end of term charge of \$0.4 million was recorded as debt discount and is included in other long-term liabilities on the balance sheet as of September 30, 2018. The end of term charge is being recognized as additional interest expense over the term of the loan.

In conjunction with entering into the MidCap Financial CSA, the Company issued to MidCap a warrant to purchase 625,000 shares of Series D-1 convertible preferred stock at an exercise price of \$0.48 per share that was immediately exercisable and expires June 29, 2028. The Company valued the warrant to purchase Series D convertible preferred stock using the Black-Scholes-Merton model, and the initial fair value of the warrant to purchase Series D-1 convertible preferred stock of \$0.2 million was recorded as a debt discount and is being amortized to interest expense over the term of the loan. The assumptions used in the model were: the fair value of the Series D-1 convertible preferred stock, which was determined using an OPM analysis (see Note 3), an expected life of 10 years, a risk-free interest rate of 2.83% and an expected volatility of 59%. Upon the closing of the IPO in August 2018, the warrants exercisable for shares of Series D convertible preferred stock were adjusted to warrants exercisable for 14,603 shares of common stock for \$20.55. The warrants expire on June 29, 2028.



In addition, MidCap invested \$1.0 million in the convertible note offering at terms identical to other investors described in the Convertible Notes section below.

### Convertible Notes

On February 9, 2018, the Company entered into a Note Purchase Agreement (the “Note Purchase Agreement”) with various investors, which included related parties (the “Investors”), pursuant to which the Company agreed to sell to the Investors convertible promissory notes (the “Convertible Notes”) in the original principal amount of up to \$16.0 million. On April 2, 2018, the Company amended the Note Purchase Agreement to, among other things, increase the principal amount available for issuance under the Note Purchase Agreement to \$18.4 million. The Convertible Notes had a maturity date of September 30, 2018 and were convertible either into the Company’s common stock or convertible preferred stock, dependent on the conversion events.

On June 29, 2018, the Note Purchase Agreement was amended to increase the principal amount available for issuance from \$18.4 million to \$19.4 million.

In August 2018, the outstanding convertible promissory notes of \$14.9 million of principal and interest were converted into 3,239,294 shares of common stock upon completion of the IPO. As of September 30, 2018, there are no convertible notes outstanding.

Debt and unamortized discount balances relating to the Western Alliance LSA are as follows:

	<b>December 31, 2017</b>
Term loan face value	\$ 7,000,000
Fair value of warrant	(99,684)
End of term charge	(227,500)
Capitalized debt issuance costs	(131,042)
Accretion of debt issuance costs and end of term charge	148,225
Accretion of warrant fair value	39,753
Balance	6,729,752
Less current portion	6,729,752
Long-term debt	\$ —

Debt and unamortized discount balances relating to the MidCap Financial CSA are as follows:

	<b>September 30, 2018</b>
Term loan face value	\$ 10,000,000
Fair value of warrant	(176,813)
End of term charge	(400,000)
Capitalized debt issuance costs	(467,044)
Accretion of debt issuance costs and end of term charge	43,352
Accretion of warrant fair value	8,842
Balance	9,008,337
Less current portion	—
Long-term debt	\$ 9,008,337

Non-cash interest expense related to debt discount amortization and accretion of end of term fees was \$52,194 and \$21,558, for the three months ended September 30, 2018 and 2017 and \$121,984 and \$66,241 for the nine months ended September 30, 2018 and 2017, respectively.

Future minimum payments including interest under the MidCap Financial CSA are as follows as of September 30, 2018:

Years ending December 31,	
2018	\$ 243,900
2019	975,600
2020	3,704,986
2021	3,426,243
2022-2023	5,016,721
Total minimum loan payments	<u>\$ 13,367,450</u>
Unamortized interest	(2,967,450)
End of term charge	(400,000)
Warrant fair value	(167,972)
Capitalized debt issuance costs and end of term charge	<u>(823,691)</u>
Term loan	9,008,337
Less current portion	—
Long-term debt	<u>\$ 9,008,337</u>

## 8. Stockholders' Deficit

### Common Stock

On August 23, 2018, the Company amended and restated its Certificate of Incorporation in connection with the IPO. The Company's Amended and Restated Certificate of Incorporation authorizes 200,000,000 shares of common stock, \$0.0001 par value per share, and 10,000,000 shares of preferred stock, \$0.0001 par value per share, all of which shares of preferred stock are undesignated. Of the 200,000,000 authorized shares of common stock, 10,032,687 shares were issued as of September 30, 2018.

During the three months ended September 30, 2018 and 2017, the company issued 1,068 and 1,168 shares of common stock in connection with the exercise of stock options for net proceeds of \$1,116 and \$1,500, respectively.

During the nine months ended September 30, 2018 and 2017, the company issued 1,856 and 1,168 shares of common stock in connection with the exercise of stock options for net proceeds of \$3,499 and \$1,500, respectively.

### Convertible Preferred Stock

#### Conversion of all outstanding Preferred Stock to Common Stock

In August 2018, due to completion of a public offering meeting certain requires (as defined below), each 42.8 shares of Series Preferred was converted into one share of common stock at a Conversion Price of \$1.3995 for each share of Series A, B and B-1 convertible preferred stock, \$1.4043 for each share of Series C convertible preferred stock and \$0.48 for each share of Series D and D-1 convertible preferred stock. Prior to the August 2018 offering, there were 121,992,497 shares of convertible preferred stock outstanding. The Company's convertible preferred stock had been classified as temporary equity on the accompanying balance sheets in accordance with authoritative guidance for the classification and measurement of redeemable securities. As of September 30, 2018, there are no shares of convertible preferred stock outstanding.

The following sets forth information regarding all convertible preferred stock securities sold since January 1, 2017:

#### *Series D-1 Convertible Preferred Stock Financing*

From February through November 2017, the Company sold and issued 36,974,586 shares of Series D-1 convertible preferred stock at \$0.48 per share, raising approximately \$17,750,000, net of issuance costs of \$154,191. At any time after December 31, 2021, holders of a majority of the then outstanding Series D-1 convertible preferred stock may redeem any unconverted or unredeemed Series D-1 convertible preferred stock in cash at the greater of the original convertible preferred stock purchase price plus all declared but unpaid dividends or the fair market value. The Company had determined not to adjust the carrying values of the Series D-1 convertible preferred stock to the liquidation preferences of such shares because of the uncertainty over whether or when such an event would occur. The Company had determined that it was not probable that such redemption would occur as a mandatory conversion event, the close of the public offering, was expected in advance of the redemption triggers.

#### *Convertible Preferred Stock*

The Series A, B, B-1, C, D and D-1 convertible preferred stock (collectively, the “Series Preferred”) had the following rights and privileges immediately prior to conversion to common stock in connection with the public offering:

##### *Voting rights*

Series Preferred stockholders were entitled to cast the number of votes equal to the number of whole shares of common stock into which the convertible preferred stock was convertible.

##### *Conversion*

Each 42.8 shares of Series Preferred was convertible, at any time, into one share of common stock at the then-applicable Conversion Price (as defined below). The Series Preferred was automatically converted into common stock, at the then-applicable Conversion Price, upon (a) the vote or consent of 66-2/3% of the outstanding shares of Series Preferred or (b) upon the closing of the sale to the public of either shares of common stock or units comprised of shares of common stock and warrants to purchase shares of common stock (i) in which the price per share paid by the public (prior to the deduction of underwriting discounts and registration expenses) was no less than \$6.00 per share, or to the extent units are sold in such offering, no less than \$6.00 per unit (in each case as adjusted for any stock dividends, combinations, splits, recapitalizations and the like with respect to shares of common stock effectuated after August 15, 2018), in each case in the initial closing of the such offering, and (ii) resulting in at least \$15,000,000 in gross proceeds to the company (prior to the deduction of underwriting discounts and registration expenses), in a firm-commitment underwritten public offering pursuant to an effective registration statement under the Securities Act of 1933, as amended. The Conversion Price was initially \$1.3995 for each share of Series A, B and B-1 convertible preferred stock, \$1.4043 for each share of Series C convertible preferred stock and \$0.48 for each share of Series D and D-1 convertible preferred stock. The Conversion Price was subject to adjustment in certain circumstances.

##### *Dividends*

Holders of the Series Preferred were entitled to receive cash dividends at the rate of 8% of the applicable Original Issue Price (as defined below) per annum, on a non-cumulative basis, on each outstanding share of Series Preferred. The Company could not declare any dividends on any shares of Series Preferred other than shares of Series D-1 convertible preferred stock unless the holders of the Series D-1 convertible preferred stock then outstanding first receive, or simultaneously receive, full payment of a dividend. The Original Issue Price was \$2.733 per share for the Series A convertible preferred stock, \$1.3995 per share for the Series B convertible preferred stock, \$1.3995 per share for the Series B-1 convertible preferred stock, \$1.4043 per share for the Series C convertible preferred stock, \$0.48 per share for the Series D convertible preferred stock and \$0.48 per share for the Series D-1 convertible preferred stock, each subject to adjustment in the event of any reorganization, stock split, recapitalization or other similar event involving or affecting a change in the Company’s capital structure.

### Liquidation Preferences

In the event of liquidation or winding up of the Company, (i) the holders of the Series D and D-1 convertible preferred stock, on a pari passu basis, were entitled to receive, prior to and in preference to any payment or distribution to the holders of, Series C convertible preferred stock, Series B and B-1 convertible preferred stock, Series A convertible preferred stock and common stock, a per-share amount equal to the applicable Liquidation Preference (as defined below); (ii) the holders of the Series C convertible preferred stock, on a pari passu basis, were entitled to receive, prior to and in preference to any payment or distribution to the holders of Series B and B-1 convertible preferred stock, Series A convertible preferred stock, and common stock, a per-share amount equal to the applicable Liquidation Preference; and (iii) the holders of Series B and B-1 convertible preferred stock and the holders of Series A convertible preferred stock, on a pari passu basis, were entitled to receive, prior to and in preference to any payment or distribution to the holders of common stock, a per-share amount equal to the applicable Liquidation Preference. The Liquidation Preference was calculated as follows: (i) when the Company was valued at \$91 million or below, the Liquidation Preference was equal to the applicable Original Issue Price for such shares plus the amount of any declared but unpaid dividends and (ii) when the company was valued greater than \$91 million, the Liquidation Preference was equal to the applicable Original Issue Price for such shares plus the amount of any declared but unpaid dividends, with the first \$10 million of proceeds above \$91 million distributed to the holders of the Series D and D-1 convertible preferred stock on a pro rata basis ((i) and (ii) together, "Liquidation Preference").

### Stock Options

In August 2018, the Company's board of directors (the "Board") and its stockholders adopted the 2018 Equity Incentive Plan (the "2018 Plan"), as a successor to and continuation of the Company's 2006 Equity Incentive Plan (the "2006 Plan"). Under the 2018 Plan the Company may grant stock options, stock appreciation rights, restricted stock, restricted stock units and other awards to individuals who are then its employees, directors and consultants, including employees and consultants of its affiliates. The Company has initially reserved 1,499,454 shares of common stock for issuance under the 2018 Plan, which is the sum of (1) 1,000,000 new shares, plus (2) the number of shares that remained available for issuance under the 2006 Plan at the time the 2018 Plan became effective, and (3) any shares subject to outstanding stock options or other stock awards that were granted under the 2006 Plan that would have otherwise returned to the 2006 Plan. In addition, the number of shares of common stock reserved for issuance under the 2018 Plan will automatically increase on January 1 of each calendar year, starting on January 1, 2019 through January 1, 2028, in an amount equal to 5% of the total number of shares of the Company's capital stock outstanding on the last day of the calendar month before the date of each automatic increase, or a lesser number of shares determined by the Board.

As of September 30, 2018, there were 415,137 shares of common stock subject to outstanding options and 1,084,285 shares of common stock reserved for future stock awards under the 2018 Plan.

A summary of the Company's stock option activity under the 2018 Plan and 2006 Plan is as follows:

	Shares	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Term	Aggregate Intrinsic Value
Outstanding at January 1, 2018	436,341	\$ 5.14	9.0	\$ —
Granted (unaudited)	385	6.00		—
Exercised (unaudited)	(1,856)	1.28		\$ 4,571
Cancelled/Expired (unaudited)	(19,733)	9.65		—
Outstanding at September 30, 2018 (unaudited)	<u>415,137</u>	<u>\$ 4.99</u>	<u>8.2</u>	<u>\$ 2,589,204</u>
Vested and expected to vest at September 30, 2018 (unaudited)	<u>399,705</u>	<u>\$ 5.14</u>	<u>8.2</u>	<u>\$ 2,487,288</u>
Vested and exercisable at September 30, 2018 (unaudited)	<u>261,487</u>	<u>\$ 6.73</u>	<u>8.1</u>	<u>\$ 1,580,698</u>

For the three months ended September 30, 2018 and 2017, the Company granted to its employee's options to purchase no shares and 17,769 shares of its common stock with an exercise price of \$1.28 per share, respectively.

For the nine months ended September 30, 2018 and 2017, the Company granted to its employee's options to purchase 385 shares and 422,706 shares of its common stock with an exercise price of \$6.00 per share and \$1.28 per share, respectively.

For the three months ended September 30, 2018 and 2017, the total grant date fair value of vested options was \$50,584 and \$60,515, respectively. The Company did not grant employee options during the three months ended September 30, 2018; the weighted-average grant date fair value of employee option grants during the three months ended September 30, 2017 was \$0.67.

For the nine months ended September 30, 2018 and 2017, the total grant date fair value of vested options was \$161,897 and \$232,915, respectively. The weighted-average grant date fair value of employee option grants during the nine months ended September 30, 2018 and 2017 was \$2.99 and \$0.66, respectively.

### Stock-Based Compensation Expense

The Company recognized stock-based compensation expense of for the three and nine months ended September 30, 2018 and 2017 as follows:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	2017	2018	2017
Research and development	\$ 43,363	\$ 18,564	\$ 131,900	\$ 162,420
General and administrative	9,762	5,561	28,651	79,551
<b>Total stock-based compensation expense</b>	<b>\$ 53,125</b>	<b>\$ 24,125</b>	<b>\$ 160,551</b>	<b>\$ 241,971</b>

The weighted-average assumptions used in the Black-Scholes option pricing model to determine the fair value of the employee stock option grants were as follows:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	2017	2018	2017
Risk-free interest rate	—	1.8%	2.5%	2.5%
Expected volatility	—	58.0%	63.0%	58.0%
Expected term (in years)	—	5.3	4.0	5.1 - 5.3
Expected dividend yield	—	0.0%	0.0%	0.0%

*Risk-free interest rate.* The risk-free rate assumption is based on the U.S. Treasury instruments, the terms of which were consistent with the expected term of the Company's stock options.

*Expected volatility.* Due to the Company's limited operating history and lack of company-specific historical or implied volatility as a private company, the expected volatility assumption was determined by examining the historical volatilities of a group of industry peers whose share prices are publicly available.

*Expected term.* The expected term of stock options represents the weighted-average period the stock options are expected to be outstanding. The Company does not have sufficient historical exercise data to provide a reasonable basis upon which to estimate expected term due to the limited period of time its equity shares have been publicly traded. As a result, the Company uses the simplified method for estimating the expected term as provided by the Securities and Exchange Commission. The simplified method calculates the expected term as the average of the time-to-vesting and the contractual life of the options.

*Expected dividend yield.* The expected dividend assumption is based on the Company's history and expectation of dividend payouts. The Company has not paid and does not intend to pay dividends.

*Forfeitures.* The Company reduces stock-based compensation expense for actual forfeitures during the period.

As of September 30, 2018 the unrecognized compensation cost related to outstanding employee options was \$132,726 and is expected to be recognized as expense over approximately 1.1 years.

### **Employee Stock Purchase Plan**

In August 2018, the Board and the Company's stockholders adopted the 2018 Employee Stock Purchase Plan (the "ESPP"). A total of 175,000 shares of common stock are initially reserved for issuance under the ESPP. In addition, the number shares of common stock reserved for issuance under the ESPP will automatically increase each on January 1 of each calendar year, beginning on January 1, 2019, through January 1, 2028, by the lesser of (1) 1% of the total number of shares of the Company's common stock outstanding on the last day of the calendar month before the date of the automatic increase, (2) 220,000 shares, or (3) a lesser number of shares as determined by the Board. As of September 30, 2018, no shares of common stock have been purchased under the ESPP.

### **Common Stock Reserved for Future Issuance**

Common stock reserved for future issuance consist of the following:

	<b>Nine Months Ended September 30, 2018</b>
Stock options issued and outstanding	415,137
Authorized for future stock awards, option grants, or employee stock purchase program	1,259,285
Common Warrants	4,015,013
<b>Total</b>	<b>5,689,435</b>

## **9. Commitments and Contingencies**

### **Leases**

The Company leases certain office and lab space in San Diego, California under a non-cancelable operating lease, which was amended July 1, 2015 to add laboratory space and office space and extend its terms through December 2020. Rent expense for the three months ended September 30, 2018 and 2017 was \$147,522 each period, including the offset for amortization of leasehold incentive obligation of \$56,263 each period. Rent expense for the nine months ended September 30, 2018 and 2017 was \$442,566 each period, including the offset for amortization of leasehold incentive obligation of \$168,789 each period.

The future minimum lease payments required under non-cancelable leases as of September 30, 2018, are summarized as follows:

<b>Year Ending December 31,</b>	
2018 (3 months remaining)	\$ 206,721
2019	862,656
2020	902,412
<b>Total minimum lease payments</b>	<b>\$ 1,971,789</b>

### **Royalty Agreements**

The Company has entered into agreements to market and distribute chips and kits used in its instruments. Pursuant to these agreements, the Company is obligated to pay royalties based on sales during each annual license period and is obligated to make minimum payments regardless of the level of sales achieved. The Company has paid \$76,846 and \$75,960 for the three months ended September 30, 2018 and 2017, and \$295,246 and \$235,455 for the nine months ended September 30, 2018 and 2017, respectively.

Such royalty agreements extend through the life of underlying intellectual property which is affected by patent filing date and jurisdiction. As of December 31, 2017, annual future minimum royalty payments under the Company's royalty agreements total \$70,000, on a continuing basis, and extend through November 29, 2026.

### ***Purchase Commitments***

The Company has a contractual commitment with a supplier to purchase \$100,000 of products each quarter until the first quarter of 2019. The Company is not able to determine the aggregate amount of other such purchase orders that represent contractual obligations, as purchase orders may represent authorizations to purchase rather than binding agreements. The Company's purchase orders are based on its current procurement or development needs and are fulfilled by the Company's vendors within short time horizons.

### ***Litigation***

The Company is subject to potential liabilities under various claims and legal actions that are pending or may be asserted. These matters arise in the ordinary course and conduct of the business. The Company intends to continue to defend itself vigorously in such matters. The Company regularly assesses contingencies to determine the degree of probability and range of possible loss for potential accrual in the financial statements. An estimated loss contingency is accrued in the financial statements if it is probable that a liability has been incurred and the amount of the loss can be reasonably estimated. Based on the Company's assessment, it currently does not have any amount accrued as it is not a defendant in any claims or legal actions.

## **10. Income Taxes**

The Company is subject to taxation in the United States, United Kingdom and various state jurisdictions. The Company computes its quarterly income tax provision by using a forecasted annual effective tax rate and adjusts for any discrete items arising during the quarter. The primary difference between the effective tax rate and the federal statutory tax rate relates to the full valuation allowance on the Company's U.S. net operating losses.

At September 30, 2018 and 2017, respectively the provision for income taxes reflected on the statements of operations reflect an effective tax rate of -0.06% and -0.10% respectively.

Federal, state, and foreign income tax expense/(benefit) was \$(2,978) and \$(4,738) for the three months ended September 30, 2018, and 2017 respectively; and \$6,304 and \$17,620 for the nine months ended September 30, 2018 and 2017, respectively.

As of September 30, 2018 and 2017, management assessed the realizability of deferred tax assets and evaluated the need for a valuation allowance on deferred tax assets on a jurisdictional basis. This evaluation utilizes the framework contained in ASC 740, Income Taxes, wherein management analyzes all positive and negative evidence available at the balance sheet date to determine whether all or some portion of our deferred tax assets will not be realized. Under this guidance, a valuation allowance must be established for deferred tax assets when it is more likely than not (a probability level of more than 50 percent) that they will not be realized. Because of our history of losses and the uncertainty as to the realization of those deferred tax assets, a full valuation allowance has been recognized for the U.S. federal and state jurisdictions.

Utilization of the net operating losses and research and development ("R&D") credit carryforwards are subject to annual limitations due to ownership change limitations that have occurred or that could occur in the future, as required by Section 382 of the Internal Revenue Code of 1986, as amended (the "Code"), as well as similar state and foreign provisions. These ownership changes may limit the amount of net operating losses and R&D credit carryforwards that can be utilized annually to offset future taxable income and tax, respectively. In general, an "ownership change" as defined by Section 382 of the Code results from a transaction or series of transactions over a three-year period resulting in an ownership change of more than 50 percentage points of the outstanding stock of a company by certain stockholders.

During 2013, the Company completed a Section 382/383 analysis, from inception through December 31, 2012, regarding the limitation of the net operating losses and R&D credits. Based upon the analysis, the Company determined that no ownership changes occurred during that period. However, there may have been ownership changes subsequent to

December 31, 2012, that could limit the Company's ability to utilize the net operating loss and R&D credit carryforwards. The Company plans to complete an analysis prior to using any of the net operating losses and R&D credits.

On December 22, 2017, Staff Accounting Bulletin No. 118 ("SAB 118") was issued to address the application of GAAP in situations when a registrant does not have the necessary information available, prepared, or analyzed (including computations) in reasonable detail to complete the accounting for certain income tax effects of the Tax Cuts and Jobs Act (The "Act"). In accordance with SAB 118, the Company's provisional determination is that there is no deferred tax benefit or expense with respect to the remeasurement of certain deferred tax assets and liabilities due to the full valuation allowance against net deferred tax assets. The Company did not record any adjustments to this provisional amount during the nine months ended September 30, 2018 and will continue to analyze and refine its calculations related to the remeasurement as the impact of the Act is finalized.

## **11. Employee Benefits**

The Company has a defined contribution 401(k) plan available to eligible employees. Under the terms of the plan, employees may make voluntary contributions as a percent of compensation, limited to the maximum amount allowable under federal tax regulations. The Company, at its discretion, may make certain contributions to the 401(k) plan. The Company made matching contributions of \$78,020 and \$97,414, and, \$211,185 and \$334,988, for the three months ended September 30, 2018 and 2017 and the nine months ended September 30, 2018 and 2017, respectively.



## 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 in conjunction with our unaudited consolidated financial statements and related notes included in this Quarterly Report on Form 10-Q and the audited consolidated financial statements and notes thereto as of and for the year ended December 31, 2017 and the related Management’s Discussion and Analysis of Financial Condition and Results of Operations, both of which are contained in our final prospectus dated August 21, 2018, filed with the Securities and Exchange Commission, or the SEC, on August 22, 2018 (the “Prospectus”), relating to our Registration Statement on Form S-1, as amended, originally filed with the SEC on June 28, 2018 (File No. 333-225970). Unless the context requires otherwise, references in this Quarterly Report on Form 10-Q to “we,” “us,” and “our” refer to Bionano Genomics, Inc.

### Forward-Looking Statements

The information in this discussion contains forward-looking statements and information within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act, which are subject to the “safe harbor” created by those sections. These forward-looking statements include, but are not limited to, statements concerning our strategy, future operations, future financial position, future revenues, projected costs, prospects and plans and objectives of management. The words “anticipates,” “believes,” “estimates,” “expects,” “intends,” “may,” “plans,” “projects,” “will,” “would” and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. We may not actually achieve the plans, intentions, or expectations disclosed in our forward-looking statements and you should not place undue reliance on our forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements that we make. These forward-looking statements involve risks and uncertainties that could cause our actual results to differ materially from those in the forward-looking statements, including, without limitation, the risks set forth in our filings with the SEC. The forward-looking statements are applicable only as of the date on which they are made, and we do not assume any obligation to update any forward-looking statements.

### Overview

We are a life sciences instrumentation company in the genome analysis space. We develop and market the Saphyr system, a platform for ultra-sensitive and ultra-specific structural variation detection that enables researchers and clinicians to accelerate the search for new diagnostics and therapeutic targets and to streamline the study of changes in chromosomes, which is known as cytogenetics. Our Saphyr system comprises an instrument, chip consumables, reagents and a suite of data analysis tools.

Structural variation refers to large-scale structural differences in the genomic DNA of one individual compared to another. Each structural variation involves the rearrangement or repetition of as few as hundreds to as many as tens of millions of DNA base pairs. Those rearrangements may be insertions, deletions, duplications, inversions or translocations of segments of one or more chromosomes. Structural variations may be inherited or arise spontaneously and many cause genetic disorders and diseases. Until our commercial launch of the Saphyr system in February 2017, and since, we believe no products existed or exist that could more comprehensively and cost and time-efficiently detect structural variation.

Our Saphyr system comprises an instrument, chip consumables, reagents and a suite of data analysis tools. Our customers include researchers and clinicians who seek to uncover and understand the biological or clinical impact of genome variation to improve the diagnosis and treatment of patients with better clinical tests and new medicines or to replace existing cytogenetic tests that are expensive, slow and labor-intensive, with a modern solution that simplifies workflow and reduces costs and that has the potential to significantly increase diagnostic yields across the industry. Our customers also include researchers in non-human segments such as agricultural genomics where they seek to advance their understanding of how structural variation impacts industrial applications of plants and animals.

Since our inception, we have raised net proceeds of \$148.7 million to fund our operations from the issuance of equity and convertible promissory notes. We have incurred losses in each year since our inception. Our net losses were \$4.9 million and \$5.1 million for the three months ended September 30, 2018 and 2017, respectively, and \$12.1 million and \$17.4 million for the nine months ended September 30, 2018 and 2017, respectively. As of September 30, 2018, we had an accumulated deficit of \$66.4 million.

We expect to continue to incur significant expenses and operating losses as we:

- expand our sales and marketing efforts to further commercialize our products;
- continue research and development efforts to improve our existing products;
- hire additional personnel;
- enter into collaboration arrangements, if any;
- add operational, financial and management information systems; and
- incur increased costs as a result of operating as a public company.

### Initial Public Offering

In August 2018, we completed our initial public offering of our common stock, or the IPO, in which we sold an aggregate of 3,864,000 units (each unit consisting of one share of our common stock and one warrant to purchase one share of our common stock) at a public offering price of \$6.125 per unit for net proceeds of \$19.4 million, after deducting underwriters' discounts and commissions of \$2.2 million and other offering expenses of \$2.1 million.

### Financial Overview

#### Revenue

We generate product revenue from sales of our instruments and consumables. We currently sell our products for research use only applications and our customers are primarily laboratories associated with academic and governmental research institutions, as well as pharmaceutical, biotechnology and contract research companies. Sales of our consumables have consistently increased due to an increasing number of our instruments being installed in the field, all of which require certain of our consumables to run customers' specific tests. Consumable revenue consists of sales of complete assays which are developed internally by us, plus sales of kits which contain all the elements necessary to run tests.

Other revenue consists of warranty and other service-based revenue.

The following table presents our revenue for the periods indicated:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	2017	2018	2017
Product revenue	\$ 2,700,162	\$ 2,604,215	\$ 7,618,407	\$ 6,213,496
Other revenue	128,542	138,841	368,791	446,424
<b>Total</b>	<b>\$ 2,828,704</b>	<b>\$ 2,743,056</b>	<b>\$ 7,987,198</b>	<b>\$ 6,659,920</b>

The following table reflects total revenue by geography and as a percentage of total revenue, based on the billing address of our customers. North America consists of the United States and Canada. EMEIA consists of Europe, Middle East, India and Africa. Asia Pacific includes China, Japan, South Korea, Singapore and Australia.

	Three Months Ended September 30,				Nine Months Ended September 30,			
	2018		2017		2018		2017	
	\$	%	\$	%	\$	%	\$	%
North America	\$ 901,679	32%	\$ 319,468	12%	\$ 3,450,322	43%	\$ 2,114,593	32%
EMEIA	1,089,239	38%	621,598	23%	2,231,349	28%	1,445,363	22%
Asia Pacific	837,786	30%	1,801,990	65%	2,305,527	29%	3,099,964	46%
<b>Total</b>	<b>\$ 2,828,704</b>	<b>100%</b>	<b>\$ 2,743,056</b>	<b>100%</b>	<b>\$ 7,987,198</b>	<b>100%</b>	<b>\$ 6,659,920</b>	<b>100%</b>

## Cost of Revenue

Cost of revenue for our instruments and consumables includes cost from the manufacturer, raw material parts costs and associated freight, shipping and handling costs, contract manufacturer costs, salaries and other personnel costs, overhead and other direct costs related to those sales recognized as product revenue in the period.

Cost of other revenue consists of salaries and other personnel costs and costs related to warranties and other costs of servicing equipment at customer sites.

## Research and Development Expenses

Research and development expenses consist of salaries and other personnel costs, stock-based compensation, research supplies, third-party development costs for new products, materials for prototypes, and allocated overhead costs that include facility and other overhead costs. We have made substantial investments in research and development since our inception, and plan to continue to make investments in the future. Our research and development efforts have focused primarily on the tasks required to support development and commercialization of new and existing products. We believe that our continued investment in research and development is essential to our long-term competitive position.

## Selling, General and Administrative Expenses

Selling, general and administrative expenses consist primarily of salaries and other personnel costs, and stock-based compensation for our sales and marketing, finance, legal, human resources and general management, as well as professional services, such as legal and accounting services.

## Results of Operations

### Comparison of the Three Months Ended September 30, 2018 and 2017

The following table sets forth our results of operations for the three months ended September 30, 2018 and 2017:

	Three Months Ended September 30,		Period-to-Period Change	
	2018	2017	\$	%
Revenues:				
Product revenue	\$ 2,700,162	\$ 2,604,215	\$ 95,947	3.7%
Other revenue	128,542	138,841	(10,299)	-7.4%
Total revenue	2,828,704	2,743,056	85,648	3.1%
Cost of revenue:				
Cost of product revenue	3,064,661	1,643,504	1,421,157	86.5%
Cost of other revenue	3,671	46,719	(43,048)	-92.1%
Total cost of revenue	3,068,332	1,690,223	1,378,109	81.5%
Operating expense:				
Research and development	2,505,137	2,967,073	(461,936)	-15.6%
Selling, general and administrative	3,224,075	3,116,922	107,153	3.4%
Total operating expense	5,729,212	6,083,995	(354,783)	-5.8%
Loss from operations	(5,968,840)	(5,031,162)	(937,678)	18.6%
Interest expense	(404,437)	(145,308)	(259,129)	178.3%
Change in fair value of preferred stock warrants and expirations	1,520,159	154,469	1,365,690	884.1%
Other expense	(75,957)	(68,189)	(7,768)	11.4%
Loss before income taxes	(4,929,075)	(5,090,190)	161,115	-3.2%
Provision for income taxes	2,978	4,738	(1,760)	-37.1%
Net loss	<u>\$ (4,926,097)</u>	<u>\$ (5,085,452)</u>	<u>\$ 159,355</u>	<u>-3.1%</u>

## Revenue

Total revenue increased by \$0.1 million, or 3.1%, to \$2.8 million for the three months ended September 30, 2018 compared to \$2.7 million for the same period in 2017. Average sales prices, or ASPs, of instruments decreased by 10%

while instrument sales volume remained flat, respectively, in the three months ended September 30, 2018, as compared with the three months ended September 30, 2017. In June 2018, we began offering discounts on bulk consumables orders. ASPs of consumables decreased by 40% while consumable sales volume increased 125%, respectively, in the three months ended September 30, 2018, as compared with the three months ended September 30, 2017.

#### *Cost of Revenue*

Cost of product revenue increased by \$1.4 million, or 86.5%, to \$3.1 million for the three months ended September 30, 2018 compared to \$1.6 million for the same period in 2017. Based on new conditions presented in the quarter, the Company incurred a \$1.3 million expense to write-down the carrying value Irys instruments on-hand to zero.

#### *Research and Development Expenses*

Research and development expenses decreased \$0.5 million, or 15.6%, to \$2.5 million for the three months ended September 30, 2018 compared to \$3.0 million for the same period in 2017. The decrease was primarily related to decreases in compensation and benefit expenses resulting from a reduction in headcount during the second half of 2017.

#### *Selling, General and Administrative Expenses*

Selling, general and administrative expenses increased \$0.1 million, or 3.4%, to \$3.2 million for the three months ended September 30, 2018 compared to \$3.1 million for the same period in 2017. The increase was primarily related to additional costs associated with being a public company, such as expenses related to compliance with rules and regulations of the SEC and Nasdaq, additional insurance expenses, and expenses related to investor relations activities. These expenses were offset by reduced compensation and benefit expenses resulting from a reduction in headcount during the second half of 2017. We expect selling, general and administrative expenses to increase in future periods as the number of sales, technical support and marketing and administrative personnel grows.

#### *Interest Expense*

Interest expense increased \$0.3 million, or 178.3%, to \$0.4 million for the three months ended September 30, 2018 compared to \$0.1 million for the same period in 2017. The increase in interest expense is related to additional borrowing of convertible notes entered into in February and June of 2018 as well as additional borrowing under the MidCap Financial CSA, entered into in June 2018.

#### *Change in Fair Value of Preferred Stock Warrants*

Change in fair value of preferred stock warrants increased \$1.3 million to \$1.5 million for the three months ended September 30, 2018 compared to \$0.2 million for the same period in 2017. The preferred stock warrants were subject to remeasurement at each reporting period, with changes in fair value recorded in the statement of operations. In connection with the IPO in August 2018, outstanding warrants, previously exercisable for preferred shares, were adjusted to exercisable for common shares, and are therefore not treated as a liability. The liability balance remaining prior to the close of the IPO was reclassified to additional paid-in-capital.

## Comparison of the Nine Months Ended September 30, 2018 and 2017

The following table sets forth our results of operations for the nine months ended September 30, 2018 and 2017:

	Nine Months Ended September 30,		Period-to-Period Change	
	2018	2017	\$	%
Revenues:				
Product revenue	\$ 7,618,407	\$ 6,213,496	\$ 1,404,911	22.6%
Other revenue	368,791	446,424	(77,633)	-17.4%
<b>Total revenue</b>	<b>7,987,198</b>	<b>6,659,920</b>	<b>1,327,278</b>	<b>19.9%</b>
Cost of revenue:				
Cost of product revenue	5,708,704	4,462,365	1,246,339	27.9%
Cost of other revenue	14,507	71,975	(57,468)	-79.8%
<b>Total cost of revenue</b>	<b>5,723,211</b>	<b>4,534,340</b>	<b>1,188,871</b>	<b>26.2%</b>
Operating expense:				
Research and development	6,962,696	9,551,687	(2,588,991)	-27.1%
Selling, general and administrative	9,617,814	10,553,348	(935,534)	-8.9%
<b>Total operating expenses</b>	<b>16,580,510</b>	<b>20,105,035</b>	<b>(3,524,525)</b>	<b>-17.5%</b>
Loss from operations	(14,316,523)	(17,979,455)	3,662,932	-20.4%
Interest expense	(1,114,053)	(431,403)	(682,650)	158.2%
Change in fair value of preferred stock warrants and expirations	3,991,081	1,108,362	2,882,719	260.1%
Other expense	(639,137)	(125,324)	(513,813)	410.0%
Loss before income taxes	(12,078,632)	(17,427,820)	5,349,188	-30.7%
Provision for income taxes	(6,304)	(17,620)	11,316	-64.2%
<b>Net loss</b>	<b>\$ (12,084,936)</b>	<b>\$ (17,445,440)</b>	<b>\$ 5,360,504</b>	<b>-30.7%</b>

### Revenue

Total revenue increased by \$1.3 million, or 19.9%, to \$8.0 million for the nine months ended September 30, 2018, compared to \$6.7 million for the same period in 2017. Instrument ASPs and sales volume both remained flat in the nine months ended September 30, 2018, as compared with the nine months ended September 30, 2017. In June 2018, we began offering bulk discounts on consumables. ASPs of consumables increased by 9% while consumable sales volume increased 142%, respectively, in the nine months ended September 30, 2018, as compared with the nine months ended September 30, 2017.

### Cost of Revenue

Cost of product revenue increased by \$1.2 million, or 27.9%, to \$5.7 million for the nine months ended September 30, 2018 compared to \$4.5 million for the same period in 2017. The increase is attributed to a \$1.3 million expense to write-down the carrying value of Irys instruments on-hand to zero impacting the nine months ended September 30, 2018.

### Research and Development Expenses

Research and development expenses decreased \$2.6 million, or 27.1%, to \$7.0 million for the nine months ended September 30, 2018 compared to \$9.6 million for the same period in 2017. The decrease was primarily related to decreases in compensation and benefit expenses resulting from a reduction in headcount during the second half of 2017. In addition, our transition efforts from research and development to the commercialization of our products began to take place in late 2017, resulting in decreased spending on research and development materials and services for the nine month ended September 30, 2018.

### Selling, General and Administrative Expenses

Selling, general and administrative expenses decreased \$0.9 million, or 8.9%, to \$9.6 million for the nine months ended September 30, 2018 compared to \$10.6 million for the same period 2017. The decrease was primarily related to decreases in compensation and benefit expenses resulting from a reduction in headcount during the second half of 2017, offset by

additional costs associated with being a public company. We expect selling, general and administrative expenses to increase in future periods as the number of sales, technical support and marketing and administrative personnel grows and we continue to broaden our customer base and grow our business. We also expect to incur additional expenses as a public company, including expenses related to compliance with the rules and regulations of the SEC and Nasdaq, additional insurance expenses, and expenses related to investor relations activities and other administrative and professional services.

#### *Interest Expense*

Interest expense increased \$0.7 million, to \$1.1 million compared to \$0.4 million for the same period 2017. The increase in interest expense is related to additional borrowing of convertible notes entered into in February and June of 2018 as well as additional borrowing under the MidCap Financial CSA entered into in June 2018.

#### *Change in Fair Value of Preferred Stock Warrants*

Change in fair value of preferred stock warrants increased \$2.9 million to \$4.0 million for the nine months ended September 30, 2018 compared to \$1.1 million for the same period in 2017. The preferred stock warrants were subject to remeasurement at each reporting period, with changes in fair value recorded in the statement of operations. In connection with the IPO in August 2018, outstanding warrants, previously exercisable for preferred shares, were adjusted to exercisable for common shares, and are therefore not treated as a liability. The liability balance remaining on the date of the close of the IPO was reclassified to additional paid-in-capital.

#### *Other Expense*

Other expense increased \$0.5 million to \$0.6 million for the nine months ended September 30, 2018 as compared to \$0.1 million for the same period 2017. The increase is attributed to financing costs that were incurred when extinguishing the outstanding loan on the Western Alliance LSA prior to its maturing date.

### **Liquidity and Capital Resources**

Since our inception, we have incurred net losses and negative cash flows from operations. We incurred net losses of \$4.9 million, \$5.1 million, \$12.1 million and \$17.4 million for the three months ended September 30, 2018 and 2017 and for the nine months ended September 30, 2018 and 2017, respectively. We used \$15.9 million and \$18.0 million of cash from our operating activities for the nine months ended September 30, 2018 and 2017, respectively. As of September 30, 2018, we have an accumulated deficit of \$66.4 million and cash and cash equivalents of \$20.7 million.

#### **Sources of Liquidity**

Prior to August 2018, we financed our operations principally through private placements of our convertible preferred stock, borrowings from credit facilities, and revenue from our commercial operations.

In August 2018, we completed the IPO, in which we sold 3,864,000 units (each unit consisting of one share of common stock and one warrant to purchase one share of its common stock) at a public offering price of \$6.125 per unit for net cash proceeds of \$19.4 million after deducting underwriters' discounts and commissions of \$2.1 million and other offering expenses of \$2.1 million.

#### *Preferred stock financings*

To date, we have raised approximately \$129.3 million in net equity proceeds through sales of our preferred stock.

#### *Loan facility*

On March 8, 2016, we entered into a new term Loan and Security Agreement with Western Alliance Bank, or the Western Alliance LSA, for \$7.0 million. The loan proceeds were used to repay the outstanding \$5.0 million loan with Square 1 Bank, as required by the amended Loan and Security agreement between Square 1 Bank and us.

In February 2018, the Western Alliance LSA was amended requiring the Company to secure \$21.0 million in funding prior to June 30, 2018. As part of the amendment, Western Alliance Bank agreed to forbear from exercising any of its default remedies set forth in the LSA as a result of our loan default.

On June 13, 2018, the Western Alliance LSA was amended, replacing previously amended funding requirements and requiring the Company to secure \$5.0 million in funding prior to August 3, 2018. Additionally, the amendment restricted the Company's use of all cash collected from customers, received on and after the amendment date, until a total of \$2.5 million of collections. As part of the amendment, Western Alliance Bank waived the existing default.

On June 29, 2018, we entered into a new Credit and Security Agreement with Midcap Financial Trust which provides for a five year \$15 million term loan facility. The Credit and Security Agreement is secured by a lien covering substantially all of our assets, including intellectual property. Upon executing the agreement, we drew down a \$10.0 million term loan from the credit facility. The loan proceeds were used to repay the outstanding \$7.0 million balance on the Western Alliance LSA.

See Note 7 to our consolidated financial statements for a discussion of terms and provisions to the Western Alliance LSA and Midcap Financial CSA.

#### *Note purchase agreement*

On February 9, 2018, we entered into a Note Purchase Agreement with various investors, which included related parties or the Investors, pursuant to which we agreed to sell the Investors 8% Convertible Promissory Notes, or the Convertible Notes, in the original principal amount up to approximately \$16.0 million. On April 2, 2018, we amended the Note Purchase Agreement to, among other things, increase the principal amount available for issuance under the Note Purchase Agreement to approximately \$18.4 million. In addition, in connection with the Midcap Financial CSA, we again amended the Note Purchase Agreement to increase the amount available for issuance under the Note Purchase Agreement to approximately \$19.4 million. The Convertible Notes had a maturity date of September 30, 2018 and were convertible either into our common stock or preferred stock, dependent on the conversion events as described in Note 12 to our consolidated financial statements.

In August 2018 the outstanding convertible promissory notes of \$14,329,843 and accrued interest was converted into 3,239,294 shares of common stock upon completion of the IPO.

#### **Cash Flows**

The following table sets forth the cash flow from operating, investing and financing activities for the periods presented:

	<b>Nine Months Ended September 30,</b>	
	<b>2018</b>	<b>2017</b>
<b>Net cash provided by (used in):</b>		
Operating activities	\$ (15,853,679)	\$ (18,008,789)
Investing activities	(319,885)	(736,063)
Financing activities	35,808,706	16,133,264

#### *Operating Activities*

We derive cash flows from operations primarily from the sale of our products and services. Our cash flows from operating activities are also significantly influenced by our use of cash for operating expenses to support the growth of our business. We have historically experienced negative cash flows from operating activities as we have developed our technology, expanded our business and built our infrastructure and this may continue in the future.

Net cash used in operating activities was \$15.9 million during the nine months ended September 30, 2018 as compared to \$18.0 million during the nine months ended September 30, 2017. The decrease in cash used in operating activities of \$2.1 million was mostly the result of lower compensation and benefits resulting from the second half of 2017 reduction in force, an increase in revenues, and lower cost of revenue for the nine months ended September 30, 2018 compared to the same period 2017.

### *Investing Activities*

Historically, our primary investing activities have consisted of capital expenditures for the purchase of capital equipment to support our expanding infrastructure. We expect to continue to incur additional costs for capital expenditures related to these efforts in future periods.

Net cash used in investing activities was \$0.3 million during the nine months ended September 30, 2018 as compared to \$0.7 million during the nine months ended September 30, 2017.

### *Financing Activities*

Historically, we have financed our operations principally through private placements of our convertible preferred stock and promissory notes and borrowings from credit facilities, as well as gross profits from our commercial operations. In August 2018, we completed the IPO.

Net cash provided by financing activities was \$35.8 million during the nine months ended September 30, 2018 as compared to \$16.1 million during the nine months ended September 30, 2017, an increase of \$19.7 million. During the nine months ended September 30, 2018 we had net proceeds from the issuance of convertible notes of \$14.3 million, IPO net proceeds of \$19.4 million, and net debt proceeds (net of payments outstanding loan) of \$2.0 million. During the same period 2017, we had net proceeds from the issuance preferred stock and warrants of \$16.1 million.

### **Capital Resources**

We have not achieved profitability since our inception, and we expect to continue to incur net losses in the future. We also expect that our operating expenses will increase as we continue to increase our marketing efforts to drive adoption of our commercial products. Additionally, as a public company, we will incur significant audit, legal and other expenses that we did not incur as a private company. Our liquidity requirements have historically consisted, and we expect that they will continue to consist, of sales and marketing expenses, research and development expenses, working capital, debt service and general corporate expenses.

We believe that the net proceeds received from the IPO, together with our cash generated from commercial sales and our current cash and cash equivalents, including the proceeds from our recent financings, will be sufficient to meet our anticipated operating cash requirements for at least the next 15 months. We have based this belief on the following factors with respect to our anticipated operating cash requirements during the next 15 months:

- our expectation that our revenues during the next 15 months will be significantly higher than our historical revenues, due in part to the continued high rate of growth of instrument and consumables sales, which given our customers' recurring consumables purchasing patterns and our growing installed base of instruments, is expected to continue;
- our expectation that our gross margins during the next 15 months will be significantly higher than our historical gross margins, due in part to our projection that a larger proportion of our total revenues will be derived from higher-margin consumables sales relative to instrument sales; and
- our expectation that our research and development expenses and certain general and administration expenses during the next 15 months will be lower, or will grow at a significantly reduced rate, relative to prior periods due in part to a reduction in personnel in late 2017 and a significant reduction in the number, size and scope of research projects and product development initiatives.

In the future, we expect our operating and capital expenditures to increase as we increase headcount, expand our sales and marketing activities and grow our customer base. Our estimates of the period of time through which our financial resources will be adequate to support our operations and the costs to support research and development and our sales and marketing activities are forward-looking statements and involve risks and uncertainties and actual results could vary materially and negatively as a result of a number of factors, including the factors discussed in the section "Risk Factors" of the Prospectus. We have based our estimates on assumptions that may prove to be wrong and we could utilize our available capital resources sooner than we currently expect. Our future funding requirements will depend on many factors, including:

- market acceptance of our products;
- the cost and timing of establishing additional sales, marketing and distribution capabilities;



- the cost of our research and development activities; and
- the effect of competing technological and market developments.

We cannot assure you that we will be able to obtain additional funds on acceptable terms, or at all. If we raise additional funds by issuing equity or equity-linked securities, our stockholders may experience dilution. Future debt financing, if available, may involve covenants restricting our operations or our ability to incur additional debt. Any debt or equity financing that we raise may contain terms that are not favorable to us or our stockholders. If we do not have or are not able to obtain sufficient funds, we may have to reduce our commercialization efforts or delay our development of new products. We also may have to reduce marketing, customer support or other resources devoted to our products or cease operations.

#### **Off-Balance Sheet Arrangements**

We did not have during the periods presented, and we do not currently have, any off-balance sheet arrangements, as defined under SEC rules, and similarly did not and do not have any holdings in variable interest entities.

#### **Critical Accounting Policies and Estimates**

Our management's discussion and analysis of our financial condition and results of operations is based on our consolidated financial statements, which have been prepared in accordance with generally accepted accounting principles in the United States. The preparation of our consolidated financial statements requires us to make estimates and assumptions that affect the reported amounts of assets, liabilities and expenses and the disclosure of contingent assets and liabilities in our consolidated financial statements and accompanying notes. We evaluate these estimates and judgments on an ongoing basis. We base our estimates on 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.

There were no material changes in our critical accounting policies and estimates during the three months ended September 30, 2018.

#### **Recent Accounting Pronouncements**

See Note 2 to our condensed consolidated financial statements included elsewhere in this Quarterly Report on Form 10-Q for information concerning recent accounting pronouncements.

### **ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK**

As a smaller reporting company, we are not required to provide the information required by this Item.

### **ITEM 4. CONTROLS AND PROCEDURES**

#### **Evaluation of Disclosure Controls and Procedures**

We maintain "disclosure controls and procedures," as defined in Rule 13a-15(e) and Rule 15d-15(e) under the Securities Exchange Act of 1934, as amended, or the Exchange Act. Disclosure controls and procedures are controls and other procedures designed to ensure that the information required to be disclosed by us in the reports that we file or submit under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in the SEC's rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is accumulated and communicated to our management, including our principal executive officer and our principal financial officer, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure.

As of September 30, 2018, our management, with the participation of our principal executive officer and principal financial officer, evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities and Exchange Act of 1934). Our management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives, and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures.

Our principal executive officer and principal financial officer have concluded, based upon the evaluation described above, that as of September 30, 2018 our disclosure controls and procedures were effective at the reasonable assurance level.

## **PART II. OTHER INFORMATION**

### **ITEM 1. LEGAL PROCEEDINGS**

None.

### **ITEM 1A. RISK FACTORS**

There have been no material changes to the risk factors previously disclosed under the heading “Risk Factors” in our final prospectus dated August 21, 2018, filed with the Securities and Exchange Commission, or the SEC, on August 22, 2018, relating to our Registration Statement on Form S-1, as amended, originally filed with the SEC on June 28, 2018 (File No. 333-225970).

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

#### **Unregistered Sales of Equity Securities**

None.

#### **Use of Proceeds**

On August 20, 2018, our Registration Statement on Form S-1 (File No. 333-225970) relating to the initial public offering of our common stock was declared effective by the SEC. In our initial public offering, we sold an aggregate of 3,864,000 million units (each unit consisting of one share of our common stock and one warrant to purchase one share of our common stock) at a public offering price of \$6.125 per unit for gross proceeds of \$23.7 million. After deducting underwriting discounts, commissions and all other offering costs incurred by us of \$4.3 million, the net proceeds from the offering were \$19.4 million. Roth Capital Partners served as the managing underwriter. No offering costs were paid or are payable, directly or indirectly, to our directors or officers, to persons owning 10% or more of any class of our equity securities, or to any of our affiliates.

There has been no material change in the expected use of the net proceeds from our IPO as described in our final prospectus filed with the SEC on August 22, 2018 pursuant to Rule 424(b) under the Securities Act of 1933, as amended. Through the date hereof, we have used approximately \$6.0 million of the net proceeds from the offering. Pending such uses, we plan to continue investing the unused proceeds from this offering in fixed, non-speculative income instruments.

### **ITEM 3. DEFAULTS UPON SENIOR SECURITIES**

None.

### **ITEM 4. MINE SAFETY DISCLOSURES**

None.

### **ITEM 5. OTHER INFORMATION**

Effective November 5, 2018, Han Cao, Ph.D. is no longer serving as our Chief Scientific Officer.

**ITEM 6. EXHIBITS**

<b>Exhibit Number</b>	<b>Description</b>
3.1(1)	<a href="#"><u>Amended and Restated Certificate of Incorporation.</u></a>
3.2(2)	<a href="#"><u>Amended and Restated Bylaws.</u></a>
4.1(3)	<a href="#"><u>Form of Common Stock Certificate.</u></a>
4.2(4)	<a href="#"><u>Form of Warrant to Purchase Series B Preferred Stock issued to Square 1 Bank.</u></a>
4.3(5)	<a href="#"><u>Form of Warrant to Purchase Series B-1 Preferred Stock issued to Square 1 Bank.</u></a>
4.4(6)	<a href="#"><u>Form of Warrant to Purchase Series B-1 Preferred Stock issued to investors.</u></a>
4.5(7)	<a href="#"><u>Form of Warrant to Purchase Series D Preferred Stock issued to Western Alliance Bank.</u></a>
4.6(8)	<a href="#"><u>Form of Warrant to Purchase Series D Preferred Stock issued to investors.</u></a>
4.7(9)	<a href="#"><u>Warrant to Purchase Series D-1 Preferred Stock issued to Western Alliance Bank.</u></a>
4.8(10)	<a href="#"><u>Form of Warrant to Purchase Series D-1 Preferred Stock issued to Midcap Financial Trust.</u></a>
4.9(11)	<a href="#"><u>Form of Warrant to Purchase Common Stock issued to underwriters.</u></a>
31.1	<a href="#"><u>Certification of Chief Executive Officer pursuant to Rules 13a-14 and 15d-14 promulgated pursuant to the Securities Exchange Act of 1934, as amended.</u></a>
31.2	<a href="#"><u>Certification of Chief Financial Officer pursuant to Rules 13a-14 and 15d-14 promulgated pursuant to the Securities Exchange Act of 1934, as amended.</u></a>
32.1*	<a href="#"><u>Certification of Principal Executive Officer and Principal Financial Officer pursuant to Rule 13a-14(b) or 15d-14(b) of the Securities Exchange Act of 1934, as amended, and 18 U.S.C. Section 1350.</u></a>
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) Previously filed as Exhibit 3.1 to the Company's Current Report on Form 8-K, filed with the Securities and Exchange Commission on August 24, 2018, and incorporated herein by reference.
- (2) Previously filed as Exhibit 3.2 to the Company's Current Report on Form 8-K, filed with the Securities and Exchange Commission on August 24, 2018, and incorporated herein by reference.
- (3) Previously filed as Exhibit 4.1 to Amendment No. 2 to the Company's Registration Statement on Form S-1 (File No. 333-225970), filed with the Securities and Exchange Commission on July 17, 2018, and incorporated herein by reference.
- (4) Previously filed as Exhibit 4.2 to the Company's Registration Statement on Form S-1 (File No. 333-225970), filed with the Securities and Exchange Commission on June 28, 2018, and incorporated herein by reference.
- (5) Previously filed as Exhibit 4.3 to the Company's Registration Statement on Form S-1 (File No. 333-225970), filed with the Securities and Exchange Commission on June 28, 2018, and incorporated herein by reference.
- (6) Previously filed as Exhibit 4.4 to the Company's Registration Statement on Form S-1 (File No. 333-225970), filed with the Securities and Exchange Commission on June 28, 2018, and incorporated herein by reference.
- (7) Previously filed as Exhibit 4.5 to the Company's Registration Statement on Form S-1 (File No. 333-225970), filed with the Securities and Exchange Commission on June 28, 2018, and incorporated herein by reference.
- (8) Previously filed as Exhibit 4.6 to the Company's Registration Statement on Form S-1 (File No. 333-225970), filed with the Securities and Exchange Commission on June 28, 2018, and incorporated herein by reference.

- (9) Previously filed as Exhibit 4.7 to the Company's Registration Statement on Form S-1 (File No. 333-225970), filed with the Securities and Exchange Commission on June 28, 2018, and incorporated herein by reference.
- (10) Previously filed as Exhibit 4.8 to Amendment No. 1 to the Company's Registration Statement on Form S-1 (File No. 333-225970), filed with the Securities and Exchange Commission on July 13, 2018, and incorporated herein by reference.
- (11) Previously filed as Exhibit 4.9 to Amendment No. 2 to the Company's Registration Statement on Form S-1 (File No. 333-225970), filed with the Securities and Exchange Commission on July 17, 2018, and incorporated herein by reference.
- \* This certification is deemed not filed for purpose of section 18 of 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 or the Exchange Act.

**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.

BIONANO GENOMICS, INC.

Date: November 7, 2018

By: /s/ R. Erik Holmlin, Ph.D.  
R. Erik Holmlin, Ph.D.  
President and Chief Executive Officer  
(Principal Executive Officer)

Date: November 7, 2018

By: /s/ Mike Ward  
Mike Ward  
Chief Financial Officer  
(Principal Financial and Accounting Officer)

**CERTIFICATION**

I, R. Erik Holmlin, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Bionano Genomics, Inc., a Delaware corporation (the “registrant”);
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)) 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) 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
  - (c) 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 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: November 7, 2018

/s/ R. Erik Holmlin, Ph.D.

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R. Erik Holmlin, Ph.D.

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

**CERTIFICATION**

I, Mike Ward, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Bionano Genomics, Inc., a Delaware corporation (the “registrant”);
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)) 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) 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
  - (c) 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 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: November 7, 2018

/s/ Mike Ward

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Mike Ward  
Chief Financial Officer  
(Principal Financial and Accounting Officer)



## CERTIFICATION

Pursuant to the requirement set forth in Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended, (the "Exchange Act") and 18 U.S.C. Section 1350 as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, R. Erik Holmlin, Chief Executive Officer of Bionano Genomics, Inc., a Delaware corporation (the "Company"), and Mike Ward, Chief Financial Officer of the Company, each hereby certifies that, to the best of his knowledge:

1. the Company's Quarterly Report on Form 10-Q for the period ended September 30, 2018, as filed with the Securities and Exchange Commission on the date hereof (the "Periodic Report"), and to which this Certification is attached as Exhibit 32.1, fully complies with the requirements of Section 13(a) or Section 15(d) of the Exchange Act; and
2. the information contained in the Periodic Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: November 7, 2018

/s/ R. Erik Holmlin, Ph.D.

\_\_\_\_\_  
R. Erik Holmlin, Ph.D.  
President and Chief Executive Officer  
(Principal Executive Officer)

/s/ Mike Ward

\_\_\_\_\_  
Mike Ward  
Chief Financial Officer  
(Principal Financial and Accounting Officer)

*This certification accompanies and is being "furnished" with this Periodic Report, shall not be deemed "filed" by the Company for purposes of Section 18 of the Exchange Act, or otherwise subject to liability under that Section and shall not be deemed to be incorporated by reference into any filing of the Company under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date of this Periodic Report, irrespective of any general incorporation language contained in such filing.*