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SECURITIES & EXCHANGE COMMISSION EDGAR FILING

Avinger Inc

Form: 10-Q

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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, D.C. 20549

FORM 10-Q

(Mark One)

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

For the quarterly period ended June 30, 2018

or

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

For the transition period from to

Commission File Number: 001-36817

AVINGER, INC.

(Exact name of registrant as specified in its charter)

Delaware	**20-8873453**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification Number)

400 Chesapeake Drive
Redwood City, California 94063
(Address of principal executive offices and zip code)

(650) 241-7900
(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 during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☑ No ☐

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

Large accelerated filer ☐	Accelerated filer ☐
Non-accelerated filer ☐	Smaller reporting company ☑
	Emerging growth company ☑

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

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

As of August 9, 2018, the number of outstanding shares of the registrant’s common stock, par value $0.001 per share, was 11,552,052.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Quarterly Report on Form 10-Q contains forward-looking statements concerning our business, operations and financial performance and condition, as well as our plans, objectives and expectations for our business, operations and financial performance and condition. Any statements contained herein that are not statements of historical facts may be deemed to be forward-looking statements. In some cases, you can identify forward-looking statements by terminology such as “anticipate,” “assume,” “believe,” “contemplate,” “continue,” “could,” “due,” “estimate,” “expect,” “goal,” “intend,” “may,” “objective,” “plan,” “predict,” “potential,” “positioned,” “seek,” “should,” “target,” “will,” “would” and other similar expressions that are predictions of or indicate future events and future trends, or the negative of these terms or other comparable terminology. These forward-looking statements include, but are not limited to, statements about:

- the outcome of and expectations regarding our clinical studies, including our INSIGHT trial and plans to conduct further clinical studies;
- our plans to modify our current products, or develop new products, to address additional indications;
- our ability to obtain additional financing through future equity or debt financings;
- the expected timing of 510(k) clearances by FDA for enhanced versions of Pantheris;
- the expected timing of 510(k) submission to FDA, and associated marketing clearances by FDA, for additional versions of Pantheris designed for use in smaller vessels;
- the expected growth in our business and our organization;
- our expectations regarding government and third-party payor coverage and reimbursement, including the ability of Pantheris to qualify for reimbursement codes used by other atherectomy products;
- our ability to continue as a going concern;
- our ability to retain and recruit key personnel, including the continued development of our sales and marketing infrastructure;
- our ability to obtain and maintain intellectual property protection for our products;
- our estimates of our expenses, ongoing losses, future revenue, capital requirements and our needs for, or ability to obtain, additional financing;
- our expectations regarding revenue, cost of revenue, gross margins, and expenses, including research and development and selling, general and administrative expenses;
- our expectations regarding the time during which we will be an emerging growth company under the Jumpstart Our Business Startups Act;
- our ability to identify and develop new and planned products and acquire new products;
- our financial performance;
- our ability to remain in compliance with laws and regulations that currently apply or become applicable to our business, both in the United States and internationally; and
- developments and projections relating to our competitors or our industry.

We believe that it is important to communicate our future expectations to our investors. However, there may be events in the future that we are not able to accurately predict or control and that may cause our actual results to differ materially from the expectations we describe in our forward-looking statements. These forward-looking statements are based on management’s current expectations, estimates, forecasts and projections about our business and the industry in which we operate and management’s beliefs and assumptions and are not guarantees of future performance or development and involve known and unknown risks, uncertainties and other factors that are in some cases beyond our control. As a result, any or all of our forward-looking statements in this Quarterly Report on Form 10-Q may turn out to be inaccurate. Factors that may cause actual results to differ materially from current expectations include, among other things, those listed under “Risk Factors” and elsewhere in this Quarterly Report on Form 10-Q. We urge you to consider these factors carefully in evaluating the forward-looking statements. These forward-looking statements speak only as of the date of this Quarterly Report on Form 10-Q. We assume no obligation to update or revise these forward-looking statements for any reason, even if new information becomes available in the future.

You should not rely upon forward-looking statements as predictions of future events. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee that the future results, levels of activity, performance or events and circumstances reflected in the forward-looking statements will be achieved or occur. Except as required by law, we undertake no obligation to update publicly any forward-looking statements for any reason after the date of this Quarterly Report on Form 10-Q to conform these statements to actual results or to changes in our expectations.

You should read this Quarterly Report on Form 10-Q and the documents that we reference in this Quarterly Report on Form 10-Q and have filed with the United States Securities and Exchange Commission (“SEC”) as exhibits to the Quarterly Report on Form 10-Q with the understanding that our actual future results, levels of activity, performance and events and circumstances may be materially different from what we expect.

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"Avinger," "Pantheris," and "Lumivascular" are trademarks of our company. Our logo and our other trade names, trademarks and service marks appearing in this Quarterly Report on Form 10-Q are our property. Other trade names, trademarks and service marks appearing in this Quarterly Report on Form 10-Q are the property of their respective owners. Solely for convenience, our trademarks and trade names referred to in this Quarterly Report on Form 10-Q appear without the ™ symbol, but those references are not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights, or the right of the applicable licensor to these trademarks and trade names.

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PART I. FINANCIAL INFORMATION

ITEM 1. UNAUDITED FINANCIAL STATEMENTS

AVINGER, INC.
CONDENSED BALANCE SHEETS
(unaudited)
(In thousands, except share and per share data)

	June 30, 2018	December 31, 2017
Assets		
Current assets:		
Cash and cash equivalents	$ 10,144	$ 5,389
Accounts receivable, net of allowance for doubtful accounts of $191 and $146 at June 30, 2018 and December 31, 2017, respectively	1,675	1,127
Inventories	3,651	4,295
Prepaid expenses and other current assets	1,079	640
Total current assets	16,549	11,451
Property and equipment, net	2,098	2,950
Other assets	584	687
Total assets	$ 19,231	$ 15,088
Liabilities and stockholders' equity (deficit)		
Current liabilities:		
Accounts payable	$ 1,373	$ 1,273
Accrued compensation	1,197	863
Accrued expenses and other current liabilities	812	3,597
Borrowings	7,823	44,744
Preferred stock dividends payable	1,246	—
Total current liabilities	12,451	50,477
Other long-term liabilities	188	301
Total liabilities	12,639	50,778
Commitments and contingencies (Note 7)		
Stockholders' equity (deficit):		
Preferred stock issuable in series, par value of $0.001		
Shares authorized: 5,000,000 at June 30, 2018 and December 31, 2017		
Shares issued and outstanding: 43,501 and none at June 30, 2018 and December 31, 2017, respectively	—	—
Common stock, par value of $0.001		
Shares authorized: 100,000,000 at June 30, 2018 and December 31, 2017		

Shares issued and outstanding: 9,305,872 and 833,597 at June 30, 2018 and December 31, 2017, respectively	8	1
Additional paid-in capital	323,991	265,636
Accumulated deficit	(317,407)	(301,327)
Total stockholders' equity (deficit)	6,592	(35,690)
Total liabilities and stockholders' equity (deficit)	$ 19,231	$ 15,088

See accompanying notes.

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AVINGER, INC.
CONDENSED STATEMENTS OF OPERATIONS AND COMPREHENSIVE LOSS
(unaudited)
(In thousands, except per share data)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2018	2017	2018	2017
Revenues	$ 2,058	$ 2,459	$ 3,867	$ 5,950
Cost of revenues	2,169	3,919	3,584	7,994
Gross profit (loss)	(111)	(1,460)	283	(2,044)
Operating expenses:				
Research and development	1,159	3,097	2,936	7,020
Selling, general and administrative	4,204	6,189	8,464	15,507
Restructuring charges	—	519	—	519
Total operating expenses	5,363	9,805	11,400	23,046
Loss from operations	(5,474)	(11,265)	(11,117)	(25,090)
Interest income	50	31	83	63
Interest expense	(362)	(1,571)	(5,034)	(3,121)
Other income (expense), net	(13)	6	(12)	9
Net loss and comprehensive loss	(5,799)	(12,799)	(16,080)	(28,139)
Accretion of preferred stock dividends	(836)	—	(1,246)	—
Deemed dividend arising from beneficial conversion feature of convertible preferred stock	—	—	(5,216)	—
Net loss applicable to common stockholders	$ (6,635)	$ (12,799)	$ (22,542)	$ (28,139)
Net loss per share attributable to common stockholders, basic and diluted	$ (0.98)	$ (21.40)	$ (5.18)	$ (47.13)
Weighted average common shares used to compute net loss per share, basic and diluted	6,755	598	4,354	597

See accompanying notes.

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AVINGER, INC.
CONDENSED STATEMENTS OF CASH FLOWS
(unaudited)
(In thousands)

	Six Months Ended June 30,	
	2018	2017
Cash flows from operating activities		
Net loss	$ (16,080)	(28,139)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	518	854
Amortization of debt issuance costs and debt discount	57	124
Stock-based compensation	1,260	2,877
Noncash interest expense and other charges	5,037	1,083
Common stock to be issued for services	106	—
Provision for doubtful accounts receivable	45	99
Provision for excess and obsolete inventories	528	3,577
Changes in operating assets and liabilities:		
Accounts receivable	(593)	1,981
Inventories	575	(1,925)
Prepaid expenses and other current assets	(439)	(468)
Other assets	104	(39)
Accounts payable	(301)	(457)
Accrued compensation	334	(898)
Accrued expenses and other current liabilities	(2,383)	(640)
Other long-term liabilities and accrued interest	(114)	(340)
Net cash used in operating activities	(11,346)	(22,311)

Cash flows from investing activities		
Purchase of property and equipment	(125)	(45)
Net cash used in investing activities	(125)	(45)
Cash flows from financing activities		
Principal paydown of capital lease obligations	—	(12)
Proceeds from the issuance of convertible preferred stock, net of issuance costs	15,534	—
Proceeds from the issuance of common stock related to warrant exercises	581	—
Proceeds from the issuance of common stock	—	236
Proceeds from public offerings, net of issuance costs	326	—
Payment of debt discount in connection with loan amendment	(155)	—
Payment of accrued interest included in borrowings	(60)	—
Net cash provided by financing activities	16,226	224
Net change in cash	4,755	(22,132)
Cash and cash equivalents, beginning of period	5,389	36,096
Cash and cash equivalents, end of period	$ 10,144	$ 13,964
Supplemental disclosure of cash flow information		
Cash paid for interest	$ 60	$ 2,406
Noncash operating and financing activities:		
Conversion of CRG loan principal into Series A preferred stock	$ 38,000	$ —
Series A preferred stock accrued dividends	$ 1,246	$ —
Deemed dividend arising from beneficial conversion feature of convertible preferred stock	$ 5,216	$ —

See accompanying notes.

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AVINGER, INC.

Notes to Condensed Financial Statements

1. Organization

Organization, Nature of Business

Avinger, Inc. (the "Company"), a Delaware corporation, was incorporated in March 2007. The Company designs, manufactures and sells image-guided, catheter-based systems that are used by physicians to treat patients with peripheral artery disease ("PAD"). Patients with PAD have a build-up of plaque in the arteries that supply blood to areas away from the heart, particularly the pelvis and legs. The Company manufactures and sells a suite of products in the United States ("U.S.") and in select international markets. The Company has developed its Lumivascular platform, which integrates optical coherence tomography ("OCT") visualization with interventional catheters and is the industry's only system that provides real-time intravascular imaging during the treatment portion of PAD procedures. The Company's Lumivascular platform consists of a capital component, Lightbox, as well as a variety of disposable catheter products. The Company's current products include its non-imaging catheters, Wildcat and Kittycat, as well as its Lumivascular platform products, Ocelot, Ocelot PIXL and Ocelot MVRX, all of which are designed to allow physicians to penetrate a total blockage in an artery, known as a chronic total occlusion ("CTO"). In March 2016, the Company also received 510(k) clearance from the U.S. Food and Drug Administration ("FDA") for commercialization of Pantheris, the Company's image-guided atherectomy system, designed to allow physicians to precisely remove arterial plaque in PAD patients. The Company commenced sales of Pantheris in the U.S. and select international markets promptly thereafter. The Company is located in Redwood City, California. In May 2018, the Company also received 510(k) clearance from the FDA for its next generation of Pantheris, Pantheris 3.0.

Liquidity Matters

The accompanying financial statements have been prepared assuming that the Company will continue as a going concern, which contemplates the realization of assets and the satisfaction of liabilities in the normal course of business. The Company adopted Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2014-15*, Presentation of Financial Statements - Going Concern (Subtopic 205-40),* effective December 31, 2016, which requires the Company to make certain disclosures if it concludes that there is substantial doubt about the entity's ability to continue as a going concern within one year from the date of the issuance of these financial statements. The accompanying financial statements have been prepared assuming that the Company will continue as a going concern, which contemplates the realization of assets and the satisfaction of liabilities in the normal course of business.

In the course of its activities, the Company has incurred losses and negative cash flows from operations since its inception. As of June 30, 2018, the Company had an accumulated deficit of approximately $317.4 million. The Company expects to incur losses for the foreseeable future. The Company believes that its cash and cash equivalents of approximately $10.1 million at June 30, 2018 and expected revenues will be sufficient to allow the Company to fund its current operations through approximately December 2018. The Company will seek additional sources of funding in the form of debt financing or equity issuances, however, there can be no assurance that the Company will be successful in acquiring additional funding at levels sufficient to fund its operations. These conditions raise substantial doubt about the Company's ability to continue as a going concern. If the Company is unable to raise additional capital in sufficient amounts or on terms acceptable to it, the Company may have to significantly reduce its operations or delay, scale back or discontinue the development of one or more of its products. The financial statements do not include any adjustments that might result from the outcome of this uncertainty.

The Company's ultimate success will largely depend on its continued development of innovative medical technologies, its ability to successfully commercialize its products and its ability to raise significant additional funding. Additionally, due to the substantial doubt about the Company's ability to continue operating as a going concern and the material adverse change clause in the Loan Agreement with CRG Partners III L.P. and certain of its affiliated funds (collectively "CRG"), the entire amount of borrowings at June 30, 2018 and December 31, 2017 has been classified as current in these financial statements. CRG

has not invoked the material adverse change clause. On November 3, 2017, the Company entered into a purchase agreement with Lincoln Park Capital Fund, LLC ("Lincoln Park"), pursuant to which Lincoln Park is obligated to purchase, at the Company's request, up to $15,000,000 of the Company's common stock over a 30-month period, subject to certain limitations set forth in the agreement (the "Lincoln Park Purchase Agreement"). As a fee for Lincoln Park's commitment to purchase such shares, the Company issued 23,584 shares of common stock to Lincoln Park on November 3, 2017. As obligated under a registration rights agreement entered into with Lincoln Park in connection with the Purchase Agreement, the Company filed a registration statement on Form S-1 on November 6, 2017 for up to 248,750 of such shares, which registration statement was declared effective by the SEC on November 17, 2017. On July 12, 2018, the Company filed a prospectus supplement to offer 2,166,180 shares of its common stock at an offering price of $1.6425 per share, for net proceeds of approximately $3,100,000 after deducting placement agent fees of approximately $285,000 and expenses of approximately $160,000.

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Public Offerings

On February 3, 2016, the Company filed a universal shelf registration statement to offer up to $150,0000 of its securities and entered into an "at-the-market" program pursuant to a Sales Agreement with Cowen and Company ("Cowen"), through which it may, from time to time, issue and sell shares of common stock having an aggregate offering value of up to $50,000,000. The shelf registration statement also covers the resale of the shares sold to CRG in September 2015. The registration statement was declared effective by the SEC on March 8, 2016. During the three and six months ended June 30, 2018 and 2017, the Company sold no shares of common stock through the "at-the-market" program. Due to the SEC's "baby shelf rules," which prohibit companies with a public float of less than $75 million from issuing securities under a shelf registration statement in excess of one-third of such company's public float in a twelve-month period, the Company is unable to issue more shares in its "at-the-market" program at this time.

On February 16, 2018, the Company completed a public offering of 17,979 shares of Series B convertible preferred stock (the "Series B preferred stock"). As a result, the Company received net proceeds of approximately $16.0 million after underwriting discounts, commissions, legal and accounting fees of approximately $1.9 million (Note 8).

Since November 2017, we have sold an aggregate of 65,000 shares of our common stock under the Lincoln Park Purchase Agreement for approximately $0.5 million of gross proceeds. In February 2018, we sold $18.0 million in Series B preferred stock and warrants to purchase our common stock in a registered offering. In July 2018, the Company sold a further 2,166,180 shares of our common stock (excluding warrants to purchase an additional 1,083,091 shares of our common stock issued in a concurrent private placement) pursuant to the Shelf Registration Statement for gross proceeds of approximately $3.5 million.

2. Summary of Significant Accounting Policies

Basis of Presentation

The accompanying unaudited condensed financial statements have been prepared in accordance with United States generally accepted accounting principles ("U.S. GAAP") and pursuant to the rules and regulations of the SEC. The accompanying unaudited condensed interim financial statements have been prepared on the same basis as the annual financial statements and, in the opinion of management, reflect all adjustments, which include only normal recurring adjustments, necessary for a fair statement of the Company's financial information. The results for the three and six months ended June 30, 2018 are not necessarily indicative of results to be expected for the year ending December 31, 2018, or for any other interim period or for any future year. The December 31, 2017 condensed balance sheet data has been derived from audited financial statements. Certain information and footnote disclosures normally included in annual financial statements prepared in accordance with U.S. GAAP have been condensed or omitted pursuant to SEC rules and regulations relating to interim financial statements. These unaudited condensed financial statements and notes should be read in conjunction with the financial statements included in the Company's Form 10-K for the fiscal year ended December 31, 2017, which was filed with the SEC on March 30, 2018. The Company's significant accounting policies are more fully described in Note 2 of the Notes to Financial Statements included in the Company's Annual Report on Form 10-K for the year ended December 31, 2017.

On January 30, 2018, the Company's Board of Directors approved an amendment to the Company's amended and restated certificate of incorporation to effect a 1-for-40 reverse stock split of the Company's common stock. The par value of the common stock and convertible preferred stock was not adjusted as a result of the reverse stock split. All common stock, stock options, restricted stock units and warrants, and per share amounts in the financial statements have been retroactively adjusted for all periods presented to give effect to the reverse stock split. The reverse stock split was effected on January 30, 2018.

Use of Estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the amounts and disclosures reported in the financial statements. Management uses significant judgment when making estimates related to its common stock valuation and related stock-based compensation, the valuation of the common stock warrants, the valuation of compound embedded derivatives, provisions for doubtful accounts receivable and excess and obsolete inventories, clinical trial accruals, and its reserves for sales returns and warranty costs. Management bases its estimates on historical experience and on various other assumptions that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Although these estimates are based on the Company's knowledge of current events and actions it may undertake in the future, actual results may ultimately materially differ from these estimates and assumptions.

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Fair Value of Financial Instruments

The Company has evaluated the estimated fair value of its financial instruments as of June 30, 2018 and December 31, 2017. Financial instruments consist of cash and cash equivalents, accounts receivable and payable, and other current liabilities and borrowings. The carrying amounts of cash and cash equivalents, accounts receivable and payable, and other current liabilities approximate their respective fair values because of the short-term nature of those instruments. Based upon the borrowing terms and conditions currently available to the Company, the carrying values of the borrowings approximate their fair value.

Cash and Cash Equivalents

The Company considers all highly liquid investments with an original maturity of three months or less at the time of purchase to be cash equivalents. Cash equivalents are considered available-for-sale marketable securities and are recorded at fair value, using level 1 inputs, based on quoted market prices. As of June 30, 2018 and December 31, 2017, the Company's cash equivalents are entirely comprised of investments in money market funds. Any related unrealized gains and losses are recorded in other comprehensive income (loss) and included as a separate component of stockholders' equity (deficit). There were no unrealized gains and losses as of June 30, 2018 and December 31, 2017. Any realized gains and losses and interest and dividends on available-for-sale securities are included in interest income or expense and computed using the specific identification cost method.

Concentration of Credit Risk, and Other Risks and Uncertainties

Financial instruments that potentially subject the Company to credit risk consist of cash and cash equivalents and accounts receivable to the extent of the amounts recorded on the balance sheets.

The Company's policy is to invest in cash and cash equivalents, consisting of money market funds. These financial instruments are held in Company accounts at one financial institution. The counterparties to the agreements relating to the Company's investments consist of financial institutions of high credit standing.

The Company provides for uncollectible amounts when specific credit problems arise. Management's estimates for uncollectible amounts have been adequate, and management believes that all significant credit risks have been identified at June 30, 2018 and December 31, 2017.

The Company's accounts receivable are due from a variety of healthcare organizations in the United States and select international markets. At June 30, 2018 and December 31, 2017, there were no customers that represented 10% or more of the Company's accounts receivable. For the three and six months ended June 30, 2018 and 2017, there were no customers that represented 10% or more of revenues. Disruption of sales orders or a deterioration of financial condition of its customers would have a negative impact on the Company's financial position and results of operations.

The Company manufactures its commercial products in-house, including Pantheris and the Ocelot family of catheters. Certain of the Company's product components and sub-assemblies continue to be manufactured by sole suppliers. Disruption in component or sub-assembly supply from these manufacturers or from in-house production would have a negative impact on the Company's financial position and results of operations.

The Company is subject to certain risks, including that its devices may not be approved or cleared for marketing by governmental authorities or be successfully marketed. There can be no assurance that the Company's products will achieve widespread adoption in the marketplace, nor can there be any assurance that existing devices or any future devices can be developed or manufactured at an acceptable cost and with appropriate performance characteristics. The Company is also subject to risks common to companies in the medical device industry, including, but not limited to, new technological innovations, dependence upon third-party payors to provide adequate coverage and reimbursement, dependence on key personnel and suppliers, protection of proprietary technology, product liability claims, and compliance with government regulations.

Existing or future devices developed by the Company may require approvals or clearances from the FDA or international regulatory agencies. In addition, in order to continue the Company's operations, compliance with various federal and state laws is required. If the Company were denied or delayed in receiving such approvals or clearances, it may be necessary to adjust operations to align with the Company's currently approved portfolio. If clearance for the products in the current portfolio were withdrawn by the FDA, this may have a material adverse impact on the Company.

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Revenue Recognition

The Company's revenues are derived from (1) sale of Lightboxes, (2) sale of disposables, which consist of catheters and accessories, and (3) service revenue. The Company sells its products directly to hospitals and medical centers as well as through distributors. The Company accounts for a contract with a customer when there is a legally enforceable contract between the Company and the customer, the rights of the parties are identified, the contract has commercial substance, and collectability of the contract consideration is probable. The Company's revenues are measured based on consideration specified in the contract with each customer, net of any sales incentives and taxes collected from customers that are remitted to government authorities. For all sales, the Company uses either a signed agreement or a binding purchase order as evidence of an arrangement. The Company's revenue recognition policies generally result in revenue recognition at the following points:

1. Lightbox sales: The Company sells its products directly to hospitals and medical centers. Provided all other criteria for revenue recognition have been met, the Company recognizes revenue for Lightbox sales directly to end customers when delivery and acceptance occurs, which is defined as receipt by the Company of an executed form by the customer acknowledging that the training and installation process is complete.

2. Sales of disposables: Disposable revenues consist of sales of the Company's catheters and accessories and are recognized when the product has shipped, risk of loss and title has passed to the customer and collectability is reasonably assured.

3. Service revenue: Service contract revenue is recognized ratably over the term of the service period and maintenance contract revenue is recognized as work is performed. To date, service revenue has been insignificant.

The Company offers its customers the ability to purchase or lease its Lightbox. In addition, the Company provides a Lightbox under a limited commercial evaluation program to allow certain strategic accounts to install and utilize the Lightbox for a limited trial period of three to six months. When a Lightbox is placed under a lease agreement or under a commercial evaluation program, the Company retains title to the equipment and it remains capitalized on its balance sheet under property and equipment. Depreciation expense on these placed Lightboxes is recorded to cost of revenues on a straight-line basis. The costs to maintain these placed Lightboxes are charged to cost of revenues as incurred.

The Company evaluates its lease and commercial evaluation program agreements and accounts for these contracts under the guidance in Accounting Standards Codification ("ASC") 840, *Leases* and ASU No. 2014 09, *Revenue from Contracts with Customers (Topic 606)* . The guidance requires arrangement consideration to be allocated between a lease deliverable and a non-lease deliverable based upon the relative selling-price of the deliverables, using a specific hierarchy. The hierarchy is as follows: vendor-specific objective evidence of fair value of the respective elements, third-party evidence of selling price, or best estimate of selling price ("BESP"). The Company allocates arrangement consideration using BESP.

The Company assessed whether the embedded lease is an operating lease or sales-type lease. Based on the Company's assessment of the guidance

and given that any payments under the lease agreements are dependent upon contingent future sales, it was determined that collectability of the minimum lease payments is not reasonably predictable. Accordingly, the Company concluded the embedded lease did not meet the criteria of a sales-type lease and accounts for it as an operating lease. The Company recognizes revenue allocated to the lease as the contingent disposable product purchases are delivered and are included in revenues within the statement of operations and comprehensive loss.

For sales through distributors, the Company recognizes revenue when title to the product and the risk of loss transfers from the Company to the distributor. The distributors are responsible for all marketing, sales, training and warranty in their respective territories. The standard terms and conditions contained in the Company's distribution agreements do not provide price protection or stock rotation rights to any of its distributors. In addition, its distributor agreements do not allow the distributor to return or exchange products, and the distributor is obligated to pay the Company upon invoice regardless of its ability to resell the product.

The Company estimates reductions in revenue for potential returns of products by customers. In making such estimates, management analyzes historical returns, current economic trends and changes in customer demand and acceptance of its products. The Company expenses shipping and handling costs as incurred and includes them in the cost of revenues. In those cases where the Company bills shipping and handling costs to customers, it will classify the amounts billed as a component of revenue.

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Cost of Revenues

Cost of revenues consists primarily of manufacturing overhead costs, material costs and direct labor. A significant portion of the Company's cost of revenues currently consists of manufacturing overhead costs. These overhead costs include the cost of quality assurance, material procurement, inventory control, facilities, equipment and operations supervision and management. Cost of revenues also includes depreciation expense for the Lightboxes under lease agreements and certain direct costs such as shipping costs.

Product Warranty Costs

The Company typically offers a one-year warranty for parts and labor on its products commencing upon the transfer of title and risk of loss to the customer. The Company accrues for the estimated cost of product warranties upon invoicing its customers, based on historical results. Warranty costs are reflected in the statement of operations and comprehensive loss as a cost of revenues. The warranty obligation is affected by product failure rates, material usage and service delivery costs incurred in correcting a product failure. Should actual product failure rates, material usage or service delivery costs differ from these estimates, revisions to the estimated warranty liability would be required. Periodically the Company assesses the adequacy of its recorded warranty liabilities and adjusts the amounts as necessary. Warranty provisions and claims are summarized as follows (in thousands):

	Amount
Balance at December 31, 2017	$ (390)
Warranty provision	(54)
Usage/Release	8
Balance at June 30, 2018	$ (436)

Net Loss per Share Attributable to Common Stockholders

Basic net loss per share attributable to common stockholders is computed by dividing the net loss attributable to common stockholders by the weighted average number of shares of common stock outstanding during the period, without consideration for potential dilutive common shares. Diluted net loss per share attributable to common stockholders is computed by dividing the net loss attributable to common stockholders by the weighted average number of shares of common stock and dilutive potential shares of common stock outstanding during the period. Any common stock shares subject to repurchase are excluded from the calculations as the continued vesting of such shares is contingent upon the holders' continued service to the Company. As of June 30, 2018 and 2017, there were no shares subject to repurchase. Since the Company was in a loss position for all periods presented, basic net loss per share attributable to common stockholders is the same as diluted net loss per share attributable to common stockholders as the inclusion of all potentially dilutive common shares would have been anti-dilutive.

Net loss per share attributable to common stockholders was determined as follows (in thousands, except per share data):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2018	2017	2018	2017
Net loss attributable to common stockholders	$ (6,635)	$ (12,799)	$ (22,542)	$ (28,139)
Weighted average common stock outstanding	6,755	598	4,354	597
Net loss per share attributable to common stockholders, basic and diluted	$ (0.98)	$ (21.40)	$ (5.18)	$ (47.13)

The following potentially dilutive securities outstanding have been excluded from the computations of diluted weighted average shares outstanding because such securities have an anti-dilutive impact due to losses reported:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2018	2017	2018	2017
Common stock warrants	18,032,715	53,803	17,742,215	53,803
Common stock options	55,862	112,259	84,842	101,601
Preferred stock	52,762	—	43,501	—
Unvested restricted stock units	3,457	11,115	3,306	8,799
	18,144,796	177,177	17,873,864	164,203

Segment and Geographical Information

The Company operates and manages its business as one reportable and operating segment. The Company's chief executive officer, who is the chief operating decision maker, reviews financial information on an aggregate basis for purposes of allocating resources and evaluating financial performance. Primarily all of the Company's long-lived assets are based in the United States. Long-lived assets are comprised of property and equipment. For the three months ended June 30, 2018 and 2017, 95% and 96%, respectively, of the Company's revenues were in the United States based on the shipping location of the external customer. For the six months ended June 30, 2018 and 2017, 93% and 96%, respectively, of the Company's revenues were in the United States based on the shipping location of the external customer.

Recent Accounting Pronouncements

Adopted:

In May 2014, the FASB issued ASU No. 2014-09, *Revenue from Contracts with Customers (Topic 606)*, which supersedes the revenue recognition requirements in ASC 605, *Revenue Recognition*. This ASU is based on the principle that revenue is recognized to depict the transfer of goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. The ASU also requires additional disclosure about the nature, amount, timing and uncertainty of revenue and cash flows arising from customer contracts, including significant judgments and changes in judgments and assets recognized from costs incurred to obtain or fulfill a contract. In August 2015, FASB issued ASU No. 2015-14, *Revenue from Contracts with Customers (Topic 606): Deferral of the Effective Date*, which effectively delayed the adoption date by one year, to an effective date for public entities for annual and interim periods beginning after December 15, 2017.

In March 2016, the FASB issued ASU No. 2016-08, "Revenue from Contracts with Customers (Topic 606)": Principal Versus Agent Considerations (Reporting Revenue Gross Versus Net), to clarify certain aspects of the principal-versus-agent guidance in its new revenue recognition standard.

In April 2016, the FASB issued ASU No. 2016-10, "Revenue from Contracts with Customers (Topic 606)": Identifying Performance Obligations and Licensing to clarify how to identify the performance obligations and the licensing implementation guidance in its new revenue recognition standard.

In May 2016, the FASB issued ASU No. 2016-12, "Revenue from Contracts with Customers (Topic 606)": Narrow-Scope Improvements and Practical Expedients, to address certain issues identified by the Transition Resource Group, (the "TRG") in the guidance on assessing collectability, presentation of sales tax, noncash consideration, and completed contracts and contracts modifications at transition.

In May 2017, the FASB issued ASU No. 2017-09, *Compensation—Stock Compensation (Topic 718): Scope of Modification Accounting* which provides guidance on determining which changes to the terms and conditions of share-based payment awards require an entity to apply modification accounting under Topic 718. The amendments in this ASU should be applied prospectively to an award modified on or after the adoption date. The Company adopted this guidance on January 1, 2018 and such adoption did not have a material impact on the Company's condensed financial statements.

During the three months ended March 31, 2018, the Company adopted ASC 606, using the modified retrospective approach. The adoption did not have a material impact on the Company's financial statements

Pending Adoption:

In February 2016, the FASB issued ASU No. 2016-02 *Leases* (Topic 842). Topic 842 amends a number of aspects of lease accounting, including requiring lessees to recognize leases with a term greater than one year as a right-of-use asset and corresponding liability, measured at the present value of the lease payments. In July, the FASB issued supplemental adoption guidance and clarification to Topic 842 within ASU 2018-10 *Codification Improvements to Topic 842,* Leases and ASU 2018-11 *Leases (Topic 842): Targeted Improvements*. The guidance will become effective for us beginning in the first quarter of 2019 and is required to be adopted using a modified retrospective approach. Early adoption is permitted.

As we continue to evaluate the impact of the adoption of these standards, we anticipate recognition of additional assets and corresponding liabilities related to leases on our Condensed Balance Sheets with no material impact to our Condensed Statements of Income. We plan to adopt these standards using the modified retrospective approach with the cumulative effect of adoption recognized to retained earnings on January 1, 2019. We plan to elect the practical expedients upon transition that will retain the lease classification and initial direct costs for any leases that existed prior to the adoption of these new standards. We will not reassess whether any contracts entered into prior to the adoption are leases.

In June 2018, the FASB issued ASU 2018-07, *"Compensation-Stock Compensation (Topic 718): Improvements to Nonemployee Share-Based Payment Accounting"*, which expands the scope of Topic 718 to include share based payment transactions for acquiring goods and services from nonemployees and applies to all share-based payment transactions in which a grantor acquires goods or services to be used or consumed in a grantor's own operations by issuing share-based payment awards. Topic 718 does not apply to share-based payments used to effectively provide (1) financing to the issuer or (2) awards granted in conjunction with selling goods or services to customers as part of a contract accounted for under Topic 606. This update is effective for public business entities for fiscal years beginning after December 15, 2018, including interim periods within that fiscal year. Early adoption is permitted, but no earlier than an entity's adoption date of Topic 606. The Company is evaluating the effect that this update will have on its condensed financial statements and related disclosures.

3. Fair Value Measurements

The Company measures certain financial assets and liabilities at fair value on a recurring basis. Fair value is 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 a liability. A three-tier fair value hierarchy is established as a basis for considering such assumptions and for inputs used in the valuation methodologies in measuring fair value:

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

Level 2—Inputs other than quoted prices included within Level 1 that are observable, either directly or indirectly, such as quoted prices for similar assets

or liabilities; quoted prices in markets that are not active; or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.

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

As of June 30, 2018 and December 31, 2017, cash equivalents were all categorized as Level 1 and consisted of money market funds. As of June 30, 2018 and December 31, 2017, there were no financial assets and liabilities categorized as Level 2 or 3. There were no transfers between fair value hierarchy levels during the three and six months ended June 30, 2018 and 2017.

4. Inventories

Inventories consisted of the following (in thousands):

	June 30, 2018	December 31, 2017
Raw materials	$ 76	$ 1,286
Work-in-process	300	—
Finished products	3,275	3,009
Total inventories	$ 3,651	$ 4,295

5. Borrowings

CRG

On September 22, 2015, the Company entered into a Term Loan Agreement (the "Loan Agreement") with CRG under which, subject to certain conditions, the Company had the right to borrow up to $50,000,000 in principal amount from CRG on or before March 29, 2017. The Company borrowed $30,000,000 on September 22, 2015. The Company borrowed an additional $10,000,000 on June 15, 2016 under the Loan Agreement. The Company would have been eligible to borrow an additional $10,000,000, on or prior to March 29, 2017, upon achievement of certain revenue milestones, among other conditions, but those milestones were not achieved.

On October 28, 2016, the Company and CRG amended the Loan Agreement to reduce the minimum revenue that the Company was required to achieve in 2016 to $18,000,000. On February 14, 2018, the Company and CRG further amended the Loan Agreement concurrent with the conversion of $38,000,000 of the principal amount of the senior secured term loan (plus $3,800,000 in back-end fees and prepayment premium applicable thereto) into a newly authorized Series A convertible preferred stock (see Note 8, below). For the six months ended June 30, 2018, the $3,800,000 was accounted for in the condensed statement of operations and comprehensive loss as interest expense.

Under the Loan Agreement, as in effect prior to amendment, the first sixteen quarterly payments were to be interest only payments, and the last eight quarterly payments were to be equal installments in which interest and principal amounts would be paid. Interest is calculated at a fixed rate of 12.5% per annum. The Company makes quarterly payments of interest only in arrears commencing on September 30, 2015. During the interest only period, the Company had the right to elect to make the 12.5% interest payment by making a cash payment for 8.5% per annum of interest and making a payment-in-kind ("PIK") for the remaining amount, for which the 4.0% per annum of interest would be added to the outstanding principal amount of the borrowings. To date, the Company has elected the PIK interest option to the extent available and has made a cash payment for the remaining amount. Principal is repayable in eight equal quarterly installments during the final two years of the term. Under the original Loan Agreement, all unpaid principal, and accrued and unpaid interest, was to be due and payable in full on September 30, 2021.

The Company may voluntarily prepay the borrowings in full, with a prepayment premium beginning at 5.0% and declining by 1.0% annually thereafter, with no premium being payable if prepayment occurs after the fifth year of the loan. Each tranche of borrowing required the payment, on the borrowing date, of a financing fee equal to 1.5% of the borrowed loan principal, which is recorded as a discount to the debt. In addition, a facility fee equal to 7.0% of the amounts borrowed plus any PIK was to be payable at the end of the term or when the borrowings are repaid in full. A long-term liability is being accreted using the effective interest

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method for the facility fee over the term of the Loan Agreement with a corresponding discount to the debt. The borrowings are collateralized by a security interest in substantially all of the Company's assets. The Loan Agreement requires that the Company adheres to certain affirmative and negative covenants, including financial reporting requirements, certain minimum financial covenants for pre-specified liquidity and revenue requirements and a prohibition against the incurrence of indebtedness, or creation of additional liens, other than as specifically permitted by the terms of the Loan Agreement. In particular, the covenants of the original Loan Agreement included a covenant that the Company maintain a minimum of $5,000,000 of cash and certain cash equivalents, and the Company had to achieve minimum revenue of $7,000,000 in 2015, $23,000,000 in 2016, $40,000,000 in 2017, $50,000,000 in 2018, $60,000,000 in 2019 and $70,000,000 in 2020 and in each year thereafter, as applicable. On October 28, 2016, the Company amended the terms of the Loan Agreement, to reduce the minimum revenue that the Company must achieve in 2016 to $18,000,000. If the Company fails to meet the applicable minimum revenue target in any calendar year, the Loan Agreement provides the Company with a cure right if it prepays a portion of the outstanding principal equal to 2.0 times the revenue shortfall. In addition, the Loan Agreement prohibits the payment of cash dividends on the Company's capital stock and also places restrictions on mergers, sales of assets, investments, incurrence of liens, incurrence of indebtedness and transactions with affiliates. CRG may accelerate the payment terms of the Loan Agreement upon the occurrence of certain events of default set forth therein, which include the failure of the Company to make timely payments of amounts due under the Loan Agreement, the failure of the Company to adhere to the covenants set forth in the Loan Agreement, the insolvency of the Company or upon the occurrence of a material adverse change.

On December 14, 2017, the Company entered into a waiver and consent agreement (the "Waiver and Consent") with CRG. The Waiver and Consent provided for the waiver of the minimum required revenue financial covenant for the twelve-month period beginning January 1, 2017, as required under the terms of the Loan Agreement. Pursuant to the Waiver and Consent, CRG also consented to the Company's payment of the cash interest payment due on December 31, 2017 in the form of a PIK loan instead. On January 24, 2018, we entered into a waiver agreement (the "Waiver") with CRG. The Waiver provided for the waiver of the $5,000,0000 minimum liquidity financial covenant and reduced it to $2,500,000 for the period beginning January 1, 2018 through February 28, 2018, as required under the terms of the Loan Agreement and waived any event of default resulting from non-compliance with the $5,000,000 minimum liquidity financial covenant.

On February 14, 2018, the Company entered into Amendment No. 2 to the Loan Agreement to, among other things:

- extend the interest only payment period and the period during which the Company may elect to pay a portion of the interest in PIK interest payments through June 30, 2021;
- provide for a 15% facility fee to be paid on the maturity date;
- permit the Company to make the entire interest payment for payment dates in 2018 and 2019 in PIK interest payments, provided no default has occurred and is continuing;
- extend the maturity date to June 30, 2023;
- modify certain of the covenants, including the indebtedness covenant, lien covenant and restricted payments covenant, to eliminate or modify permitted exceptions to the restrictions in those covenants;
- modify the financial covenants to reduce the minimum liquidity requirement to $3,500,000 at all times, to eliminate the minimum revenue requirements for 2018 and 2019, and to reduce the minimum revenue requirements to $15,000,000 million for 2020, $20,000,000 for 2021 and $25,000,000 for 2022; and
- provide CRG with board observer rights.

As of June 30, 2018, the Company was in compliance with all applicable covenants under the Loan Agreement.

As of June 30, 2018, principal and PIK payments under the Loan Agreement were as follows (in thousands):

Period Ending June 30,	Principal and PIK Loan Repayments
2018	$ —
2019	—
2020	—
2021	—
2022 and after	2,000
	2,000
Add: Accretion of closing fees	994
Add: PIK	5,645
	8,639
Less: Amount representing debt financing costs	(816)
Borrowings, as of June 30, 2018	$ 7,823

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Contemporaneously with the execution of the Loan Agreement in September 2015, the Company entered into a Securities Purchase Agreement (the "CRG Purchase Agreement") with CRG which allowed it to purchase up to $5,000,000 of the Company's common stock. CRG purchased 8,705 shares of common stock on September 22, 2015 at a price of $559.64 per share, which is the 10-day average of closing prices of the Company's common stock ending on September 21, 2015. The closing price on September 22, 2015 was $558.80 yielding a $0.84 per share premium. Both the premium and the issuance costs were allocated to the borrowings under Loan Agreement and the common stock purchase under the CRG Purchase Agreement based on the relative fair values of each security. The portion of the premium allocated to the borrowings is being amortized over the term of the Loan Agreement. Pursuant to the CRG Purchase Agreement, the Company filed a shelf registration statement covering, among other things, the resale of the shares sold to CRG and must comply with certain affirmative covenants during the time that such registration statement remains in effect.

In connection with the initial drawdown under the Loan Agreement, the Company recorded a debt discount of $876,000 as contra-debt. The debt discount comprised financing fees of $450,000, paid directly to CRG, and an allocation of the other costs directly attributable to the Loan Agreement and CRG Securities Purchase Agreement of $541,000 net of the common stock premium of $115,000 based on the relative fair values of each security. In connection with the June 2016 drawdown under the Loan Agreement, the Company recorded a debt discount of $275,000 which comprised financing fees of $150,000, paid directly to CRG, and other costs directly attributable to the Loan Agreement with CRG of $125,000. Concurrent with the Amendment No.2 to the Loan Agreement, the Company recorded an additional debt discount of $154,000 of issuance costs. The debt discount is being amortized as non-cash interest expense using the effective interest method over the term of the Loan Agreement. As of June 30, 2018 and December 31, 2017, the balance of the aggregate debt discount was $816,000 and $716,000, respectively. The Company's interest expense associated with the debt discount amounted to $30,000 and $57,000 during the three months ended June 30, 2018 and 2017, respectively. The Company's interest expense associated with the debt discount amounted to $56,000 and $115,000 during the six months ended June 30, 2018 and 2017, respectively.

As noted in Note 1 to these financial statements, due to the substantial doubt about the Company's ability to continue operating as a going concern and the material adverse change clause in the CRG Loan Agreement, the entire amount of borrowings at June 30, 2018 and December 31, 2017 has been classified as current in these financial statements. CRG has not invoked the material adverse change clause.

PDL BioPharma

On April 18, 2013, the Company entered into a Credit Agreement ("Agreement") with PDL BioPharma, Inc. ("PDL") whereby PDL agreed to loan up to $40,000,000. Contemporaneous with the execution of the Agreement the Company borrowed an initial $20,000,000 ("Term Note").

The Term Note was scheduled to mature April 18, 2018, had a stated interest rate of 12.0% per annum and could be prepaid by the Company at any time. The Company paid interest-only through the first ten quarters and, thereafter, repayment of principal in equal installments including accrued and unpaid interest, payable each quarter. As provided under the terms of the Agreement, for the first eight quarterly interest payments, or through 2015, on the Term Note the Company elected to convert an amount of interest, up to 1.5% per annum, into additional loans, referred to as PIK loans. The PIK loans accrued interest and were added to the aggregate principal balance of the Term Note.

In September 2015, in connection with the consummation of the Loan Agreement with CRG, the Company repaid all amounts outstanding under the Agreement. The payoff amount of $21,363,000 included accrued interest through the repayment date of $563,000 and $200,000 as an end-of-term final payment fee recorded in other income (expense), net on the statement of loss and comprehensive loss. For the three months ended June 30, 2018 and 2017, the Company incurred interest expense of $61,000 and $251,000, respectively. For the six months ended June 30, 2018 and 2017, the Company incurred interest expense of $364,000 and $492,000, respectively.

In addition to the interest and principal payments, the Company also paid a royalty, referred to as Assigned Interests, equal to 1.8% of the Company's quarterly net revenues. Upon the prepayment of the Term Note, the Company's obligations relating to Assigned Interests continue, and are payable through the maturity date at a reduced rate of 0.9% of the quarterly net revenues, subject to certain quarterly minimum mandatory amounts, which are payable monthly. The ongoing obligation was determined to be an embedded element of the Agreement and cannot be bifurcated from the Term Note for accounting purposes. Accordingly, the Company continued to account for the Assigned Interests obligation relating to future royalties as a debt instrument by applying the retrospective approach and reviews its estimate of forecasted Assigned Interests payable annually. Under the retrospective method, the Company computes a new effective interest rate based on the original carrying amount, actual cash flows to date, and remaining estimated cash flows over the maturity date. The new effective interest rate, 20.4% as of December 31, 2016, was used to adjust the carrying amount to the present value of the revised estimated cash flows, discounted at the new effective interest rate. At the time of the repayment the resulting increase in the carrying value of the Assigned Interests, of $942,000, was recognized as a component of other income (expense), net, on the statements of operations and comprehensive loss. The Company had an aggregate accrual for its Assigned Interests obligations of $364,000, representing the net present value of the future minimum royalty obligation as of

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December 31, 2017, respectively. The Assigned Interest liability was included within accrued expenses and other current liabilities as of December 31, 2017. This amount was fully paid during the six months ended June 30, 2018.

Additionally, until April 2018, the Company was required to pay on a periodic basis PDL a percentage of its net revenue and comply with certain affirmative covenants and negative covenants limiting its ability to, among other things, undergo a change in control or dispose of assets, in each case subject to certain exceptions.

6. Capital Leases

Capital lease obligations consist of leased office equipment. As of June 30, 2018 and December 31, 2017, the aggregate amount of capital leases recorded within property and equipment, net, on the accompanying balance sheet is $5,000 and $14,000, respectively. The current portion of the capital lease obligations is included in accrued liabilities and the balance included within other long-term liabilities represents the long-term portion.

The future minimum lease payments as of June 30, 2018, are as follows (in thousands):

Period ending December 31,	Future Minimum Lease Payments
2018	$ 4
2019	1
Total minimum payments	5
Less: Amount representing future interest	—
Present value of minimum lease payments	$ 5

7. Commitments and Contingencies

Lease Commitments

The Company's operating lease obligations primarily consist of leased office, laboratory, and manufacturing space under a non-cancelable operating lease that expires in November 2019. The lease agreement includes a renewal provision allowing the Company to extend this lease for an additional period of three years. In addition to the minimum future lease commitments presented below, the lease requires the Company to pay property taxes, insurance, maintenance, and repair costs. The lease includes a rent holiday concession and escalation clauses for increased rent over the lease term. Rent expense is recognized using the straight-line method over the term of the lease. The Company records deferred rent calculated as the difference between rent expense and the cash rental payments. In connection with the facility lease, the landlord also provided incentives of $369,000 to the Company in the form of leasehold improvements. These amounts were reflected as deferred rent and were amortized as a reduction to rent expense over the original term of the Company's operating lease. In February 2016, the Company entered into an additional non-cancelable operating lease for warehouse and storage space that expires in November 2019. Rent expense was $240,000 and $506,000 for the three months ended June 30, 2018 and 2017, respectively. Rent expense was $480,000 and $1,013,000 for the six months ended June 30, 2018 and 2017, respectively.

On October 19, 2017, the Company entered into an agreement to sublease one of its facilities (Note 10). The sublease agreement commenced on approximately December 1, 2017 and is scheduled to expire on November 15, 2019 (which is 15 days prior to the expiration of the facility lease). The sublessee pays a base rent of $3.25 per rentable square foot, for a total of $79,950 per month, increasing to $3.35 per rentable square foot, for a total of $82,410 per month as of December 1, 2017. In addition to the base rent, the sublessee pays the Landlord's operating expenses and property taxes due and payable with respect to the subleased facility.

The future aggregate minimum lease payments, net of sublease income, as of June 30, 2018, are as follows (in thousands):

Year ending December 31,	Future Minimum Lease Payments
2018	$ 537
2019	1,009
Total minimum lease payments	$ 1,546

Purchase Obligations

Purchase obligations consist of agreements to purchase goods and services entered into in the ordinary course of business. The Company had non-cancellable commitments to suppliers for purchases totaling approximately $2,050,000 as of June 30, 2018.

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Indemnification

In the normal course of business, the Company enters into contracts and agreements that contain a variety of representations and warranties and may provide for indemnification of the counterparty. The Company's exposure under these agreements is unknown because it involves claims that may be made against it in the future, but have not yet been made. To date, the Company has not been subject to any claims or been required to defend any action related to its indemnification obligations.

The Company indemnifies each of its directors and officers for certain events or occurrences, subject to certain limits, while the director is or was serving at the Company's request in such capacity, as permitted under Delaware law and in accordance with its certificate of incorporation and bylaws. The term of the indemnification period lasts as long as a director may be subject to any proceeding arising out of acts or omissions of such director in such capacity. The maximum amount of potential future indemnification is unlimited; however, the Company currently holds director liability insurance. This insurance allows the transfer of risk associated with the Company's exposure and may enable it to recover a portion of any future amounts paid. The Company believes that the fair value of these indemnification obligations is minimal. Accordingly, it has not recognized any liabilities relating to these obligations for any period presented.

Legal Proceedings

Except as set forth below, the Company is not involved in any pending legal proceedings that it believes could have a material adverse effect on its financial condition, results of operations or cash flows. From time to time, the Company may pursue litigation to assert its legal right and such litigation may be costly and divert the efforts and attention of its management and technical personnel which could adversely affect its business.

Between May 22, 2017 and May 25, 2017, three purported class action lawsuits were filed in the Superior Court of the State of California, County of San Mateo ("State Court"), against the Company, certain of its officers and directors and the underwriters of the Company's January 2015 IPO. The actions were captioned Grotewiel v. Avinger, Inc., et al., No. 17-CIV-02240, Gonzalez v. Avinger, Inc., et al., No. 17-CIV-02284, and Olberding v. Avinger, Inc., et al., No. 17-CIV-02307. These lawsuits allege that the registration statement for the Company's IPO made false and misleading statements and omissions in violation of the Securities Act of 1933. Plaintiffs seek to represent a class of purchasers of our common stock in and/or traceable to our IPO. Plaintiffs seek, among other things, unspecified compensatory damages, interest, costs, recission, and attorneys' fees. On June 12, 2017, defendants removed these actions to the United States District Court for the Northern District of California ("Federal Court").

On June 22, 2017, and June 23, 2017, plaintiffs Olberding and Gonzalez moved to remand their cases to the State Court. Defendants opposed these motions. On July 21, 2017, the Federal Court granted the motions to remand the Olberding and Gonzalez actions to the State Court. On August 9, 2017, the State Court consolidated the Olberding and Grotewiel actions under the caption Gonzalez v. Avinger, Inc., et al., No. 17-CIV-02284 ("State Action"). On September 22, 2017, an amended complaint was filed in the State Action. On October 31, 2017, the parties in the State Action stipulated to a stay of proceedings until judgment is entered in the Federal Action.

On October 11, 2017, the Federal Court appointed a lead plaintiff and approved the selection of a lead counsel in the Grotewiel action ("Federal Action"). On November 2, 2017, pursuant to stipulation of the parties, the State Court entered an order staying proceedings in the State Action until judgment is entered in the Federal Action. On June 20, 2018, the State Court dismissed the State Action pursuant to the proposed settlement described below. On November 21, 2017, an amended complaint was filed in the Federal Action. Defendants filed a motion to dismiss that complaint on January 26, 2018. On March 19, 2018, plaintiff in the Federal Action filed a further amended complaint, on behalf of a class of purchasers of our common stock in and/or traceable to our IPO, as well as purchasers of our common stock during the period January 30, 2015, to April 10, 2017.

The Company and its directors believe that the foregoing lawsuits were entirely without merit; however, in the interest of avoiding the cost and disruption of continuing to defend against these lawsuits, the Company entered into a settlement of the securities class actions pending against the Company and several of its officers and directors. The settlement is for a total of $5 million and, if approved by the court, will result in a full release of claims against all defendants. The settlement is subject to approval by the court. A court hearing regarding final settlement approval is set for October 23, 2018. The Company's total contribution to the settlement fund is $1.76 million, which amount was included within accrued expenses and other current liabilities as of December 31, 2017. In March 2018, the Company paid out the $1.76 million.

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8. Stockholders' Equity (Deficit)

Preferred Stock

As of June 30, 2018, the Company's certificate of incorporation, as amended and restated, authorizes the Company to issue up to 5,000,000 shares of preferred stock with $0.001 par value per share, of which 43,501 shares were issued and outstanding.

Series A Preferred Stock

On February 14, 2018, the Company entered into a Series A Purchase Agreement with CRG, pursuant to which it agreed to convert $38,000,000 of the outstanding principal amount of its senior secured term loan (plus $3,800,000 in back-end fees and prepayment premium applicable thereto), totaling $41,800,000, into a newly authorized Series A preferred stock. The Series A preferred stock is initially convertible into 20,900,000 shares of common stock subject to certain limitations contained in the Series A Purchase Agreement. Under the terms of the Series A Purchase Agreement, the holders of Series A preferred stock are entitled to receive annual accruing dividends at a rate of 8%, payable in additional shares of Series A preferred stock or cash, at the Company's option. The shares of Series A preferred stock have no voting rights and rank senior to all other classes and series of the Company's equity in terms of repayment and certain other rights. The Series A preferred stock and any of the Company's common stock issued upon conversion of the Series A preferred stock are subject to a lockup agreement through February 14, 2019. As of June 30, 2018, 41,800 shares of Series A preferred stock were outstanding. The Series A preferred stock accrued dividends through June 30, 2018 of approximately $1.2 million which is included within current liabilities.

Series B Preferred Stock

On February 16, 2018, the Company completed a public offering of 17,979 shares of Series B convertible preferred stock (the "Series B preferred stock"). As a result, the Company received net proceeds of approximately $16.0 million after underwriting discounts, commissions, legal and accounting fees of approximately $1.9 million. The Series B preferred stock has a liquidation preference of $0.001 per share, full ratchet price based anti-dilution protection, has no voting rights and is subject to certain ownership limitations. The Series B preferred stock is immediately convertible at the option of the holder, has no stated

maturity, and does not pay regularly stated dividends or interest. As of March 31, 2018, 10,962 shares of Series B preferred stock were outstanding. During the months of April, May and June 2018 certain investors exercised their conversion rights and converted 9,261 shares of preferred stock into 4,631,148 shares of the Company's common stock. As of June 30, 2018, 1,701 shares of Series B preferred stock were outstanding.

The Company evaluated the Series B convertible preferred stock issuance in accordance with the provisions of ASC 815, *Derivatives and Hedging*, including consideration of embedded derivatives requiring bifurcation. The issuance of the convertible preferred stock could generate a beneficial conversion feature (BCF), which arises when a debt or equity security is issued with an embedded conversion option that is beneficial to the investor or in the money at inception because the conversion option has an effective conversion price that is less than the market price of the underlying stock at the commitment date. The Company recognized the BCF by allocating the intrinsic value of the conversion option, which is the number of shares of common stock available upon conversion multiplied by the difference between the effective conversion price per share and the fair value of common stock per share on the commitment date, to additional paid-in capital, resulting in a discount on the convertible preferred stock. As the Series B convertible preferred stock may be converted immediately, the Company recognized a BCF of $5.2 million as a deemed dividend in the condensed consolidated statements of operations as of February 16, 2018. This one-time, non-cash charge impacted net loss attributable to common stockholders and net loss per share attributable to common stockholders for the six months ended June 30, 2018.

Common Stock

As of June 30, 2018, the Company's certificate of incorporation, as amended and restated, authorizes the Company to issue up to 100,000,000 shares of common stock with $0.001 par value per share, of which 9,305,872 shares were issued and outstanding.

Common Stock Warrants

In connection with the issuance of the Company's Series E Convertible preferred stock in September 2014 through January 2015, the Company issued warrants to purchase an aggregate of up to the number of shares of common stock equal to 50% of the number of shares of the Company's Series E Convertible preferred stock purchased by such investor. As of June 30, 2018, there were 53,803 warrants outstanding with an exercise price of $504.00 per share. These warrants expire upon the earlier of September 2, 2019 or upon consummation of a change in control of the Company.

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On February 16, 2018, in connection with the Company's completed public offering of Series B preferred stock, the Company issued two series of warrants that together provide for the purchase, by the investors in the Series B Offering, of an aggregate of 17,979,000 shares of common stock (the "Series B Warrants"). Each share of Series B preferred stock is accompanied by one warrant that expires on the seventh anniversary of the date of issuance to purchase up to 500 shares of common stock and one warrant that expires on the earlier of (i) the seventh anniversary of the date of issuance or (ii) the 60th calendar day following the receipt and announcement of FDA clearance of the Company's Pantheris below-the-knee device (or the same or similar product with a different name) to purchase up to 500 shares of common stock; provided, however, if at any time during such 60-day period the volume weighted average price for any trading day is less than the then effective exercise price, the termination date shall be extended to the seven year anniversary of the initial exercise date. The Company assessed the Series B Warrants under ASC 480 and determined that the Series B Warrants were outside the scope of ASC 480. The Company next assessed the Series B Warrants under ASC 815. Under the related guidance, a reporting entity shall not consider a contract to be a derivative instrument if the contract is both (1) indexed to the entity's own stock and (2) classified in stockholders' equity. The Company determined that the Series B Warrants were indexed to the Company's stock, as the agreements do not contain any exercise contingencies and the Series B Warrants' settlement amount equals the difference between the fair value of the Company's common stock price and the Series B Warrant strike price. The Company also assessed the classification as stockholders' equity and determined the Series B Warrants met all of the criteria for classification as equity under ASC 815. Based on this analysis, the Company determined that the Series B Warrants should be classified as equity. During the three months ended June 30, certain of the Series B Warrants were exercised and 290,500 shares of the Company's common stock were issued to the warrant holders in return. As of June 30, 2018, Series B Warrants to purchase an aggregate of 17,688,500 shares of common stock were outstanding.

As of June 30, 2018 and December 31, 2017, warrants to purchase an aggregate of 17,742,215 and 53,715 shares of common stock were outstanding, respectively.

Stock Plans

In January 2015, the Board of Directors adopted and the Company's stockholders approved the 2015 Equity Incentive Plan ("2015 Plan"). The 2015 Plan replaced the 2009 Stock Plan (the "2009 Plan") which was terminated immediately prior to consummation of the Company's IPO, collectively the "Plans." The 2015 Plan provides for the grant of incentive stock options ("ISOs") to employees and for the grant of nonstatutory stock options ("NSOs"), restricted stock, RSUs, stock appreciation rights, performance units and performance shares to employees, directors and consultants. Initially a total of 33,000 shares of common stock were reserved for issuance pursuant to the 2015 Plan. The shares reserved for issuance under the 2015 Plan included shares reserved but not issued under the 2009 Plan, plus any share awards granted under the 2009 Plan that expire or terminate without having been exercised in full or that are forfeited or repurchased. In addition, the number of shares available for issuance under the 2015 Plan includes an automatic annual increase on the first day of each fiscal year beginning in fiscal 2016, equal to the lesser of 42,250 shares, 5.0% of the outstanding shares of common stock as of the last day of the immediately preceding fiscal year or an amount as determined by the Board of Directors. For fiscal 2018, the common stock available for issuance under the 2015 Plan was increased by 41,674 shares of common stock. During the three and six months ended June 30, 2018, the common stock available for issuance under the 2015 Plan was increased by an additional 3,000,000 shares of common stock. As of June 30, 2018, 3,090,775 shares were available for grant under the 2015 Plan.

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Pursuant to the Plans, ISOs and NSOs may be granted with exercise prices at not less than 100% of the fair value of the common stock on the date of grant and the exercise price of ISOs granted to a stockholder, who, at the time of grant, owns stock representing more than 10% of the voting power of all classes of the stock of the Company, shall be not less than 110% of the fair market value per share of common stock on the date of grant. The Company's Board of Directors determines the vesting schedule of the options. Options granted generally vest over four years and expire ten years from the date of grant.

Stock option activity under the Plans is set forth below:

	Options Outstanding

	Number of Shares	Weighted Average Exercise Price	Aggregate Intrinsic Value (in thousands)
Balance at December 31, 2017	76,645	$ 291.73	$ —
Options granted	31,000	$ 1.67	
Options exercised	—	$ —	
Options cancelled	(22,803)	$ 258.35	
Balance at June 30, 2018	84,842	$ 194.72	$ —

As of June 30, 2018, the aggregate intrinsic value of options outstanding and vested was zero. There were no options exercised during the six months ended June 30, 2018. The aggregate intrinsic value was calculated as the difference between the exercise prices of the underlying options and the closing market price of the common stock on the date of exercise. Because of the Company's net operating losses, the Company did not realize any tax benefits from share-based payment arrangements for the three and six months ended June 30, 2018 and 2017.

The Company's RSUs vest annually over four years in equal increments. A summary of all RSU activity is presented below:

	Number of Shares	Weighted Average Grant Date Fair Value	Weighted Average Remaining Contractual Term	Aggregate Intrinsic Value (in thousands)
Awards outstanding at December 31, 2017	5,089	$ 237.78	2.87	$ 37
Awarded	—	$ —		
Released	(1,166)	$ 225.52		
Forfeited	(617)	$ 237.96		
Awards outstanding at June 30, 2018	3,306	$ 242.07	2.00	$ 6

As of June 30, 2018, approximately $651,000 of total unrecognized compensation expense related to employee RSUs was expected to be recognized over a weighted-average period of 2.0 years. The Company used the closing market price of $1.67 per share at June 29, 2018, to determine the aggregate intrinsic value.

2015 Employee Stock Purchase Plan

In January 2015, the Board of Directors adopted and the Company's stockholders approved the 2015 Employee Stock Purchase Plan ("ESPP") under which eligible employees are permitted to purchase common stock at a discount through payroll deductions. Initially 12,500 shares of common stock were reserved for issuance, which is subject to an automatic increase on the first day of each fiscal year, commencing in 2016, by an amount equal to the lesser of (i) 12,325 shares (ii) 1.5% of the outstanding shares of common stock as of the last day of the immediately preceding fiscal year; or (iii) an amount as determined by the Board of Directors. For fiscal 2018, the common stock available for issuance under the ESPP was increased by 12,325 shares of common stock. The price of the common stock purchased will be the lower of 85% of the fair market value of the common stock at the beginning of an offering period or at the end of a purchase period. The ESPP is intended to qualify as an "employee stock purchase plan" within the meaning of Section 423 of the Internal Revenue Code of 1986, as amended. The first offering under the ESPP began in February 2015. As of June 30, 2018, approximately 27,515 shares of common stock remained reserved for issuance under the ESPP. The Company incurred $0 and $25,000 in stock-based compensation expense related to the ESPP for the three months ended June 30, 2018 and 2017, respectively. The Company incurred $1,000 and $90,000 in stock-based compensation expense related to the ESPP for the three and six months ended June 30, 2018 and 2017, respectively.

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9. Stock-Based Compensation

Stock-based compensation for the Company includes amortization related to all stock options, RSUs and shares issued under the ESPP, based on the grant-date estimated fair value. The Company estimates the fair value of stock options and shares issued under the ESPP on the date of grant using the Black-Scholes option-pricing model. The Black-Scholes model determines the fair value of stock-based payment awards based on the fair market value of the Company's common stock on the date of grant and is affected by assumptions regarding a number of complex and subjective variables. These variables include, but are not limited to, the fair value of the Company's common stock, and the volatility over the expected term of the awards. The Company has opted to use the "simplified method" for estimating the expected term of options, whereby the expected term equals the arithmetic average of the vesting term and the original contractual term of the option. Prior to the Company's IPO in January 2015, due to the Company's limited operating history and a lack of company specific historical and implied volatility data, the Company based its estimate of expected volatility on the historical volatility of a group of similar companies that are publicly traded. When selecting these public companies on which it has based its expected stock price volatility, the Company selected companies with comparable characteristics to it, including enterprise value, stage of development, risk profile, and position within the industry as well as selecting companies with historical share price information sufficient to meet the expected life of the stock-based awards. The historical volatility data was computed using the daily closing prices for the selected companies' shares during the equivalent period of the calculated expected term of the share-based payments. Following the closing of the Company's IPO, the Company supplements its own available company specific historical volatility with the volatility of the previously selected peer group of publicly traded companies. The Company will continue to analyze the historical stock price volatility and expected term assumptions as more historical data for the Company's common stock becomes available. The risk-free rate assumption is based on the U.S. Treasury instruments with maturities similar to the expected term of the Company's stock options. The expected dividend assumption is based on the Company's history of not paying dividends and its expectation that it will not declare dividends for the foreseeable future.

As noncash stock-based compensation expense recognized in the financial statements is based on awards ultimately expected to vest, it has been reduced for estimated forfeitures. During the year ended December 31, 2017, the Company estimated a forfeiture rate for its stock options and RSUs based on an analysis of its actual forfeitures based on actual forfeiture experience and other factors. Forfeitures are estimated at the time of grant and revised, if necessary, over the service period to the extent that actual forfeitures differ, or are expected to differ, from prior estimates. Forfeitures are estimated based on estimated future employee turnover and historical experience. Effective January 1, 2017, the Company adopted ASU 2016-09 and elected to recognize forfeitures when they occur using a modified retrospective approach. The fair value for the Company's employee stock options was estimated at the date of grant using the Black-Scholes valuation model with the following average assumptions:

	Three Months Ended June 30, 2017	Six Months Ended June 30, 2017

Expected term (years)	5.5	5.9
Expected volatility	63.3%	57.1%
Risk-free interest rate	1.8%	2.2%
Dividend rate	—	—

As of June 30, 2018 and December 31, 2017, the total unamortized compensation expense related to stock option awards granted to employees and directors was approximately $1,566,000 and $2,979,000, which is expected to be amortized over the next 1.04 and 1.45 years, respectively.

The fair value of the shares to be issued under the Company's ESPP was estimated using the Black-Scholes valuation model with the following assumptions:

	Three Months Ended June 30, 2017	Six Months Ended June 30, 2017
Expected term (years)	0.5	0.5
Expected volatility	85.0%	89.2%
Risk-free interest rate	0.78%	0.63%
Dividend rate	—	—

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10. Restructuring Charges and Expenses

In April 2017, the Company undertook an organizational realignment which included a reduction in force, lowering its total headcount by approximately 33% compared to December 31, 2016, in order to conserve resources. Accordingly, the Company recorded a restructuring charge of approximately $519,000, relating to severance related costs at that time. As of December 31, 2017, all of the severance costs related to the April 2017 termination of 44 employees had been paid.

In September 2017, the Company effected a cost reduction plan, which included a company-wide reduction in force, lowering its total headcount by 24 employees. The Company recorded a restructuring charge of approximately $416,000, relating to severance costs at that time. In October 2017, the Company subleased one of its facilities and ceased to use the facility as part of the cost reduction plan. The Company recorded a restructuring charge of approximately $388,000 relating to the cost to exit the facility. As of December 31, 2017, all of the severance costs related to the termination of 24 employees had been paid. As of June 30, 2018 and December 31, 2017, $99,000 and $98,000, respectively, of the total costs to exit the facility was included within accrued expenses and other current liabilities.

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

You should read the following discussion and analysis of our financial condition and results of operations together with the unaudited financial statements and related notes included elsewhere in this Quarterly Report on Form 10-Q. This discussion and other parts of this Quarterly Report on Form 10-Q contain forward-looking statements that involve risks and uncertainties, such as statements of our plans, objectives, expectations and intentions, that are based on the beliefs of our management, as well as assumptions made by, and information currently available to, our management. Our actual results could differ materially from those discussed in these forward-looking statements. Factors that could cause or contribute to such differences include, but are not limited to, those discussed in the section of this Quarterly Report on Form 10-Q entitled "Risk Factors."

Overview

We are a commercial-stage medical device company that designs, manufactures and sells image-guided, catheter-based systems that are used by physicians to treat patients with peripheral artery disease, or PAD. Patients with PAD have a build-up of plaque in the arteries that supply blood to areas away from the heart, particularly the pelvis and legs. Our mission is to significantly improve the treatment of vascular disease through the introduction of products based on our Lumivascular platform, the only intravascular image-guided system available in this market. We manufacture and sell a suite of products in the United States and select international markets. Our current products include our Lightbox imaging console, the Ocelot family of catheters, which are designed to allow physicians to penetrate a total blockage in an artery, known as a chronic total occlusion, or CTO, and Pantheris, our image-guided atherectomy device which is designed to allow physicians to precisely remove arterial plaque in PAD patients. We received 510(k) clearance from the U.S. Food and Drug Administration, or FDA, for commercialization of Pantheris in October 2015. We received an additional 510(k) clearance for enhanced versions of Pantheris in March 2016 and May 2018, and those versions of Pantheris became commercially available in the United States and select international markets promptly thereafter. We also offer the Wildcat and Kittycat 2 catheters, which are used for crossing CTOs but do not contain on-board imaging technology.

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During the first quarter of 2015, we completed enrollment of patients in VISION, a clinical trial designed to support our August 2015 510(k) filing with the FDA for our Pantheris atherectomy device. VISION was designed to evaluate the safety and efficacy of Pantheris to perform atherectomy using intravascular imaging and successfully achieved all primary and secondary safety and efficacy endpoints. We believe the data from VISION allows us to demonstrate that avoiding damage to healthy arterial structures, and in particular disruption of the external elastic lamina, which is the membrane between the outermost layers of the artery, reduces the likelihood of restenosis, or re-narrowing, of the diseased artery. Although the original VISION study protocol was not designed to follow patients beyond six months, we have worked with 18 of the VISION sites to re-solicit consent from previous clinical trial patients in order for them to evaluate patient outcomes through 12 and 24 months following initial treatment. Data collection for the remaining patients from participating sites was completed in May 2017, and we released the final 12 and 24-month results for a total of 89 patients in July 2017. We commenced commercialization of Pantheris as part of our Lumivascular platform in the United States and in select international markets in March 2016, after obtaining the required marketing authorizations. During the fourth quarter of 2017, we began enrolling patients in INSIGHT, a clinical trial designed to support a filing with the FDA to expand the indication for our Pantheris atherectomy device to include instent restenosis.

We focus our direct sales force, marketing efforts and promotional activities on interventional cardiologists, vascular surgeons and interventional radiologists. We also work on developing strong relationships with physicians and hospitals that we have identified as key opinion leaders. Although our sales and

marketing efforts are directed at these physicians because they are the primary users of our technology, we consider the hospitals and medical centers where the procedure is performed to be our customers, as they typically are responsible for purchasing our products. We are designing future products to be compatible with our Lumivascular platform, which we expect to enhance the value proposition for hospitals to invest in our technology. Pantheris qualifies for existing reimbursement codes currently utilized by other atherectomy products, further facilitating adoption of our products.

Prior to the introduction of our Lumivascular platform our non-imaging catheter products were manufactured by third parties. All of our products are now manufactured in-house at our facilities in Redwood City, California using components and sub-assemblies manufactured both in-house and by outside vendors. We assemble all of our products at our manufacturing facility, but certain critical processes such as coating and sterilization are done by outside vendors. We expect our current manufacturing facility will be sufficient through at least 2019.

In addition to commercialization of Pantheris in the United States and select international markets in March 2016, we began commercializing our initial non-Lumivascular platform products in 2009 and introduced our Lumivascular platform products in the United States in late 2012. We generated revenues of $3.9 million and $6.0 million in the six months ended June 30, 2018 and 2017, respectively. During the six months ended June 30, 2018 and 2017, our net loss was $16.1 million and $28.1 million, respectively. We have not been profitable since inception, and as of June 30, 2018, our accumulated deficit was approximately $317.4 million. Since inception, we have financed our operations primarily through private placements of our preferred securities and, to a lesser extent, debt financing arrangements. In January 2015, we completed an initial public offering, or IPO, of 5.0 million shares. As a result of our IPO, which closed in February 2015, we received net proceeds of approximately $56.9 million, after underwriting discounts and commissions of approximately $4.5 million and other expenses associated with our IPO of approximately $3.6 million.

In September 2015, we entered into a Term Loan Agreement, or Loan Agreement, with CRG Partners III L.P. and certain of its affiliated funds, collectively CRG, under which we were able to borrow up to $50.0 million on or before March 29, 2017, subject to certain terms and conditions. We borrowed $30.0 million on September 22, 2015 and an additional $10.0 million on June 15, 2016 under the Loan Agreement. Contingent on achievement of certain revenue milestones, among other conditions, we would have been eligible to borrow an additional $10.0 million, on or prior to March 29, 2017; however, we did not achieve the level of revenues required to borrow the final $10.0 million. Contemporaneously with the execution of the Loan Agreement, we entered into a Securities Purchase Agreement with CRG, pursuant to which CRG purchased 8,705 shares of our common stock on September 22, 2015 at a price of $559.64 per share, which represents the 10-day average of closing prices of our common stock ending on September 21, 2015. Pursuant to the Securities Purchase Agreement, we filed a registration statement covering the resale of the shares sold to CRG and must comply with certain affirmative covenants during the time that such registration statement remains in effect. We used the proceeds from the CRG borrowing and securities purchase to retire our outstanding principal and accrued interest with PDL Biopharma, or PDL, and to retire the principal and accrued interest underlying our outstanding promissory notes, or the notes.

On February 3, 2016, we filed a universal shelf registration statement to offer up to $150.0 million of our securities and entered into an “at-the-market” program pursuant to a Sales Agreement with Cowen and Company, or Cowen, through which we may, from time to time, issue and sell shares of common stock having an aggregate offering value of up to $50.0 million. The shelf registration statement also covers the resale of the shares sold to CRG. The registration statement was declared effective by the SEC on March 8, 2016. During the year ended December 31, 2016, we sold 27,374 shares of common stock through the “at-the-market” program at an average price of $194.74 and raised net proceeds of $5.2 million, after payment of $0.2 million in commissions and fees to Cowen. During the three and six months ended June 30, 2018 and 2017, we sold no shares of common stock through the “at-the-market” program. Due to the SEC’s “baby shelf rules,” which prohibit companies with a public float of less than $75 million from

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issuing securities under a shelf registration statement in excess of one-third of such company’s public float in a twelve-month period, at this time we are unable to issue more shares through our “at-the-market” program. In addition, in August 2016 we completed a follow-on public offering of 246,445 shares of our common stock for net proceeds of approximately $31.5 million after deducting underwriting discounts and commissions of approximately $2.4 million and other expenses of approximately $0.6 million. The 246,445 shares include the exercise in full by the underwriters of their option to purchase an additional 32,145 shares of our common stock.

In April 2017, we undertook an organizational realignment which included a reduction in force, that lowered our total headcount by approximately 33% compared to December 31, 2016. The organizational realignment was designed to focus our commercial efforts on driving catheter utilization in our strongest markets, around our most productive sales professionals. Our field sales personnel headcount was reduced to 32, down from 60 as of December 31, 2016. This workforce reduction was designed to reduce operating expenses while continuing to support major product development and clinical initiatives. The strategic reduction in the field sales force was designed to maintain robust engagement with higher volume users of our Lumivascular technology and position us to increase utilization of our catheters within our installed base of accounts in 2018 following the launch of our next generation products. In September 2017, we effected a cost reduction plan, which also included a company-wide reduction in force, lowering our total headcount by an additional 24 employees. Our field sales personnel headcount was further reduced to a total of 20 people. In addition, as part of the cost reduction plan, in October 2017, we subleased a portion of the Company’s facilities and consolidated our operations primarily into one building.

On November 3, 2017, we entered the Lincoln Park Purchase Agreement, pursuant to which Lincoln Park is obligated to purchase, at our request, up to $15.0 million of our common stock over a 30-month period, subject to certain limitations set forth in the Lincoln Park Purchase Agreement. As a fee for Lincoln Park’s commitment to purchase such shares, we issued 23,584 shares of common stock to Lincoln Park on November 3, 2017. As obligated under a registration rights agreement entered into with Lincoln Park in connection with the Lincoln Park Purchase Agreement, we filed a registration statement on Form S-1 on November 6, 2017 for up to 248,750 of such shares, which registration statement was declared effective by the SEC on November 17, 2017.

On February 14, 2018, we entered into Amendment No. 2 to the Term Loan Agreement (the “Amendment No. 2 Loan Agreement”) with CRG. Under its terms, the Amendment No. 2 Loan Agreement, among other things: (1) extended the interest-only period through June 30, 2021; (2) extended the period during which the Company may elect to pay a portion of interest in payment-in-kind, or PIK, interest payments through June 30, 2021, so long as no default has occurred and is continuing; (3) permitted the Company to make its entire interest payments in PIK interest payments for through December 31, 2019, so long as no default has occurred and is continuing; (4) extended the maturity date to June 30, 2023; (5) reduced the minimum liquidity requirement to $3.5 million at all times; (6) eliminated the minimum revenue covenant for 2018 and 2019; (7) reduced the minimum revenue covenant to $15 million for 2020, $20 million for 2021 and $25 million for 2022; and (8) provided CRG with board observer rights.

In addition, on February 14, 2018, we entered into a Series A preferred stock Purchase Agreement (the “Series A Purchase Agreement”) with CRG, pursuant to which it agreed to convert $38.0 million of the outstanding principal amount of its senior secured term loan (plus $3.8 million in back-end fees and prepayment premium applicable thereto), totaling $41.8 million, into a newly authorized Series A preferred stock. The Series A preferred stock is initially convertible into 20,900,000 shares of common stock subject to certain limitations contained in the Series A Purchase Agreement. The holders of Series A preferred stock are entitled to receive annual accruing dividends at a rate of 8%, payable in additional shares of Series A preferred stock or cash, at our option. The shares of Series A preferred stock have no voting rights and rank senior to all other classes and series of the Company’s equity in terms of repayment and

certain other rights. The Series A preferred stock and any of the Company's common stock issued upon conversion of the Series A preferred stock is subject to a lockup agreement through February 14, 2019.

On February 16, 2018, we completed a public offering of 17,979 shares of Series B preferred stock and warrants to purchase 17,979,000 shares of common stock. As a result, we received net proceeds of approximately $16.0 million after underwriting discounts, commissions, legal and accounting fees of approximately $1.9 million. Each share of Series B preferred stock is accompanied by one warrant that expires on the seventh anniversary of the date of issuance to purchase up to 500 shares of common stock (the "Series 1 warrants") and one warrant that expires on the earlier of (i) the seventh anniversary of the date of issuance or (ii) the 60th calendar day following the receipt and announcement of FDA clearance of our Pantheris below-the-knee device (or the same or similar product with a different name) to purchase up to 500 shares of common stock; provided, however, if at any time during such 60-day period the volume weighted average price for any trading day is less than the then effective exercise price, the termination date shall be extended to the seven year anniversary of the initial exercise date (the "Series 2 warrants").

In July 2018, we sold a further 2,166,180 shares of our common stock (excluding warrants to purchase an additional 1,083,091 shares of our common stock issued in a concurrent private placement) pursuant to the Shelf Registration Statement for gross proceeds of approximately $3.5 million.

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We are developing two next-generation versions of our Pantheris atherectomy device, Pantheris 3.0 and a lower profile Pantheris (Pantheris 6F), that we believe represent significant improvements over our existing product. Pantheris 3.0 includes new features and design improvements to the handle, shaft, balloon and nose cone that we believe will improve usability and reliability, while the Pantheris 6F has a smaller diameter and longer length that we believe will optimize it for use in smaller vessels and below-the-knee applications. We obtained FDA clearance for Pantheris 3.0 in May 2018 and we plan to file a 510(k) submission for Pantheris 6F in the third quarter of 2018. We received a CE Mark for Pantheris 3.0 in December 2017.

Critical Accounting Policies and Estimates

Management's discussion and analysis of our financial condition and results of operations is based on our financial statements, which have been prepared in accordance with U.S. generally accepted accounting principles. The preparation of these financial statements requires us to make estimates and assumptions for the reported amounts of assets, liabilities, revenues, expenses and related disclosures of contingent assets and liabilities. Our estimates are based on our historical experience and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions and any such differences may be material. There have been no significant and material changes in our critical accounting policies during the six months ended June 30, 2018, as compared to those disclosed in "Management's Discussion and Analysis of Financial Conditions and Results of Operations - Critical Accounting Policies and Significant Judgments and Estimates" in our most recent Annual Report on Form 10-K, as filed with the SEC on March 30, 2018.

Components of Our Results of Operations

Revenues

All of our revenues are currently derived from sales and rentals of our Lightbox console and sales of our various PAD catheters, as well as related services in the United States and select international markets. Our revenues were adversely affected by the product performance issues we have experienced with the previous version of Pantheris as well as our strategic decision to reduce the size of our sales force in April 2017 and September 2017. However, we expect our revenues to increase in 2018 as we introduce two next-generation versions of Pantheris. No single customer accounted for more than 10% of our revenues during the three and six months ended June 30, 2018 and 2017.

Revenues may fluctuate from quarter to quarter due to a variety of factors including capital equipment purchasing patterns that are typically increased towards the end of the calendar year and decreased in the first quarter. In addition, our results can be harmed by adverse weather and by resetting of annual patient healthcare insurance plan deductibles, both of which may cause patients to delay elective procedures. In the second quarter, the number of elective procedures nationwide is historically lower than other quarters throughout the year, which we believe is primarily attributable to the summer vacations of physicians and their patients.

Cost of Revenues and Gross Margin

Cost of revenues consists primarily of costs related to manufacturing overhead, materials and direct labor. We expense all warranty costs and inventory provisions as cost of revenues. We periodically write-down inventory for estimated excess, obsolete and non-sellable inventories based on assumptions about future demand, past usage, changes to manufacturing processes and overall market conditions. A significant portion of our cost of revenues currently consists of manufacturing overhead costs. These overhead costs include the cost of quality assurance, material procurement, inventory control, facilities, equipment and operations supervision and management. We expect overhead costs as a percentage of revenues to become less significant as our production volume increases following the commercial launch of our next-generation Pantheris catheters in 2018. Cost of revenues also includes depreciation expense for production equipment, depreciation and related maintenance expense for placed Lightboxes held by customers and certain direct costs such as those incurred for shipping our products.

We calculate gross margin as gross profit divided by revenues. Our gross margin has been and will continue to be affected by a variety of factors, primarily production volumes, manufacturing costs, product yields, headcount, charges for excess and obsolete inventories and cost-reduction strategies. We expect our gross margin to increase over the long term as our production volume increases and as we spread the fixed portion of our manufacturing overhead costs over a larger number of units produced, thereby reducing our per unit manufacturing costs. We intend to use our design, engineering and manufacturing capabilities to further advance and improve the efficiency of our manufacturing processes, which we believe will reduce costs and increase our gross margin. In the future, we may seek to manufacture certain of our products outside the United States to further reduce costs. Our gross margin will likely fluctuate from quarter to quarter as we continue to introduce new products and sales channels, and as we adopt new manufacturing processes and technologies.

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Research and Development Expenses

Research and development, or R&D, expenses consist primarily of engineering, product development, clinical and regulatory affairs, consulting services, materials, depreciation and other costs associated with products and technologies in development. These expenses include employee compensation, including stock-based compensation, supplies, materials, quality assurance expenses allocated to R&D programs, consulting, related travel expenses and facilities expenses. Clinical expenses include clinical trial design, clinical site reimbursement, data management, travel expenses and the cost of manufacturing products for clinical trials. We expect R&D expenses as a percentage of revenues to vary over time depending on the level and timing of our new product development efforts, as well as our clinical development, clinical trial and other related activities.

Selling, General and Administrative Expenses

Selling, general and administrative, or SG&A, expenses consist primarily of compensation for personnel, including stock-based compensation, related to selling and marketing functions, physician education programs, business development, finance, information technology and human resource functions. Other SG&A expenses include commissions, training, travel expenses, educational and promotional activities, marketing initiatives, market research and analysis, conferences and trade shows, professional services fees, including legal, audit and tax fees, insurance costs, general corporate expenses and allocated facilities-related expenses. We expect SG&A expenses to remain lower in the near term compared to recent prior years due to our reductions in force in April and September 2017.

Interest Income (Expense), net

Interest income (expense), net consists primarily of interest incurred on our outstanding indebtedness and non-cash interest related to the amortization of debt discount and issuance costs associated with our various debt agreements.

Other Income (Expense), net

Other income (expense), net primarily consists of gains and losses resulting from the remeasurement of foreign exchange transactions.

Results of Operations:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2018	2017	2018	2017
	(in thousands, except percentages)			
Revenues	$ 2,058	$ 2,459	$ 3,867	$ 5,950
Cost of revenues	2,169	3,919	3,584	7,994
Gross profit (loss)	(111)	(1,460)	283	(2,044)
Gross margin	-5%	-59%	7%	-34%
Operating expenses:				
Research and development	1,159	3,097	2,936	7,020
Selling, general and administrative	4,204	6,189	8,464	15,507
Restructuring charges	—	519	—	519
Total operating expenses	5,363	9,805	11,400	23,046
Loss from operations	(5,474)	(11,265)	(11,117)	(25,090)
Interest income (expense), net	(312)	(1,540)	(4,951)	(3,058)
Other income (expense), net	(13)	6	(12)	9
Net loss and comprehensive loss	$ (5,799)	$ (12,799)	$ (16,080)	$ (28,139)

Comparison of Three Months Ended June 30, 2018 and 2017

Revenues. For the three months ended June 30, 2018, revenue decreased 16% compared to the three months ended June 2017. The decrease primarily reflects the impact of the reduced size of our field sales force in 2017 and the efforts we made to refocus our sales force on driving the utilization at our current installed base rather than on expanding the installed base of Lightbox imaging consoles.

Cost of Revenues and Gross Margin.

Cost of revenues decreased $1.8 million, or 45%, to $2.2 million during the three months ended June 30, 2018, compared to $3.9

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million during the three months ended June 30, 2017. This decrease was primarily attributable to lower charges for inventory excess and obsolescence in the three months ended June 30, 2018 compared to the prior year period.

Gross margin for the three months ended June 30, 2018 increased to (5%), compared to (59%) in the three months ended June 30, 2017. The increase in gross margin was primarily due to the decreased charges for inventory excess and obsolescence compared to the prior year period.

Research and Development Expenses ("R&D").

R&D expense for the three months ended June 30, 2018 was lower than the amounts reported during the three months ended June 30, 2017 primarily due to a decrease in personnel-related expenses as a result of having fewer employees and project spending.

Stock-based compensation expense within R&D totaled approximately $0.1 million and $0.5 million during the three months ended June 30, 2018 and 2017, respectively.

Selling, General and Administrative Expenses ("SG&A").

SG&A expense for the three months ended June 30, 2018 was lower than the amount reported during the three months ended June 30, 2017 primarily

due to a decrease in personnel-related expenses including compensation expense and professional services expenses.

Stock-based compensation expense within SG&A totaled approximately $0.5 million and $0.7 million during the three months ended June 30, 2018 and 2017, respectively.

Interest Income (Expense), Net. Interest income (expense), net decreased $1.2 million, to an expense of $0.3 million during the three months ended June 30, 2018, compared to an expense of $1.5 million during the three months ended June 30, 2017 due to the CRG note conversion and payoff of the PDL loan.

Other Income (Expense), Net. Other income (expense), net decreased $19,000 to an expense of $13,000, during the three months ended June 30, 2018, compared to income of $6,000 during the three months ended June 30, 2017. Other income for the three months ended June 30, 2018 and 2017, was primarily attributable to the remeasurement of foreign exchange transactions.

Comparison of Six Months Ended June 30, 2018 and 2017

Revenues. For the six months ended June 30, 2018, revenue decreased 35% compared to the six months ended June 2017. The decrease primarily reflects the impact of the reduced size of our field sales force in the first and third quarters of 2017 and the efforts we made to refocus our sales force on driving the utilization at our current installed base rather than on expanding the installed base of Lightbox imaging consoles.

Cost of Revenues and Gross Margin.

Cost of revenues decreased $4.4 million, or 55%, to $3.6 million during the six months ended June 30, 2018, compared to $8.0 million during the six months ended June 30, 2017. This decrease was primarily attributable to lower charges for inventory excess and obsolescence in the six months ended June 30, 2018 and the reduced costs related to lower revenue due to a significantly reduced sales force.

Gross margin for the six months ended June 30, 2018 increased to 7%, compared to (34%) in the six months ended June 30, 2017. The increase in gross margin was primarily due to the lower charges for inventory excess and obsolescence compared to the prior year period.

Research and Development Expenses ("R&D").

R&D expense for the six months ended June 30, 2018 was lower than the amounts reported during the six months ended June 30, 2017 primarily due to a decrease in personnel-related expenses as a result of fewer employees and project spending.

Stock-based compensation expense within R&D totaled approximately $0.2 million and $1.0 million during the six months ended June 30, 2018 and 2017, respectively.

Selling, General and Administrative Expenses ("SG&A").

SG&A expense for the six months ended June 30, 2018 was lower than the amount reported in the same period in 2017 primarily due to a decrease in personnel-related expenses including compensation expense and professional services expenses as a result of having fewer employees.

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Stock-based compensation expense within SG&A totaled approximately $1.0 million and $1.6 million during the six months ended June 30, 2018 and 2017, respectively.

Interest Income (Expense), Net. Interest income (expense), net increased $1.9 million, to an expense of $4.9 million during the six months ended June 30, 2018, compared to an expense of $3.1 million during the six months ended June 30, 2017 due to $3.8 million in back-end charges from the CRG note conversion, offset by decreased interest expense of $1.2 million related to the payoff of the PDL loan.

Other Income (Expense), Net. Other income (expense), net decreased $21,000 to an expense of $12,000, during the six months ended June 30, 2018, compared to income of $9,000 during the six months ended June 30, 2017. Other income for the six months ended June 30, 2018 and 2017 was primarily attributable to the remeasurement of foreign exchange transactions.

Liquidity and Capital Resources

As of June 30, 2018, we had cash and cash equivalents of $10.1 million and an accumulated deficit of $317.4 million, compared to cash and cash equivalents of $5.4 million and an accumulated deficit of $301.3 million as of December 31, 2017. We believe that the net proceeds we received from our Series B Offering on February 16, 2018, net proceeds from the sale of our common stock to Lincoln Park pursuant to the Lincoln Park Purchase Agreement entered into on November 3, 2017, net proceeds from the February 2018 Series B Offering, together with our cash and cash equivalents at December 31, 2017, and expected revenues from operations, will be sufficient to satisfy our capital requirements and fund our operations through at least December 31, 2018. We will need to raise additional funds through future equity or debt financings within the next five months to meet our operational needs and capital requirements for product development, clinical trials and commercialization. We can provide no assurance that we will be successful in raising funds pursuant to additional equity or debt financings or that such funds will be raised at prices that do not create substantial dilution for our existing stockholders. Given the recent decline in our stock price, any financing that we undertake in the foreseeable future could cause substantial dilution to our existing stockholders. Additional debt financing, if available, may involve covenants restricting our operations or our ability to incur additional debt. Any additional debt financing or additional equity that we raise may contain terms that are not favorable to us or our stockholders and require significant debt service payments, which divert resources from other activities. Additional financing may not be available at all, or if available, may not be in amounts or on terms acceptable to us. If we are unable to obtain additional financing, we may be required to delay the development, commercialization and marketing of our products and we may be required to significantly scale back our business and operations.

To date, our primary sources of capital have been private placements of preferred stock, debt financing agreements, our "at-the-market" program, our IPO and our follow-on public offerings. As previously disclosed, on April 20, May 24, and October 24, 2017 we received letters from the Listing Qualifications Department of The Nasdaq Stock Market, LLC ("Nasdaq") notifying us that we were not in compliance with applicable listing rules. On March 1, 2018, Nasdaq informed us that we had regained compliance with the applicable requirements for listing on the Nasdaq Capital Market. For more information on this risk, see Part II, Item 1A "*Risk Factors*."

In September 2015, we entered into a Loan Agreement with CRG, under which we could borrow up to $50.0 million, of which $30.0 million was immediately available and borrowed by us. Of the remaining $20.0 million, we borrowed $10.0 million on June 15, 2016 and the availability of the remaining $10.0 million was contingent on the achievement of certain net revenue milestones prior to December 31, 2016, which were not achieved. Under the original terms of the Loan Agreement, the first sixteen quarterly payments are interest-only payments, and the last eight quarterly payments will be equal installments in which interest and principal amounts are paid. Interest is calculated at a fixed rate of 12.5% per annum. We make quarterly payments of interest only in arrears commencing on September 30, 2015. During the interest-only period, we may elect to make the 12.5% per annum interest payment by making a cash payment for 8.5% per annum of interest and making a PIK for the remaining amount, for which the 4.0% per annum of interest would be added to the outstanding principal amount of the loan. To date, we have elected the PIK option to the extent available and have made a cash payment for the remaining amount. Principal is repayable in eight equal quarterly installments during the final two years of the term. Under the original terms of the Loan Agreement, all unpaid principal, and accrued and unpaid interest, is due and payable in full on September 30, 2021. As of June 30, 2018, we had $7.8 million outstanding under the Loan Agreement. For more information, see Part I, Item 2 *"Contractual Obligations."*

We may voluntarily prepay the loan in full, with a prepayment premium beginning at 5% and declining by 1% annually thereafter, with no premium being payable if prepayment occurs after the fifth year of the loan. Each tranche of borrowing requires the payment, on the borrowing date, of a financing fee equal to 1.5% of the principal amount borrowed. In addition, a facility fee equal to 7.0% of loan principal borrowed plus any PIK is payable at the end of the term or when the loan is repaid in full. The term loan is collateralized by a security interest in substantially all of our assets. We used the proceeds from the CRG borrowing and securities purchase to retire our outstanding debt with PDL and to retire the principal and accrued interest underlying our outstanding notes, which are described below.

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The Loan Agreement requires that we adhere to certain affirmative and negative covenants, including financial reporting requirements, certain minimum financial covenants for pre-specified liquidity and revenue requirements and a prohibition against the incurrence of indebtedness, or creation of additional liens, other than as specifically permitted by the terms of the Loan Agreement. In particular, the covenants of the Loan Agreement, as amended as of December 31, 2017, include a covenant that we maintain a minimum of $5.0 million of cash and certain cash equivalents. On December 14, 2017, we entered into a waiver and consent agreement (the "Waiver and Consent") with CRG. The Waiver and Consent provided for the waiver of the minimum required revenue financial covenant for the twelve-month period beginning January 1, 2017, as required under the terms of the Loan Agreement. Pursuant to the Waiver and Consent, CRG also consented to our payment of the cash interest payment due on December 31, 2017 in the form of a PIK loan instead. On January 24, 2018, we entered into a Waiver with CRG. The Waiver provided for the waiver of the $5,000,0000 minimum liquidity financial covenant and reduced it to $2,500,000 for the period beginning January 1, 2018 through February 28, 2018, as required under the terms of the Loan Agreement and waived any event of default resulting from non-compliance with the $5,000,000 minimum liquidity financial covenant.

On February 14, 2018, we entered into Amendment No. 2 to the Term Loan Agreement (the "Amendment No. 2 Loan Agreement") with CRG. Under its terms, the Amendment No. 2 Loan Agreement, among other things: (1) extended the interest-only period through June 30, 2021; (2) extended the period during which the Company may elect to pay a portion of interest in PIK interest payments through June 30, 2021 so long as no default has occurred and is continuing; (3) permitted the Company to make its entire interest payments in PIK interest payments for through December 31, 2019 so long as no default has occurred and is continuing; (4) extended the maturity date to June 30, 2023; (5) reduced the minimum liquidity requirement to $3.5 million at all times; (6) eliminated the minimum revenue covenant for 2018 and 2019; (7) reduced the minimum revenue covenant to $15 million for 2020, $20 million for 2021 and $25 million for 2022; and (8) provided CRG with board observer rights. If we fail to meet the applicable minimum revenue target in any calendar year, the Loan Agreement provides a cure right if we prepay a portion of the outstanding principal equal to 2.0 times the revenue shortfall. In addition, the Loan Agreement prohibits the payment of cash dividends on our capital stock and also places restrictions on mergers, sales of assets, investments, incurrence of liens, incurrence of indebtedness and transactions with affiliates. CRG may accelerate the payment terms of the Loan Agreement upon the occurrence of certain events of default set forth therein, which include our failure to make timely payments of amounts due under the Loan Agreement, the failure to adhere to the covenants set forth in the Loan Agreement, our insolvency or upon the occurrence of a material adverse change. We are currently in compliance with the covenants under the Loan Agreement, but if we default on any such covenants we will need, and may not be able to obtain, relief in the form of waivers or amendments to the applicable debt agreement.

In addition, on February 14, 2018, we entered into the Series A Purchase Agreement with CRG, pursuant to which it agreed to convert $38.0 million of the outstanding principal amount of its senior secured term loan (plus the back-end fee and prepayment premium applicable thereto) under the Loan Agreement into a newly authorized Series A preferred stock. Under the terms of the Series A Purchase Agreement, the holders of Series A preferred stock are entitled to receive annual accruing dividends at a rate of 8%, payable in additional shares of Series A preferred stock or cash, at our option. The shares of Series A preferred stock have no voting rights and rank senior to all other classes and series of the Company's equity in terms of repayment and certain other rights. The Series A preferred stock and any of the Company's common stock issued upon conversion of the Series A preferred stock is subject to a lockup agreement through February 14, 2019.

On February 3, 2016, we filed a universal shelf registration statement to offer up to $150.0 million of our securities and entered into an "at-the-market" program pursuant to a Sales Agreement with Cowen, as sales agent, through which we issued and sold common stock with an aggregate value of approximately $8.7 million between the registration statement's effectiveness on March 8, 2016 and September 2017. During the year ended December 31, 2016, we sold 27,374 shares of common stock through the "at-the-market" program at an average price of $194.74 and raised net proceeds of $5.2 million, after payment of $0.2 million in commissions and fees to Cowen. During the three and six months ended June 30, 2018 and 2017, we sold no shares of common stock through the "at-the-market" program. Due to the SEC's "baby shelf rules," which prohibit companies with a public float of less than $75 million from issuing securities under a shelf registration statement in excess of one-third of such company's public float in a twelve-month period, we are unable to issue more shares through our "at-the-market" program at this time. In addition, in August 2016, we issued and sold 246,445 shares of our common stock in a follow-on public offering at a public offering price of $140.00 per share, for net proceeds of approximately $31.5 million after deducting underwriting discounts and commissions of approximately $2.4 million and other expenses of approximately $0.6 million. The 246,445 shares include the exercise in full by the underwriters of their option to purchase an additional 32,145 shares of our common stock.

On November 3, 2017, we entered into the Lincoln Park Purchase Agreement pursuant to which Lincoln Park is obligated to purchase, at our request, up to $15.0 million of our common stock over a 30-month period, subject to certain limitations set forth in the purchase agreement. As a fee for Lincoln Park's commitment to purchase such shares, we issued 943,396 shares of common stock to Lincoln Park on November 3, 2017. As obligated under a registration rights agreement entered into with Lincoln Park in connection

with the Purchase Agreement, we filed a registration statement on Form S-1 on November 6, 2017 for up to 248,750 of such shares, which registration statement was declared effective by the SEC on November 17, 2017.

On February 16, 2018, we completed a public offering of 17,979 shares of Series B preferred stock and warrants to purchase 17,979,000 shares of common stock. As a result, we received net proceeds of approximately $16.0 million after underwriting discounts, commissions, legal and accounting fees of approximately $1.9 million. The Series B preferred stock has a liquidation preference of $0.001 per share, full ratchet price based anti-dilution protection, has no voting rights and is subject to certain ownership limitations. The Series B preferred stock is immediately convertible at the option of the holder, has no stated maturity, and does not pay regularly stated dividends or interest. Each share of Series B preferred stock is accompanied by one Series 1 warrant that expires on the seventh anniversary of the date of issuance to purchase up to 500 shares of common stock and one Series 2 warrant that expires on the earlier of (i) the seventh anniversary of the date of issuance or (ii) the 60th calendar day following the receipt and announcement of FDA clearance of our Pantheris small vessel device (or the same or similar product with a different name) to purchase up to 500 shares of common stock; provided, however, if at any time during such 60-day period the volume weighted average price for any trading day is less than the then effective exercise price, the termination date shall be extended to the seven year anniversary of the initial exercise date.

In July 2018, we sold a further 2,166,180 shares of our common stock (excluding warrants to purchase an additional 1,083,091 shares of our common stock issued in a concurrent private placement) pursuant to the Shelf Registration Statement for gross proceeds of approximately $3.5 million.

Cash Flows

	Six Months Ended June 30,	
	2018	2017
	(in thousands)	
Net cash (used in) provided by:		
Operating activities	$ (11,346)	$ (22,311)
Investing activities	(125)	(45)
Financing activities	16,226	224
Net increase (decrease) in cash and cash equivalents	$ 4,755	$ (22,132)

Net Cash Used in Operating Activities

Net cash used in operating activities for the six months ended June 30, 2018 was $11.3 million, consisting primarily of a net loss of $16.1 million and a decrease in net operating assets of $2.8 million, offset by non-cash charges of $7.6 million. The decrease in net operating assets was due to a decrease in other liabilities related to the payment of litigation settlement expense, assigned interest to PDL, partially offset by fluctuations in inventories, accounts receivable, prepaid expenses and accounts payable, due to timing of payments. The non-cash charges primarily consisted of depreciation, stock-based compensation, non-cash interest expense and an increased reserve for excess and obsolete inventories.

Net cash used in operating activities for the six months ended June 30, 2017 was $22.3 million, consisting primarily of a net loss of $28.1 million and an increase in net operating assets of $2.8 million, offset by non-cash charges of $8.6 million. The increase in net operating assets was due to an increase in inventories, prepaid expenses and other current assets, decreases in accounts payable, accrued compensation and accrued expenses and other current liabilities due to our workforce reduction in April 2017 and efforts to reduce operating expenses, decreases in other liabilities related to the repayment of assigned interest to PDL, partially offset by a decrease in accounts receivable. The non-cash charges primarily consisted of depreciation, stock-based compensation, non-cash interest expense and other charges related to our credit agreement with CRG, and an increased reserve for inventory excess and obsolescence.

Net Cash Used in Investing Activities

Net cash used in investing activities in the six months ended June 30, 2018 was $0.1 million consisting of purchases of property and equipment.

Net cash used in investing activities in the six months ended June 30, 2017 was $45,000 consisting of purchases of property and equipment.

Net Cash Provided by Financing Activities

Net cash provided by financing activities in the six months ended June 30, 2018 of $16.2 million primarily relates to proceeds from issuances of convertible preferred stock and common stock.

Net cash provided by financing activities in the six months ended June 30, 2017 of $0.2 million primarily relates to proceeds from issuances of common stock.

Off-Balance Sheet Arrangements

We currently have no off-balance sheet arrangements and we currently do not use any structured finance, special purpose entities, or variable interest entities.

Contractual Obligations

There have been no other material changes to our contractual obligations from those described in our Annual Report on Form 10-K, as filed with the SEC on March 30, 2018.

ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Interest Rate Risk

The risk associated with fluctuating interest rates is primarily limited to our cash equivalents, which are carried at quoted market prices. Due to the short-term maturities and low risk profile of our cash equivalents, an immediate 100 basis point change in interest rates would not have a material effect on the fair value of our cash equivalents. We do not currently use or plan to use financial derivatives in our investment portfolio.

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Credit Risk

As of June 30, 2018 and December 31, 2017, our cash and cash equivalents were maintained with one financial institution in the United States, and our current deposits are likely in excess of insured limits. We have reviewed the financial statements of this institution and believe it has sufficient assets and liquidity to conduct its operations in the ordinary course of business with little or no credit risk to us.

Our accounts receivable primarily relates to revenues from the sale and rental of our Lumivascular platform products to hospitals and medical centers in the United States. None of our customers represented more than 10% of our accounts receivable as of June 30, 2018 and December 31, 2017.

Foreign Currency Risk

Our business is primarily conducted in U.S. dollars. Any transactions that may be conducted in foreign currencies are not expected to have a material effect on our results of operations, financial position or cash flows. Based on our foreign currency balances of monetary assets and liabilities, we estimate that a 10% adverse change in Euro exchange rates versus the U.S. dollar would not have a material effect on the fair value of our monetary assets.

ITEM 4. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

We maintain disclosure controls and procedures that are designed to ensure that information required to be disclosed in our reports under the Securities Exchange Act of 1934, as amended, or the Exchange Act, and the rules and regulations thereunder, is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms and that such information is accumulated and communicated to our management, including our principal executive officer and principal financial officer, as appropriate, to allow for timely decisions regarding required disclosure. In designing and evaluating the disclosure controls and procedures, management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives, and management is required to apply its judgment in evaluating the cost-benefit relationship of possible controls and procedures.

As required by Rule 13a-15(b) under the Exchange Act, our management, under the supervision and with the participation of our principal executive officer and principal financial officer, has evaluated the effectiveness of the design and operation of our disclosure controls and procedures (as such term is defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act) as of June 30, 2018. Based on such evaluation, our principal executive officer and principal financial officer have concluded that, as of June 30, 2018, our disclosure controls and procedures were effective.

Changes in Internal Control over Financial Reporting

There were no changes in our internal controls over financial reporting identified in management's evaluation pursuant to Rules 13a-15(d) and 15d-15(d) of the Exchange Act that occurred during the first quarter of 2018 that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II. OTHER INFORMATION

ITEM 1. LEGAL PROCEEDINGS

Except as set forth below, as of the date of this Quarterly Report on Form 10-Q, we are not involved in any pending legal proceedings that we believe could have a material adverse effect on our financial condition, results of operations or cash flows. From time to time we may be involved in legal proceedings or investigations, which could harm our reputation, business and financial condition and divert the attention of our management from the operation of our business.

Between May 22, 2017 and May 25, 2017, three class actions were filed in the Superior Court of the State of California, County of San Mateo ("State Court"), against us and certain of our officers and directors. The underwriters of our IPO in January 2015 are also named as defendants. The actions were captioned Grotewiel v. Avinger, Inc., et al., No. 17-CIV-02240, Gonzalez v. Avinger, Inc., et al., No. 17-CIV-02284, and Olberding v. Avinger, Inc., et al., No. 17-CIV-02307. These lawsuits allege that the registration statement for our IPO made false and misleading statements and omissions in violation of the Securities Act of 1933. Plaintiffs seek to represent a class of purchasers of our common stock in and/or traceable to our IPO. Plaintiffs seek, among other things, unspecified compensatory damages, interest, costs, recission, and attorneys' fees. On June 12, 2017, defendants removed these actions to the United States District Court for the Northern District of California ("Federal Court").

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On June 22, 2017, and June 23, 2017, plaintiffs Olberding and Gonzalez moved to remand their cases to the State Court. Defendants opposed these motions. On July 21, 2017, the Federal Court granted the motions to remand the Olberding and Gonzalez actions to the State Court. On August 9, 2017, the State Court consolidated the Olberding and Gonzalez actions under the caption Gonzalez v. Avinger, Inc., et al., No. 17-CIV-02284 ("State Action"). On September 22, 2017, an amended complaint was filed in the State Action. On October 31, 2017, the parties in the State Action stipulated to a stay of proceedings until judgment is entered in the federal Grotewiel action ("Federal Action"). On June 20, 2018, the State Court dismissed the State Action pursuant to the proposed settlement described below.

On October 11, 2017, the Federal Court appointed a lead plaintiff and approved the selection of a lead counsel in the Federal Action. In order to allow the parties to pursue mandatory alternative dispute resolution, the parties have stipulated and the Federal Court ordered that defendants' motion to dismiss the Federal Action will be due on January 17, 2018, with a hearing set for May 1, 2018. On November 21, 2017, an amended complaint was filed in the Federal

Action. Defendants filed a motion to dismiss that complaint on January 26, 2018. On March 19, 2018, plaintiff in the Federal Action filed a further amended complaint, on behalf of a class of purchasers of our common stock in and/or traceable to our IPO, as well as purchasers of our common stock during the period January 30, 2015, to April 10, 2017.

The Company and its directors believe that the foregoing lawsuits were entirely without merit however, in the interest of avoiding the cost and disruption of continuing to defend against these lawsuits, the Company entered into a settlement of the securities class actions pending against the Company and several of its officers and directors. The settlement is for a total of $5 million and, if approved by the court, will result in a full release of claims against all defendants. The settlement is subject to final approval by the court. A court hearing regarding the final settlement approval is set for October 23, 2018. The Company's total contribution to the settlement fund is $1.76 million. The Company paid this amount in March 2018.

ITEM 1A. RISK FACTORS

Investing in our common stock involves a high degree of risk. We have identified the following risks and uncertainties that may have a material adverse effect on our business, financial condition, results of operations and future growth prospects. Our business could be harmed by any of these risks. The risks and uncertainties described below are not the only ones we face. If any of the risks actually occur, our business, financial condition, results of operations, cash flows and prospects could be materially and adversely affected. The trading price of our common stock could decline due to any of these risks, and you may lose all or part of your investment. In assessing these risks, you should also refer to the other information contained in this Quarterly Report on Form 10-Q, including our financial statements and related notes. Please also see "Cautionary Notes Regarding Forward-Looking Statements."

Risks Related to Our Business

Our quarterly and annual results may fluctuate significantly, may not fully reflect the underlying performance of our business and may result in decreases in the price of our common stock.

Our quarterly and annual results of operations, including our revenues, profitability and cash flow, may vary significantly in the future and period-to-period comparisons of our operating results may not be meaningful. Accordingly, the results of any one quarter or period should not be relied upon as an indication of future performance. Our quarterly and annual financial results may fluctuate as a result of a variety of factors, many of which are outside our control and, as a result, may not fully reflect the underlying performance of our business. Fluctuation in quarterly and annual results may decrease the value of our common stock. Factors that may cause fluctuations in our quarterly and annual results include, without limitation:

- our ability to obtain and maintain FDA clearance and approval from foreign regulatory authorities for our products, and the timing of such clearances and approvals, particularly with respect to current and future generations of Pantheris;
- market acceptance of our Lumivascular platform and products, including Pantheris;
- the availability of reimbursement for our Lumivascular platform products;
- our ability to attract new customers and increase the amount of business we generate from existing customers;
- results of our clinical trials;
- the timing and success of new product and feature introductions by us or our competitors or any other change in the competitive dynamics of our industry, including consolidation among competitors, customers or strategic partners;

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- the amount and timing of costs and expenses related to the maintenance and expansion of our business and operations;
- changes in our pricing policies or those of our competitors;
- general economic, political, industry and market conditions, including economic and political uncertainty caused by the recent U.S. presidential election;
- the regulatory environment;
- the hiring, training and retention of key employees, including our sales team;
- the cost and potential outcomes of existing and future litigation;
- our ability to obtain additional financing; and
- advances and trends in new technologies and industry standards.

We have a history of net losses and we may not be able to achieve or sustain profitability.

We have incurred significant losses in each period since our inception in 2007. We incurred net losses of $16.1 million for the six months ended June 30, 2018, $48.7 million in 2017, $56.1 million in 2016 and $47.3 million in 2015. As of June 30, 2018, we had an accumulated deficit of approximately $317.4 million. These losses and our accumulated deficit reflect the substantial investments we have made to develop our Lumivascular platform and acquire customers.

We expect our losses to continue for the foreseeable future as we continue to make significant future expenditures to develop and expand our business. In addition, as a public company, we will continue to incur significant legal, accounting and other expenses. Accordingly, we cannot assure you that we will achieve profitability in the future or that, if we do become profitable, we will sustain profitability. Our failure to achieve and sustain profitability would negatively impact the market price of our common stock.

We may not be able to secure additional financing on favorable terms, or at all, to meet our future capital needs and our failure to obtain additional

financing when needed could force us to delay, reduce or eliminate our product development programs and commercialization efforts or cause us to become insolvent.

We believe that the net proceeds from the recently completed offerings of our Series B preferred stock and common stock, together with our cash and cash equivalents at June 30, 2018 and expected revenues from operations, will be sufficient to satisfy our capital requirements and fund our operations for at least the next five months. Even though we sold $18.0 million in Series B preferred stock and warrants in our February 2018 offering, and $3.5 million of common stock and warrants in our July 2018 offering, we will need to raise additional funds through future equity or debt financings within the next five months to meet our operational needs and capital requirements for product development, clinical trials and commercialization and may subsequently require additional fundraising. We can provide no assurance that we will be successful in raising funds pursuant to additional equity or debt financings or that such funds will be raised at prices that do not create substantial dilution for our existing stockholders. Given the recent decline in our stock price, any financing that we undertake in the next five months could cause substantial dilution to our existing stockholders.

To date, we have financed our operations primarily through sales of our products and net proceeds from the issuance of our preferred stock and debt financings, our "at-the-market" program, our initial public offering, or IPO, and our follow-on public offerings. The warrants issued pursuant to the Series B Purchase Agreement entered into in connection with the Series B preferred stock follow-on in February 2018 (the "Series B Offering") prohibit us from entering into certain transactions involving the issuance of securities for a price determined by reference to the trading price of our common stock or otherwise subject to modification following the date of issuance, in each case for a period of three years from the closing date of the Series B Offering (and excluding purchases pursuant to the Series B Purchase Agreement, which may be made on the 120 day anniversary of the closing date of the offering). This prohibition may be waived by holders of two-thirds of the outstanding Series 1 and Series 2 warrants at any time. We do not know when or if our operations will generate sufficient cash to fund our ongoing operations. We cannot be certain that additional capital will be available as needed on acceptable terms, or at all. In the future, we may require additional capital in order to (i) continue to conduct research and development activities, (ii) conduct post-market clinical studies, as well as clinical trials to obtain regulatory clearances and approvals necessary to commercialize our Lumivascular platform products, (iii) expand our sales and marketing infrastructure and (iv) acquire complementary businesses technologies or products; or (v) respond to business opportunities,

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challenges, a decline in sales, increased regulatory obligations or unforeseen circumstances. Our future capital requirements will depend on many factors, including:

- the degree of success we experience in commercializing our Lumivascular platform products, particularly next-generation Pantheris, and any future versions of such products;
- the costs, timing and outcomes of clinical trials and regulatory reviews associated with our future products;
- the costs and expenses of maintaining or expanding our sales and marketing infrastructure and our manufacturing operations;
- the costs and timing of developing variations of our Lumivascular platform products, especially Pantheris and, if necessary, obtaining FDA clearance of such variations;
- the extent to which our Lumivascular platform is adopted by hospitals for use by interventional cardiologists, vascular surgeons and interventional radiologists in the treatment of PAD;
- the number and types of future products we develop and commercialize;
- the costs of defending ourselves against existing and future litigation;
- the costs of preparing, filing and prosecuting patent applications and maintaining, enforcing and defending intellectual property-related claims; and
- the extent and scope of our general and administrative expenses.

We may raise additional funds in equity or debt financings or enter into credit facilities in order to access funds for our capital needs. Any debt financing obtained by us in the future would cause us to incur additional debt service expenses and could include restrictive covenants relating to our capital raising activities and other financial and operational matters, which may make it more difficult for us to obtain additional capital and pursue business opportunities. In addition, due to our current level of debt, future equity investors may require that we convert all or a portion of our debt to equity, and our debtholders may not agree to such terms. If we raise additional funds through further issuances of equity or convertible debt securities, and/or if we convert all or a portion of our existing debt to equity, our existing stockholders could suffer significant dilution in their percentage ownership of our company, and any new equity securities we issue could have rights, preferences and privileges senior to those of holders of our common stock. If we are unable to obtain adequate financing or financing on terms satisfactory to us when we require it, we may terminate or delay the development of one or more of our products, delay clinical trials necessary to market our products, delay establishment of sales and marketing capabilities or other activities necessary to commercialize our products, and significantly scale back our operations, or we may become insolvent. If this were to occur, our ability to continue to grow and support our business and to respond to business challenges could be significantly limited.

We have a significant amount of debt, which may adversely affect our ability to operate our business and our financial position and our ability to secure additional financing in the future.

As of June 30, 2018, we had $7.8 million in principal and interest outstanding under a Term Loan Agreement, or the Loan Agreement, with CRG Partners III L.P. and certain of its affiliated funds (collectively "CRG"). This amount reflects the completion of the Series B Offering and CRG's conversion of $38 million in outstanding principal and interest into Series A preferred stock (the "CRG Conversion"). Our significant amount of debt may:

- make it more difficult for us to satisfy our obligations with respect to the Loan Agreement;
- increase our vulnerability to adverse changes in general economic, industry and competitive conditions;
- require us to dedicate a substantial portion of our cash flow from operations to make payments on our debt, thereby reducing the availability of our cash flow to fund working capital, capital expenditures and other general corporate purposes;

- limit our flexibility in planning for, or reacting to, changes in our business and the industry in which we operate;
- restrict us from exploiting business opportunities;

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- make it more difficult to satisfy our financial obligations, including payments on the Loan Agreement
- place us at a competitive disadvantage compared to our competitors that have less debt obligations; and
- limit our ability to borrow additional funds for working capital, capital expenditures, acquisitions, debt service requirements, execution of our business strategy or other general corporate purposes on satisfactory terms or at all.

The existence of a substantial amount of debt may make it difficult for us to run our business effectively or raise the capital we need to continue our operations.

Covenants under the Loan Agreement will restrict our business in many ways.

The Loan Agreement contains various covenants that limit, subject to certain exceptions, our ability to, among other things:

- incur or assume liens;
- incur additional debt or provide guarantees in respect of obligations of other persons;
- issue redeemable stock and preferred stock;
- pay dividends or make distributions on capital stock, repurchase, redeem or make payments on capital stock or repay, repurchase, redeem, retire, defease, acquire or cancel debt prior to the stated maturity thereof;
- make loans, investments or acquisitions;
- create or permit restrictions on the ability of our subsidiaries to pay dividends or make other distributions to us or to guarantee our debt, limit our or any of our subsidiaries ability to create liens, or make or pay intercompany loans or advances;
- enter into certain transactions with affiliates;
- sell, transfer, license, lease or dispose of our or our subsidiaries' assets, including the capital stock of our subsidiaries; and
- dissolve, liquidate, consolidate or merge with or into, or sell substantially all the assets of us and our subsidiaries, taken as a whole, to, another person.

In particular, the Loan Agreement, as amended, includes a covenant that we maintain a minimum of $3.5 million of cash and certain cash equivalents, and we will have to achieve minimum revenue of $15.0 million in 2020, $20.0 million in 2021 and $25.0 million in 2022. If we fail to meet the applicable minimum revenue target in any calendar year, the Loan Agreement provides a cure right if we prepay a portion of the outstanding principal equal to 2.0 times the revenue shortfall. There can be no assurance as to our future compliance with the covenants under the Loan Agreement, as amended.

The covenants contained in the Loan Agreement could adversely affect our ability to:

- finance our operations;
- make needed capital expenditures;
- make strategic acquisitions or investments or enter into alliances;
- withstand a future downturn in our business or the economy in general;
- refinance our outstanding indebtedness prior to maturity;
- engage in business activities, including future opportunities, that may be in our interest; and
- plan for or react to market conditions or otherwise execute our business strategies.

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We are also subject to standard event of default provisions under the Loan Agreement that , if triggered, would allow the debt to be accelerated, which could significantly deplete our cash resources, cause us to raise additional capital at unfavorable terms, require us to sell portions of our business or result in us becoming insolvent. The existing collateral pledged under the Loan Agreement may prevent us from being able to secure additional debt or equity financing on favorable terms, or at all, or to pursue business opportunities, including potential acquisitions. If we default under any of these debt covenants and are unable to cure the default within the relevant cure period, we would need relief from default or else our creditors could exercise their remedies. There can be no assurance that our debtholders would accord any relief from default. In addition, potential sources of equity financing may decline to invest in our company given the amount of debt and the rights that debt holders have to get paid before equity holders. In order to facilitate equity investments, future equity investors may require that we convert all or a portion of our debt to equity, and our debtholders may not agree to such terms. The amount of debt could therefore affect our ability to finance our company and prevent us from obtaining necessary operating capital as a result.

We may not be able to generate sufficient cash to service our credit facility with CRG. If we fail to comply with the obligations under our credit facility, the lender may be able to accelerate amounts owed under the facility and may foreclose upon the assets securing our obligations.

Borrowings under our credit facility are secured by substantially all of our personal property, including our intellectual property. Our ability to make scheduled payments or to refinance our debt obligations depends on numerous factors, including the amount of our cash reserves and our actual and projected financial and operating performance. These amounts and our performance are subject to numerous risks, including the risks in this section, some of which may be beyond our control. We cannot assure you that we will maintain a level of cash reserves or cash flows from operating activities sufficient to permit us to pay the principal, premium, if any, and interest on our existing or future indebtedness. If our cash flows and capital resources are insufficient to fund our debt service obligations, we may be forced to reduce or delay capital expenditures, sell assets or operations, seek additional capital or restructure or refinance our indebtedness. We cannot assure you that we would be able to take any of these actions, or that these actions would permit us to meet our scheduled debt service obligations. In addition, in the event of our breach of the Loan Agreement, we may be required to repay any outstanding amounts earlier than anticipated. If we fail to comply with our obligations under the Loan Agreement, the lender would be able to accelerate the required repayment of amounts due and, if they are not repaid, could foreclose upon our assets securing our obligations under the Loan Agreement.

CRG has the right to acquire a significant percentage of our stock upon conversion of its Series A preferred stock and has the ability to exert significant control over matters pursuant to the protective provisions therein as well as the covenants and other restrictions in the Loan Agreement.

Even though Series A preferred stock is non-voting stock, and has beneficial ownership restrictions, the Series A Certificate of Designations has protective provisions that will require CRG to consent to certain significant Company events. For example, CRG's consent would be necessary to create additional shares of Series A preferred stock, amend our organizational documents, or approve any merger, sale of assets, or other major corporate transaction. This consent requirement could delay or prevent any acquisition of our company on terms that other stockholders may desire, and may adversely affect the market price of our common stock.

The Series A preferred stock has a liquidation preference senior to our common stock and the Series B preferred stock.

Series A preferred stock has a liquidation preference that gets paid prior to any payment on our common stock (including shares issuable upon the exercise of the Series 1 or Series 2 warrants) and Series B preferred stock. As a result, if we were to dissolve, liquidate, merge with another company or sell our assets, the holders of our Series A preferred stock would have the right to receive up to approximately $41,800,000 from any such transaction before any amount is paid to the holders of our Series B preferred stock or common stock or pursuant to the redemption rights in the warrants for fundamental transactions. The payment of the liquidation preferences could result in common stockholders, Series B preferred stockholders and warrantholders not receiving any consideration if we were to liquidate, dissolve or wind up, either voluntarily or involuntarily.

The existence of the liquidation preferences may reduce the value of our common stock, make it harder for us to sell shares of common stock in offerings in the future, or prevent or delay a change of control. Furthermore, any conversion of Series A preferred stock into common stock will cause substantial dilution to our common stock holders.

Our limited commercialization experience and number of approved products makes it difficult to evaluate our current business, predict our future prospects, assess the long-term performance of our products, and forecast our financial performance.

We were incorporated in 2007, began commercializing our initial non-Lumivascular platform products in 2009 and introduced our first Lumivascular platform products in the United States in late 2012. We received 510(k) clearance from the FDA, for

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commercialization of Pantheris in October 2015, an additional 510(k) clearance for an enhanced version of Pantheris in March 2016 and commenced sales of Pantheris in the United States and select international markets promptly thereafter. Our current version of Pantheris, Pantheris 3.0, received FDA clearance in May 2018. Our limited commercialization experience and number of approved products make it difficult to evaluate our current business and predict our future prospects. We have encountered and will continue to encounter risks and difficulties frequently experienced by companies in rapidly-changing industries. These risks and uncertainties include the risks inherent in clinical trials, market acceptance of our products, and increasing and unforeseen expenses as we continue to attempt to grow our business.

In addition, we have in the past, and may in the future, become aware of performance issues with our products. For example, prior to becoming commercially available on March 1, 2016, Pantheris had been used in clinical trials mainly in controlled situations. Since its commercialization and as more physicians have used Pantheris, we have received additional feedback on its performance, both positive and negative. We have attempted to address certain of these concerns with Pantheris 3.0. However, there can be no assurance that the changes and improvements will fully address the performance issues that have been raised by earlier versions of Pantheris. Even if these issues are resolved and physician concerns addressed, future product performance issues may occur and our reputation could suffer, which could lead to decreased sales of our products. Our revenue has been and continues to be adversely impacted by these product performance issues. We also had to incur additional expenses to make product changes and improvements, and to replace products in accordance with our warranty policy. This additional expense, and any future expense that we may incur as a result of future product performance issues, will negatively impact our financial performance and results of operations. If we are unable to improve the performance of our products to meet the concerns of physicians our revenue may decline further or fail to increase.

Our short commercialization experience and limited number of approved products also make it difficult for us to forecast our future financial performance and such forecasts are limited and subject to a number of uncertainties, including our ability to obtain FDA clearance for new versions of Pantheris and other Lumivascular platform products we intend to commercialize in the United States. If our assumptions regarding the risks and uncertainties we face, which we use to plan our business, are incorrect or change due to circumstances in our business or our markets, or if we do not address these risks successfully, our operating and financial results could differ materially from our expectations and our business could suffer.

Our success depends in large part on a limited number of products, particularly Pantheris, all of which have a limited commercial history. If these products fail to gain, or lose, market acceptance, our business will suffer.

Ocelot, Ocelot PIXL, Ocelot MVRX, Lightbox, Wildcat, Kittycat 2 and Pantheris are our only products currently cleared for sale, and our current revenues are wholly dependent on them. Sales of Wildcat and Kittycat 2 have declined and are continuing to decline as we focus on the promotion of our Lumivascular platform products. In addition, the long-term viability of our company is largely dependent on the successful commercialization and continued development of Pantheris and we expect that sales of Pantheris 3.0 and our other current and future Lumivascular platform products in the United States will account for

substantially all of our revenues for the foreseeable future. Accordingly, our success depends on the continued and growing acceptance and use of Pantheris and our other Lumivascular platform products by the medical community. All of our products have a limited commercial history. For example, we received 510(k) clearance from the FDA to commercialize Pantheris in October 2015 as well as a separate FDA clearance to market enhanced versions of Pantheris in March 2016 and May 2018, and those versions of Pantheris became commercially available in the United States and select international markets promptly thereafter. As such acceptance among physicians of these products may not increase or may decline.

Our ability to successfully market Pantheris will also be limited due to a number of factors including regulatory restrictions in our labeling. We cannot assure you that demand for Pantheris and our other Lumivascular platform products will continue to grow and our products may not significantly penetrate current or new markets. Market demand for Pantheris and physician adoption of this product also may be negatively impacted by product performance issues that we have experienced and the need to replace certain products in accordance with our warranty policy. Utilization of our products has been less than we anticipated historically. If demand for Pantheris and our other Lumivascular platform products does not increase and we cannot sell our products as planned, our financial results will be harmed. In addition, market acceptance may be hindered if physicians are not presented with compelling data from long-term studies of the safety and efficacy of our Lumivascular platform products compared to alternative procedures, such as angioplasty, stenting, bypass surgery or other atherectomy procedures. For example, if patients undergoing treatment with our Lumivascular platform products have retreatment rates higher than or comparable with the retreatment rates of alternative procedures, it will be difficult to demonstrate the value of our Lumivascular platform products. Any studies we may conduct comparing our Lumivascular platform with alternative procedures will be expensive, time consuming and may not yield positive results. Physicians will also need to appreciate the value of real-time imaging in improving patient outcomes in order to change current methods for treating PAD patients. In addition, demand for our Lumivascular platform products may decline or may not increase as quickly as we expect. Failure of our Lumivascular platform products to significantly penetrate current or new markets, or our failure to successfully commercialize Pantheris, would harm our business, financial condition and results of operations.

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We are also aware of certain characteristics and features of our Lumivascular platform that may prevent widespread market adoption. For example, in procedures using the current model of Pantheris, some physicians may prefer to have a technician or second physician assisting with the operation of the catheter as well as a separate technician to operate the Lightbox, potentially making it less financially attractive for physicians and their hospitals and medical facilities. It may take significant time and expense to modify our products to allow a single physician to operate the entire system and we can provide no guarantee that we will be able to make such modifications, or obtain any additional and necessary regulatory clearances for such modifications. Although the OCT images created by our Lightbox may make it possible for physicians to reduce the degree to which fluoroscopy and contrast dye are used when using our Lumivascular platform products compared to competing endovascular products, physicians are still using both fluoroscopy and contrast dye. As a result, risks of complications from radiation and contrast dye are still present and may limit the commercial success of our products. Finally, it will require training for technicians and physicians to effectively operate our Lumivascular platform products, including interpreting the OCT images created by our Lightbox, which may affect adoption of our products by physicians. These or other characteristics and features of our Lumivascular platform may cause our products not to be widely adopted and harm our business, financial condition and results of operation.

We rely heavily on our sales professionals to market and sell our products. If we are unable to hire, effectively train, manage, improve the productivity of, and retain our sales professionals, our business will be harmed, which would impair our future revenue and profitability.

Our success largely depends on our ability to hire, train, manage and improve the productivity levels of our sales professionals. We have experienced direct sales employee and sales management turnover in the past. The loss of any member of our sales team's senior management could weaken our sales expertise and harm our business, and we may not be able to find adequate replacements on a timely basis, or at all. The changes in senior management that have occurred over the past several years may continue to create instability in our sales force leading to attrition in sales representatives in the future.

Competition for sales professionals who are familiar with and trained to sell our products continues to be strong. We train our sales professionals to better understand our existing and new product technologies and how they can be positioned against our competitors' products. These initiatives are intended to improve the productivity of our sales professionals and our revenue and profitability. It takes time for the sales professionals to become productive following their hiring and training and there can be no assurance that sales representatives will reach adequate levels of productivity, or that we will not experience significant levels of attrition in the future. Measures we implement to improve the productivity may not be successful and may instead contribute to instability in our operations, additional departures from our sales organization, or further reduce our revenue, profitability, and harm our business and our stock price may be adversely impacted as a result.

If our revenue does not improve, or if our cost of revenue and/or operating expenses increase by a greater percentage than our revenue, our gross margins and operating margins may be adversely impacted, our loss from operations will increase, and our cash used in operating activities will increase, which could reduce our assets and have a material adverse effect on our stock price.

Our gross margin was (5%) for the three months ended June 30, 2018 compared to (59%) for the three months ended June 30, 2017. Our gross margin was 7% for the six months ended June 30, 2018 compared to (34%) for the six months ended June 30, 2017. Gross margin for the three and six month periods ended June 30, 2017 was negatively impacted by increases in charges related to excess and obsolete Lightbox and Pantheris inventories.

Our gross margin is impacted by the revenue that we generate and the costs incurred to generate the revenue. To the extent that our revenue does not grow or declines, it is difficult to improve our gross margins as our fixed costs must be spread over a lower revenue base. Our future revenue may be adversely affected by a number of factors including the competitive market environment in which we operate, which may result in a decrease in the number of products sold or a decrease in the average selling prices achieved for our product sales. If our revenue does not improve, or if our cost of revenue increases by a greater percentage than our revenue, or if we are not able to reduce expenses in the event of a decline in revenue, we may continue to generate losses from operations and use cash, which could reduce our cash faster than budgeted, cause us to need to obtain additional financing and have a material adverse effect on our operations and stock price.

Our ability to compete is highly dependent on demonstrating the benefits of our Lumivascular platform to physicians, hospitals and patients.

In order to generate sales, we must be able to clearly demonstrate that our Lumivascular platform is both a more effective treatment system and more cost-effective than the alternatives offered by our competitors. If we are unable to convince physicians that our Lumivascular platform leads to significantly lower rates of restenosis, or narrowing of the artery, and leads to fewer adverse

events during treatment than those using competing technologies, our business will suffer. In order to use Pantheris or our Ocelot family of catheters, hospitals must make an investment in our Lightbox. Accordingly, we must convince hospitals and physicians that our Lumivascular platform results in significantly better patient outcomes at a competitive overall cost. For example, we may need to demonstrate that the investment hospitals must make when purchasing our Lightbox and the incremental costs of having a technician or a second physician operate Pantheris can be justified based on the benefits to patients, physicians and hospitals. If we are unable to develop robust clinical data to support these claims, we will be unable to convince hospitals and third-party payors of these benefits and our business will suffer.

Our value proposition to physicians and hospitals is largely dependent upon our contention that the rate of arterial damage when physicians are using our imaging products is lower than with non-imaging competing products. If minimizing arterial damage does not significantly impact patient outcomes, meaning either (i) that restenosis is often triggered without disrupting healthy arterial structures, or (ii) arteries can be damaged during treatment without triggering restenosis, then we may be unable to demonstrate our Lumivascular platform's benefits are any different than competing technologies. Furthermore, physicians may find our imaging system difficult to use, and we may not be able to provide physicians with adequate training to be able to realize the benefits of our Lumivascular platform. If physicians do not value the benefits of on-board imaging and the enhanced visualization enabled by our products during an endovascular intervention as compared to our competitor's products, or do not believe that such benefits improve clinical outcomes, our Lumivascular platform products may not be widely adopted.

The use, misuse or off-label use of the products in our Lumivascular platform may result in injuries that lead to product liability suits, which could be costly to our business.

We require limited training in the use of our Lumivascular platform products because we market primarily to physicians who are experienced in the interventional techniques required to use our device. If demand for our Lumivascular platform continues to grow, less experienced physicians will likely use the devices, potentially leading to more injury and an increased risk of product liability claims. The use or misuse of our Lumivascular platform products has in the past resulted, and may in the future result, in complications, including damage to the treated artery, infection, internal bleeding, and limb loss, potentially leading to product liability claims. Our Lumivascular platform products are contraindicated for use in the carotid, cerebral, coronary, iliac, or renal arteries. Our sales force does not promote the use of our products for off-label indications, and our U.S. instructions for use specify that our Lumivascular platform products are not intended for use in the carotid, cerebral, coronary, iliac or renal arteries. However, we cannot prevent a physician from using our Lumivascular platform products for these off-label applications. The application of our Lumivascular platform products to coronary arteries, as opposed to peripheral arteries, is more likely to result in complications that have serious consequences. For example, if excised plaque were not captured properly in our device, it could be carried by the bloodstream to a more narrow location, blocking a coronary artery, leading to a heart attack, or blocking an artery to the brain, leading to a stroke. If our Lumivascular platform products are defectively designed, manufactured or labeled, contain defective components or are misused, we may become subject to costly litigation initiated by our customers or their patients. Product liability claims are especially prevalent in the medical device industry and could harm our reputation, divert management's attention from our core business, be expensive to defend and may result in sizable damage awards against us. Although we maintain product liability insurance, the amount or breadth of our coverage may not be adequate for the claims that are made against us.

The expense and potential unavailability of insurance coverage for liabilities resulting from our products could harm us and our ability to sell our Lumivascular platform products.

We may not have sufficient insurance coverage for future product liability claims. We may not be able to obtain insurance in amounts or scope sufficient to provide us with adequate coverage against all potential liabilities. Any product liability claims brought against us, with or without merit, could increase our product liability insurance rates or prevent us from securing continuing coverage, harm our reputation in the industry, significantly increase our expenses, and reduce product sales. Product liability claims in excess of our insurance coverage would be paid out of cash reserves, harming our financial condition and operating results.

Some of our customers and prospective customers may have difficulty in procuring or maintaining liability insurance to cover their operations and use of our Lumivascular platform products. Medical malpractice carriers are also withdrawing coverage in certain states or substantially increasing premiums. If this trend continues or worsens, our customers may discontinue using our Lumivascular platform products and potential customers may opt against purchasing our Lumivascular platform products due to the cost or inability to procure insurance coverage.

Our ability to compete depends on our ability to innovate successfully.

The market for medical devices in general, and in the PAD market in particular, is highly competitive, dynamic, and marked by rapid and substantial technological development and product innovation. There are few barriers that would prevent new entrants or existing competitors from developing products that compete directly with ours. Demand for our Lumivascular platform products could be diminished by equivalent or superior products and technologies offered by competitors. If we are unable to innovate successfully, our Lumivascular platform products could become obsolete and our revenues would decline as our customers purchase our competitors' products.

In order to remain competitive, we must continue to develop new product offerings and enhancements to our existing Lumivascular platform products. In particular, we have developed and are currently developing two next-generation versions of our Pantheris atherectomy device, Pantheris 3.0 and a lower profile Pantheris. We believe these versions will represent significant improvements in reliability and usability compared to our existing products. We anticipate that Pantheris 3.0 and the lower profile Pantheris will translate into revenue growth and achieve increased physician acceptance. Because we believe they are important to our future revenues, we are devoting a significant portion of our resources to their development. However, we do not yet know whether these or any other new offerings will be well received and broadly accepted by physicians, and if so, whether sales will be sufficient for us to offset costs of development, implementation, support, operation, sales and marketing. Additionally, new products may subject us to additional risks of product performance, customer complaints and litigation. If sales of our new product offerings, including Pantheris 3.0 and the lower profile Pantheris, are lower than we expect, fail to gain anticipated market acceptance or cause us to expend additional resources to fix unforeseen problems and develop modifications, our revenues and results of operations may not improve and our business will be adversely affected.

Maintaining adequate research and development personnel and resources to meet the demands of the market is essential. If we are unable to develop products, applications or features due to certain constraints, such as insufficient cash resources, inability to raise sufficient cash in future equity or debt financings, high employee turnover, inability to hire sufficient research and development personnel or a lack of other research and development resources, we may miss market opportunities. Furthermore, many of our competitors expend a considerably greater amount of funds on their research and development

programs than we do, and those that do not may be acquired by larger companies that would allocate greater resources to our competitors' research and development programs. Our failure or inability to devote adequate research and development resources or compete effectively with the research and development programs of our competitors could harm our business.

We compete against companies that have longer operating histories, more established products and greater resources, which may prevent us from achieving significant market penetration, increasing our revenues or becoming profitable.

Our products compete with a variety of products and devices for the treatment of PAD, including other CTO crossing devices, stents, balloons and atherectomy catheters, as well as products used in vascular surgery. Large competitors in the CTO crossing, stent and balloon markets include Abbott Laboratories, Boston Scientific, Cardinal Health, Cook Medical, CR Bard and Medtronic. Competitors in the atherectomy market include Boston Scientific, Cardiovascular Systems, Medtronic and Philips. Some competitors have previously attempted to combine intravascular imaging with atherectomy and may have current programs underway to do so. These and other companies may attempt to incorporate on-board visualization into their products in the future and may remain competitive with us in marketing traditional technologies. Other competitors include pharmaceutical companies that manufacture drugs for the treatment of symptoms associated with mild to moderate PAD and companies that provide products used by surgeons in peripheral and coronary bypass procedures. These competitors and other companies may introduce new products that compete with our products. Many of our competitors have significantly greater financial and other resources than we do and have

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well-established reputations, as well as broader product offerings and worldwide distribution channels that are significantly larger and more effective than ours. Competition with these companies could result in price-cutting, reduced profit margins and loss of market share, any of which would harm our business, financial condition and results of operations.

Our ability to compete effectively depends on our ability to distinguish our company and our Lumivascular platform from our competitors and their products, and includes such factors as:

- procedural safety and efficacy;
- acute and long-term outcomes;
- ease of use and procedure time;
- price;
- size and effectiveness of sales force;
- radiation exposure for physicians, hospital staff and patients; and
- third-party reimbursement.

In addition, competitors with greater financial resources than ours could acquire other companies to gain enhanced name recognition and market share, as well as new technologies or products that could effectively compete with our existing products, which may cause our revenues to decline and would harm our business.

If our clinical trials are unsuccessful or significantly delayed, or if we do not complete our clinical trials, our business may be harmed.

Clinical development is a long, expensive, and uncertain process and is subject to delays and the risk that products may ultimately prove unsafe or ineffective in treating the indications for which they are designed. Completion of clinical trials may take several years or more and failure of the trial can occur at any time. We cannot provide any assurance that our clinical trials will meet their primary endpoints or that such trials or their results will be accepted by the FDA or foreign regulatory authorities. Even if we achieve positive early or preliminary results in clinical trials, these results do not necessarily predict final results, and positive results in early trials may not indicate success in later trials. Many companies in the medical device industry have suffered significant setbacks in late-stage clinical trials, even after receiving promising results in earlier trials or in the preliminary results from these late-stage clinical trials.

We may experience numerous unforeseen events during, or because of, the clinical trial process that could delay or prevent us from receiving regulatory clearance or approval for new products or modifications of existing products, including new indications for existing products, including:

- negative or inconclusive results that may cause us to decide, or regulators may require us, to conduct additional clinical and/or preclinical testing which may be expensive and time consuming;
- trial results that do not meet the level of statistical significance required by the FDA or other regulatory authorities;
- findings by the FDA or similar foreign regulatory authorities that the product is not sufficiently safe for investigational use in humans;
- interpretations of data from preclinical testing and clinical testing by the FDA or similar foreign regulatory authorities that may be different from our own;
- delays or failure to obtain approval of our clinical trial protocols from the FDA or other regulatory authorities;
- delays in obtaining institutional review board approvals or government approvals to conduct clinical trials at prospective sites;

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- findings by the FDA or similar foreign regulatory authorities that our or our suppliers' manufacturing processes or facilities are unsatisfactory;
- changes in the review policies of the FDA or similar foreign regulatory authorities or the adoption of new regulations that may negatively affect or delay our ability to bring a product to market or receive approvals or clearances to treat new indications;
- trouble in managing multiple clinical sites;
- delays in agreeing on acceptable terms with third-party research organizations and trial sites that may help us conduct the clinical trials; and
- the suspension or termination by us, or regulators, of our clinical trials because the participating patients are being exposed to unacceptable health risks.

Failures or perceived failures in our clinical trials will delay and may prevent our product development and regulatory approval process, damage our business prospects and negatively affect our reputation and competitive position.

From time to time, we engage outside parties to perform services related to certain of our clinical studies and trials, and any failure of those parties to fulfill their obligations could increase costs and cause delays.

From time to time, we engage consultants to help design, monitor, and analyze the results of certain of our clinical studies and trials. The consultants we engage interact with clinical investigators to enroll patients in our clinical trials. We depend on these consultants and clinical investigators to help facilitate the clinical studies and trials and monitor and analyze data from these studies and trials under the investigational plan and protocol for the study or trial and in compliance with applicable regulations and standards, commonly referred to as good clinical practices. We may face delays in our regulatory approval process if these parties do not perform their obligations in a timely, compliant or competent manner. If these third parties do not successfully carry out their duties or meet expected deadlines, or if the quality, completeness or accuracy of the data they obtain is compromised due to the failure to adhere to our clinical trial protocols or for other reasons, our clinical studies or trials may be extended, delayed or terminated or may otherwise prove to be unsuccessful, and we may have to conduct additional studies, which would significantly increase our costs, in order to obtain the regulatory clearances that we need to commercialize our products.

We have limited long-term data regarding the safety and efficacy of our Lumivascular platform products, including Pantheris. Any long-term data that is generated by clinical trials involving our Lumivascular platform may not be positive or consistent with our short-term data, which would harm our ability to obtain clearance to market and sell our products.

Our Lumivascular platform is a novel system, and our success depends on its acceptance by the medical community as being safe and effective, and improving clinical outcomes. Important factors upon which the efficacy of our Lumivascular platform products, including Pantheris, will be measured are long-term data on the rate of restenosis following our procedure, and the corresponding duration of patency, or openness of the artery, and publication of that data in peer-reviewed journals. Another important factor that physicians will consider is the rate of reintervention, or retreatment, following the use of our Lumivascular platform products. The long-term clinical benefits of procedures that use our Lumivascular platform products, including Pantheris, are not known.

The results of short-term clinical experience of our Lumivascular platform products, including Pantheris, do not necessarily predict long-term clinical benefit. Restenosis rates typically increase over time. We believe that physicians will compare the rates of long-term restenosis and reintervention for procedures using our Lumivascular platform products against alternative procedures, such as angioplasty, stenting, bypass surgery and other atherectomy procedures. If the long-term rates of restenosis and reintervention do not meet physicians' expectations, our Lumivascular platform products may not become widely adopted and physicians may recommend alternative treatments for their patients. Another significant factor that physicians will consider is acute safety data on complications that occur during the use of our Lumivascular platform products. If the results obtained from any post-market studies that we conduct or post-clearance surveillance indicate that the use of our Lumivascular platform products are not as safe or effective as other treatment options or as current short-term data would suggest, adoption of our product may suffer and our business would be harmed. Even if we believe the data collected from clinical studies or clinical experience indicate positive results, each physician's actual experience with our products will vary. Physicians who are technically proficient participate in our clinical trials and are high-volume users of our Lumivascular platform products. Consequently, the results of our clinical trials and their experiences using our products may lead to better patient outcomes than those of physicians that are less proficient, perform fewer procedures or who use our products infrequently.

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Our ability to market our current products in the United States is limited to use in peripheral vessels, and if we want to market our products for other uses, we will need to file for FDA clearances or approvals and may need to conduct trials to support expanded use, which would be expensive, time-consuming and may not be successful.

Our current products are cleared in the United States only for crossing sub-total and chronic total occlusions and for performing atherectomy in the peripheral vasculature. These clearances prohibit our ability to market or advertise our products for any other indication within the peripheral vasculature, which restricts our ability to sell these products and could affect our growth. Additionally, our products are contraindicated for use in the cerebral, carotid, coronary, iliac, and renal arteries. While off-label uses of medical devices are common and the FDA does not regulate physicians' choice of treatments, the FDA does restrict a manufacturer's communications regarding such off-label use. We are not allowed to actively promote or advertise our products for off-label uses. In addition, we cannot make comparative claims regarding the use of our products against any alternative treatments without conducting head-to-head comparative clinical studies, which would be expensive and time consuming. If our promotional activities fail to comply with the FDA's regulations or guidelines, we may be subject to warnings or enforcement action by the FDA and other government agencies. In the future, if we want to market a variation of Ocelot or Pantheris in the United States for use in other applications for which we do not currently have clearance, such as the coronary arteries, we will need to make modifications to these products, conduct further clinical trials and obtain new clearances or approvals from the FDA. There can be no assurance that we will successfully develop these modifications, that future clinical studies will be successful or that the expense of these activities will be offset by additional revenues.

The continuing development of many of our products, including Pantheris, depends upon maintaining strong working relationships with physicians.

The development, marketing, and sale of our products, including Pantheris, depends upon our ability to maintain strong working relationships with physicians. We rely on these professionals to provide us with considerable knowledge and experience regarding the development, marketing and sale of our products. Physicians assist us in clinical trials and as researchers, marketing and product consultants and public speakers. If we cannot maintain our strong working relationships with these professionals and continue to receive their advice and input, the development and marketing of our products could suffer, which could harm our business, financial condition and results of operations. The medical device industry's relationship with physicians is under increasing scrutiny by the Office of Inspector General, or OIG, the Department of Justice, or DOJ, state attorneys general, and other foreign and domestic government agencies. Our

failure to comply with laws, rules and regulations governing our relationships with physicians, or an investigation into our compliance by the OIG, DOJ, state attorneys general and other government agencies, could significantly harm our business.

We have limited experience manufacturing our Lumivascular platform products in commercial quantities, which could harm our business.

Because we have only limited experience in manufacturing our Lumivascular platform products in commercial quantities, we may encounter production delays or shortfalls. Such production delays or shortfalls may be caused by many factors, including the following:

- any expansion in our manufacturing capacity, could require changes to our production processes;
- key components and sub-assemblies of our Lumivascular platform products are currently provided by a single supplier or limited number of suppliers, and we do not maintain large inventory levels of these components and sub-assemblies; if we experience a shortage in any of these components or sub-assemblies, we would need to identify and qualify new supply sources, which could increase our expenses and result in manufacturing delays;
- we may experience a delay in completing validation and verification testing for new controlled-environment rooms at our manufacturing facilities; and
- we have limited experience in complying with the FDA's quality system regulation ("QSR"), also referred to as good manufacturing practices ("GMPs"), which applies to the manufacture of our Lumivascular platform products.

If we are unable to keep up with demand for our Lumivascular platform products, our revenues could be impaired, market acceptance for our Lumivascular platform products could be harmed and our customers might instead purchase our competitors' products. Our inability to successfully manufacture our Lumivascular platform products would materially harm our business.

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Our manufacturing facilities and processes and those of our third-party suppliers are subject to unannounced FDA and state regulatory inspections for compliance with QSR. Developing and maintaining a compliant quality system is time consuming and expensive. Failure to maintain, or not fully comply with the requirements of, a quality system could result in regulatory authorities initiating enforcement actions against us and our third-party suppliers, which could include the issuance of warning letters, seizures, prohibitions on product sales, recalls and civil and criminal penalties, any one of which could significantly impact our manufacturing supply and impair our financial results.

If our manufacturing facility becomes damaged or inoperable, or we are required to vacate the facility, or our electronic systems are compromised, our ability to manufacture and sell our Lumivascular platform products and to pursue our research and development efforts may be jeopardized.

We currently manufacture and assemble our Lumivascular platform products in-house. Our products are comprised of components sourced from a variety of contract manufacturers, with final assembly completed at our facility in Redwood City, California. Our facility and equipment, or those of our suppliers, could be harmed or rendered inoperable by natural or man-made disasters, including fire, earthquake, terrorism, flooding and power outages. Further, our electronic systems may experience service interruptions, denial-of-service and other cyber-attacks, computer viruses or other events. Any of these may render it difficult or impossible for us to manufacture products, pursue our research and development efforts or otherwise run our business for some period of time. If our facility is inoperable for even a short period of time, the inability to manufacture our current products, and the interruption in research and development of any future products, may result in harm to our reputation, increased costs, lower revenues and the loss of customers. Furthermore, it could be costly and time-consuming to repair or replace our facilities and the equipment we use to perform our research and development work and manufacture our products.

We depend on third-party vendors to manufacture some of our components and sub-assemblies, which could make us vulnerable to supply shortages and price fluctuations that could harm our business.

We currently manufacture some of our components and sub-assemblies at our Redwood City facility and rely on third-party vendors for other components and sub-assemblies used in our Lumivascular platform. Our reliance on third-party vendors subjects us to a number of risks that could impact our ability to manufacture our products and harm our business, including:

- interruption of supply resulting from modifications to, or discontinuation of, a supplier's operations;
- delays in product shipments resulting from uncorrected defects, reliability issues or a supplier's failure to consistently produce quality components;
- price fluctuations due to a lack of long-term supply arrangements with our suppliers for key components;
- inability to obtain adequate supply in a timely manner or on commercially reasonable terms;
- difficulty identifying and qualifying alternative suppliers for components in a timely manner;
- inability of the manufacturer or supplier to comply with QSR as enforced by the FDA and state regulatory authorities;
- inability to control the quality of products manufactured by third parties;
- production delays related to the evaluation and testing of products from alternative suppliers and corresponding regulatory qualifications; and
- delays in delivery by our suppliers due to changes in demand from us or their other customers.

Any significant delay or interruption in the supply of components or sub-assemblies, or our inability to obtain substitute components, sub-assemblies or materials from alternate sources at acceptable prices in a timely manner, could impair our ability to meet the demand of our customers and harm our business.

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We depend on single and limited source suppliers for some of our product components and sub-assemblies, and if any of those suppliers are unable or unwilling to produce these components and sub-assemblies or supply them in the quantities that we need, we would experience manufacturing delays.

We rely on single and limited source suppliers for several of our components and sub-assemblies. For example, we rely on single vendors for our optical fiber and drive cables that are key components of our catheters, and we rely on single vendors for our laser and data acquisition card that are key components of our Lightbox. These components are critical to our products and there are relatively few alternative sources of supply. We do not carry a significant inventory of these components. Identifying and qualifying additional or replacement suppliers for any of the components or sub-assemblies used in our products could involve significant time and cost. Any supply interruption from our vendors or failure to obtain additional vendors for any of the components or sub-assemblies incorporated into our products would limit our ability to manufacture our products and could therefore harm our business, financial condition and results of operations.

Our future growth depends on physician adoption of our Lumivascular platform products, which may require physicians to change their current practices.

We educate physicians on the capabilities of our Lumivascular platform products and advances in treatment for PAD patients. We target our sales efforts to interventional cardiologists, vascular surgeons and interventional radiologists because they are often the physicians diagnosing and treating both coronary artery disease and PAD. However, the initial point of contact for many patients may be general practitioners, podiatrists, nephrologists and endocrinologists, each of whom commonly treat patients experiencing complications or symptoms resulting from PAD. If these physicians are not made aware of our Lumivascular platform products, they may not refer patients to interventional cardiologists, vascular surgeons and interventional radiologists for treatment using our Lumivascular platform procedure, and those patients may instead be surgically treated or treated with an alternative interventional procedure. In addition, there is a significant correlation between PAD and coronary artery disease, and many physicians do not routinely screen for PAD while screening for coronary artery disease. If we are not successful in educating physicians about screening for PAD and about the capabilities of our Lumivascular platform products, our ability to increase our revenues may be impaired.

We depend on our senior management team and the loss of one or more key employees or an inability to attract and retain highly skilled employees could harm our business.

Our success largely depends upon the continued services of our executive management team and key employees and the loss of one or more of our executive officers or key employees could harm us and directly impact our financial results. Our employees may terminate their employment with us at any time. Changes in our executive management team resulting from the hiring or departure of executives could disrupt our business.

We must attract and retain highly qualified personnel. Competition for skilled personnel is intense, especially for engineers with high levels of experience in designing and developing medical devices and for sales professionals. We have, from time to time, experienced, and we expect to continue to experience, difficulty in hiring and retaining employees with appropriate qualifications. Many of the companies with which we compete for experienced personnel have greater resources than we have. If we hire employees from competitors or other companies, their former employers may attempt to assert that these employees or we have breached legal obligations, resulting in a diversion of our time and resources and, potentially, damages. In addition, job candidates and existing employees, particularly in the San Francisco Bay Area, often consider the value of the stock awards they receive in connection with their employment. If the perceived value of our stock awards declines, it may harm our ability to recruit and retain highly skilled employees. In addition, we invest significant time and expense in training our employees, which increases their value to competitors who may seek to recruit them. If we fail to attract new personnel or fail to retain and motivate our current personnel, our business would be harmed.

We do not currently intend to devote significant additional resources in the near-term to market our Lumivascular platform internationally, which will limit our potential revenues from our Lumivascular platform products.

Marketing our Lumivascular platform outside of the United States would require substantial additional sales and marketing, regulatory and personnel expenses. As part of our product development and regulatory strategy, we plan to expand into select international markets, but we do not currently intend to devote significant additional resources to market our Lumivascular platform internationally in order to focus our resources and efforts on the U.S. market. Our decision to market our products primarily in the United States in the near-term will limit our ability to reach all of our potential markets and will limit our potential sources of revenue. In addition, our competitors will have an opportunity to further penetrate and achieve market share outside of the United States until such time, if ever, that we devote significant additional resources to market our Lumivascular platform products or other products internationally.

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Our ability to utilize our net operating loss carryforwards may be limited.

As of December 31, 2017, we had federal and state net operating loss carryforwards, or NOLs, due to prior period losses of $258.4 million and $191.9 million, respectively, which if not utilized will begin to expire in 2027 for federal purposes and 2018 for state purposes. Generally, subject to certain limitations, NOLs can be used to offset taxable income for U.S. federal income tax purposes. However, Section 382 of the Internal Revenue Code of 1986, as amended, may limit the NOLs we may use in any year for U.S. federal income tax purposes in the event of certain changes in ownership of our company. A Section 382 “ownership change” generally occurs if one or more stockholders or groups of stockholders who own at least 5% of our stock increase their ownership by more than 50 percentage points over their lowest ownership percentage within a rolling three-year period. Similar rules may apply under state tax laws. It is possible that prior transactions with respect to our stock may have caused, and that future issuances or sales of our stock (including certain transactions involving our stock that are outside of our control) could cause, an “ownership change.” The sale of our common stock to Lincoln Park Capital Fund, LLC (“Lincoln Park”) pursuant to the Purchase Agreement, dated as of November 3, 2017, between us and Lincoln Park (the “Purchase Agreement”) and the sale of Series B preferred stock and warrants pursuant to the Series B Offering may affect our ability to use NOLs. If an “ownership change” occurs, Section 382 would impose an annual limit on the amount of pre-ownership change NOLs and other tax attributes we can use to reduce our taxable income, potentially increasing and accelerating our liability for income taxes, and also potentially causing those tax attributes to expire unused. Any limitation on using NOLs could (depending on the extent of such limitation and the NOLs previously used) result in our retaining less cash after payment of U.S. federal income taxes during any year in which we have taxable income (rather than losses) than we would be entitled to retain if such NOLs were available as an offset against such income for U.S. federal income tax reporting purposes, which could harm our profitability. On December 22, 2017, the Tax Cuts and Jobs Act, or Tax Act, was enacted into law with many significant changes to the U.S. tax laws. The Tax Act limits the utilization of NOLs arising in tax years beginning after December 31, 2017 to 80% of taxable income per year. However, existing NOLs that arose in years prior to December 31, 2017 are not affected by these provisions. Our ability to utilize NOLs arising in future tax periods may be limited by the Tax Act.

We may acquire other companies or technologies or be the target of strategic transactions, which could divert our management's attention, result in additional dilution to our stockholders and otherwise disrupt our operations and harm our operating results.

We may in the future seek to acquire or invest in businesses, applications or technologies that we believe could complement or expand our Lumivascular platform, enhance our technical capabilities or otherwise offer growth opportunities. The pursuit of potential acquisitions may divert the attention of management and cause us to incur various costs and expenses in identifying, investigating and pursuing suitable acquisitions, whether or not they are consummated. We may not be able to identify desirable acquisition targets or be successful in entering into an agreement with any particular target or obtain the expected benefits of any acquisition or investment.

To date, our technology and product development efforts have been organic, and we have no experience in acquiring other businesses. In any acquisition, we may not be able to successfully integrate acquired personnel, operations and technologies, or effectively manage the combined business following the acquisition. Acquisitions could also result in dilutive issuances of equity securities, the use of our available cash, or the incurrence of debt, which could harm our operating results. In addition, if an acquired business fails to meet our expectations, our operating results, business and financial condition may suffer.

In addition, we sometimes receive inquiries relating to potential strategic transactions, including from third parties who may seek to acquire us. We will continue to consider and discuss such transactions as we deem appropriate. Such potential transactions may divert the attention of management, and cause us to incur various costs and expenses in investigating and evaluating such transactions, whether or not they are consummated.

Risks Related to Our Intellectual Property

We may in the future be a party to intellectual property litigation or administrative proceedings that could be costly and could interfere with our ability to sell our Lumivascular platform products.

The medical device industry has been characterized by extensive litigation regarding patents, trademarks, trade secrets, and other intellectual property rights, and companies in the industry have used intellectual property litigation to gain a competitive advantage. It is possible that U.S. and foreign patents and pending patent applications or trademarks controlled by third parties may be alleged to cover our products, or that we may be accused of misappropriating third parties' trade secrets. Additionally, our products include hardware and software components that we purchase from vendors, and may include design components that are outside of our direct control. Our competitors, many of which have substantially greater resources and have made substantial investments in patent portfolios, trade secrets, trademarks, and competing technologies, may have applied for or obtained or may in the future apply for or obtain, patents or trademarks that will prevent, limit or otherwise interfere with our ability to make, use, sell and/or export our

products or to use product names. They may devote substantial resources towards obtaining claims that cover the design of our atherectomy products to prevent the marketing and selling of competitive products. We may become a party to patent or trademark infringement or trade secret claims and litigation as a result of these and other third-party intellectual property rights being asserted against us. The defense and prosecution of these matters are both costly and time consuming. Vendors from whom we purchase hardware or software may not indemnify us in the event that such hardware or software is accused of infringing a third-party's patent or trademark or of misappropriating a third-party's trade secret.

Further, if such patents, trademarks, or trade secrets are successfully asserted against us, this may harm our business and result in injunctions preventing us from selling our products, license fees, damages and the payment of attorney fees and court costs. In addition, if we are found to willfully infringe third-party patents or trademarks or to have misappropriated trade secrets, we could be required to pay treble damages in addition to other penalties. Although patent, trademark, trade secret, and other intellectual property disputes in the medical device area have often been settled through licensing or similar arrangements, costs associated with such arrangements may be substantial and could include ongoing royalties. We may be unable to obtain necessary licenses on satisfactory terms, if at all. If we do not obtain necessary licenses, we may not be able to redesign our Lumivascular platform products to avoid infringement.

Similarly, interference or derivation proceedings provoked by third parties or brought by the U.S. Patent and Trademark Office, or USPTO, may be necessary to determine the priority of inventions or other matters of inventorship with respect to our patents or patent applications. We may also become involved in other proceedings, such as re-examination, inter partes review, or opposition proceedings, before the USPTO or other jurisdictional body relating to our intellectual property rights or the intellectual property rights of others. Adverse determinations in a judicial or administrative proceeding or failure to obtain necessary licenses could prevent us from manufacturing and selling our Lumivascular platform products or using product names, which would have a significant adverse impact on our business.

Additionally, we may need to commence proceedings against others to enforce our patents or trademarks, to protect our trade secrets or know-how, or to determine the enforceability, scope and validity of the proprietary rights of others. These proceedings would result in substantial expense to us and significant diversion of effort by our technical and management personnel. We may not prevail in any lawsuits that we initiate and the damages or other remedies awarded, if any, may not be commercially meaningful. We may not be able to stop a competitor from marketing and selling products that are the same or similar to our products or from using product names that are the same or similar to our product names, and our business may be harmed as a result.

We are aware of patents held by third parties that may be asserted against us in litigation that could be costly and could limit our ability to sell our Lumivascular platform products.

We are aware of patent families related to catheter positioning, optical coherence tomography, occlusion cutting and atherectomy owned by third parties. With regard to atherectomy patents, one of our founders, Dr. John Simpson, founded FoxHollow Technologies prior to founding our company. FoxHollow Technologies developed an atherectomy device that is currently sold by Medtronic, and Dr. Simpson and our Chief Technology Officer, Himanshu Patel, are listed as inventors on patents covering that device that are now held by Medtronic. We are not currently aware of any claims Medtronic has made or intends to make against us with respect to Pantheris or any other product or product under development. Because of a doctrine known as "assignor estoppel," if any of Dr. Simpson's earlier patents are asserted against us by Medtronic, we may be prevented from asserting an invalidity defense regarding those patents, and our defense may be compromised. Medtronic has significantly greater financial resources than we do to pursue patent litigation and could assert these patent families against us at any time. Adverse determinations in any such litigation could prevent us from manufacturing or selling Pantheris or other products or products under development, which would significantly harm our business.

Intellectual property rights may not provide adequate protection, which may permit third parties to compete against us more effectively.

In order to remain competitive, we must develop and maintain protection of the proprietary aspects of our technologies. We rely on a combination of patents, copyrights, trademarks, trade secret laws and confidentiality and invention assignment agreements to protect our intellectual property rights. As of June 30, 2018, we held 21 issued and allowed U.S. patents and had 25 U.S. utility patent applications and 6 PCT applications pending. As of June 30, 2018, we also had 34 issued and allowed patents outside of the United States. As of June 30, 2018, we had 41 pending patent applications outside of the United States, including in Australia, Canada, China, Europe, India and Japan. Our patents and patent applications include claims covering key aspects of the design, manufacture and therapeutic use of OCT imaging catheters, occlusion-crossing catheters, atherectomy devices and our imaging console. Our patent applications may not result in issued patents and our patents may not be sufficiently broad to protect our technology. Any patents issued to us may be challenged by third parties as being invalid, or third parties may independently develop similar or competing technology that avoids our patents. Should such challenges be successful, competitors might be able to market products and use

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manufacturing processes that are substantially similar to ours. We may not be able to prevent the unauthorized disclosure or use of our technical knowledge or other trade secrets by consultants, vendors or former or current employees, despite the existence generally of confidentiality agreements and other contractual restrictions. Monitoring unauthorized use and disclosure of our intellectual property is difficult, and we do not know whether the steps we have taken to protect our intellectual property will be adequate. In addition, the laws of many foreign countries will not protect our intellectual property rights to the same extent as the laws of the United States. Consequently, we may be unable to prevent our proprietary technology from being exploited abroad, which could affect our ability to expand to international markets or require costly efforts to protect our technology. To the extent our intellectual property protection is incomplete, we are exposed to a greater risk of direct competition. In addition, competitors could purchase our products and attempt to replicate some or all of the competitive advantages we derive from our development efforts or design around our protected technology. Our failure to secure, protect and enforce our intellectual property rights could substantially harm the value of our Lumivascular platform, brand and business. We use certain open source software in Lightbox. We may face claims from companies that incorporate open source software into their products or from open source licensors, claiming ownership of, or demanding release of, the source code, the open source software or derivative works that were developed using such software, or otherwise seeking to enforce the terms of the applicable open source license. These claims could result in litigation and could require us to cease offering Lightbox unless and until we can re- engineer it to avoid infringement. This re-engineering process could require significant additional research and development resources, and we may not be able to complete it successfully. These risks could be difficult to eliminate or manage, and, if not addressed, could harm our business, financial condition and operating results.

Risks Related to Government Regulation

Failure to comply with laws and regulations could harm our business.

Our business is subject to regulation by various federal, state, local and foreign governmental agencies, including agencies responsible for monitoring and enforcing employment and labor laws, workplace safety, environmental laws, consumer protection laws, anti-bribery laws, import/export controls, federal securities laws and tax laws and regulations. In certain jurisdictions, these regulatory requirements may be more stringent than those in the United States and in other circumstances these requirements may be more stringent in the United States. Noncompliance with applicable regulations or requirements could subject us to investigations, sanctions, mandatory recalls, enforcement actions, adverse publicity, disgorgement of profits, fines, damages, civil and criminal penalties or injunctions and administrative actions. If any governmental sanctions, fines or penalties are imposed, or if we do not prevail in any possible civil or criminal litigation, our business, operating results and financial condition could be harmed. In addition, responding to any action will likely result in a significant diversion of management's attention and resources and substantial costs. Enforcement actions and sanctions could further harm our business, operating results and financial condition.

If we fail to obtain and maintain necessary regulatory clearances or approvals for our Lumivascular platform products, or if clearances or approvals for future products and indications are delayed or not issued, our commercial operations would be harmed.

Our Lumivascular platform products are medical devices that are subject to extensive regulation by FDA in the United States and by regulatory agencies in other countries where we do business. Government regulations specific to medical devices are wide-ranging and govern, among other things:

- product design, development and manufacture;
- laboratory, preclinical and clinical testing, labeling, packaging, storage and distribution;
- pre-marketing clearance or approval;
- record keeping;
- product marketing, promotion and advertising, sales and distribution; and
- post-marketing surveillance, including reporting of deaths or serious injuries and recalls and correction and removals.

Before a new medical device, or a new intended use for, an existing product can be marketed in the United States, a company must first submit and receive either 510(k) clearance or pre-marketing approval from FDA, unless an exemption applies. Either process can be expensive, lengthy and unpredictable. We may not be able to obtain the necessary clearances or approvals or may be unduly delayed in doing so, which could harm our business. Furthermore, even if we are granted regulatory clearances or approvals, they may include significant limitations on the indicated uses for the product, which may limit the market for the product. Although we have obtained 510(k) clearance to market Pantheris, our image-guided atherectomy device, and our Ocelot family of catheters for

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crossing sub and total occlusions in the peripheral vasculature, our clearance can be revoked if safety or efficacy problems develop. We obtained 510(k) clearance for Pantheris 3.0 in May 2018, and we intend to file for FDA clearance of a lower-profile device for small vessel applications in the third quarter of 2018. Delays in obtaining clearance or approval could increase our costs and harm our revenues and growth.

In addition, we are required to timely file various reports with the FDA, including medical device reports ("MDRs") if our devices may have caused or contributed to a death or serious injury or malfunctioned in a way that would likely cause or contribute to a death or serious injury if the malfunction were to recur. If these MDRs are not filed timely, regulators may impose sanctions and sales of our products may suffer, and we may be subject to product liability or regulatory enforcement actions, all of which could harm our business

If we initiate a correction or removal for one of our devices to reduce a risk to health posed by the device, we would be required to submit a publicly available Correction and Removal report to the FDA and in many cases, similar reports to other regulatory agencies. This report could be classified by the FDA as a device recall that could lead to increased scrutiny by the FDA, other international regulatory agencies and our customers regarding the quality and safety of our devices. Furthermore, the submission of these reports has been and could be used by competitors against us in competitive situations and cause customers to delay purchase decisions or cancel orders and would harm our reputation.

The FDA and the Federal Trade Commission, or FTC, also regulate the advertising and promotion of our products to ensure that the claims we make are consistent with our regulatory clearances, that there are adequate and reasonable scientific data to substantiate the claims and that our promotional labeling and advertising is neither false nor misleading in any respect. If the FDA or FTC determines that any of our advertising or promotional claims are misleading, not substantiated or not permissible, we may be subject to enforcement actions, including Warning Letters or adverse publicity, and we may be required to revise our promotional claims and make other corrections or restitutions.

The FDA and state authorities have broad enforcement powers. Our failure to comply with applicable regulatory requirements could result in enforcement action by the FDA or state agencies, which may include any of the following sanctions:

- adverse publicity, warning letters, fines, injunctions, consent decrees and civil penalties;
- repair, replacement, refunds, recall or seizure of our products;
- operating restrictions, partial suspension or total shutdown of production;
- refusing our requests for 510(k) clearance or pre-market approval of new products, new intended uses or modifications to existing products;
- withdrawing 510(k) clearance or pre-market approvals that have already been granted; and
- criminal prosecution.

If any of these events were to occur, our business and financial condition would be harmed.

Material modifications to our Lumivascular platform products may require new 510(k) clearances or pre-market approvals or may require us to recall or cease marketing our Lumivascular platform products until clearances or approvals are obtained.

Material modifications to the intended use or technological characteristics of our Lumivascular platform products will require new 510(k) clearances or pre-market approvals or require us to recall or cease marketing the modified devices until these clearances or approvals are obtained. Based on published FDA guidelines, the FDA requires device manufacturers to initially make and document a determination of whether or not a modification requires a new approval, supplement or clearance; however, the FDA can review a manufacturer's decision. Any modification to an FDA-cleared device that would significantly affect its safety or efficacy or that would constitute a major change in its intended use would require a new 510(k) clearance or possibly a pre-market approval. We may not be able to obtain additional 510(k) clearances or pre-market approvals for new products or for modifications to, or additional indications for, our Lumivascular platform products in a timely fashion, or at all. Delays in obtaining required future clearances would harm our ability to introduce new or enhanced products in a timely manner, which in turn would harm our future growth. We have made modifications to our Lumivascular platform products in the past and will make additional modifications in the future that we believe do not or will not require additional clearances or approvals. If the FDA disagrees and requires new clearances or approvals for the modifications, we may be required to recall and to stop selling or marketing our Lumivascular platform products as modified, which could harm our operating results and require us to redesign our Lumivascular platform products. In these circumstances, we

may be subject to significant enforcement actions. We plan to make further modifications to the design of Pantheris to enhance cutting efficiency and access smaller vessels. Future versions of Pantheris incorporating these enhancements may require additional regulatory clearances or approvals.

If we or our suppliers fail to comply with the FDA's QSR, our manufacturing operations could be delayed or shut down and Lumivascular platform sales could suffer.

Our manufacturing processes and those of our third-party suppliers are required to comply with the FDA's QSR, which covers the procedures and documentation of the design, testing, production, control, quality assurance, labeling, packaging, storage and shipping of our Lumivascular platform products. We are also subject to similar state requirements and licenses. In addition, we must engage in extensive recordkeeping and reporting and must make available our manufacturing facilities and records for periodic unannounced inspections by governmental agencies, including the FDA, state authorities and comparable agencies in other countries. If we fail a QSR inspection, our operations could be disrupted and our manufacturing interrupted. Failure to take adequate corrective action in response to an adverse QSR inspection could result in, among other things, a shut-down of our manufacturing operations, significant fines, suspension of marketing clearances and approvals, seizures or recalls of our device, operating restrictions and criminal prosecutions, any of which would cause our business to suffer. Furthermore, our key component suppliers may not currently be or may not continue to be in compliance with applicable regulatory requirements, which may result in manufacturing delays for our products and cause our revenues to decline.

We have registered with the FDA as a medical device manufacturer and have obtained a manufacturing license from the CDHS. The FDA has broad post-market and regulatory enforcement powers. We are subject to unannounced inspections by the FDA and the Food and Drug Branch of CDHS to determine our compliance with the QSR and other regulations, and these inspections may include the manufacturing facilities of our suppliers. Our current facility has been inspected by the FDA in 2009, 2011 and 2013, and two, three and zero observations, respectively, were noted during those inspections. BSI, our European Notified Body, inspected our facility in 2014 and 2015 and found zero non-conformances. BSI conducted four external audits in 2016 and zero non-conformances were found in all except for one audit, for which four minor non-conformances were found. The BSI audit performed in January 2017 resulted in zero non-conformances. We can provide no assurance that we will continue to remain in substantial compliance with the QSR. If the FDA, CDHS or BSI inspect our facility and discover compliance problems, we may have to shut down our facility and cease manufacturing until we can take the appropriate remedial steps to correct the audit findings. Taking corrective action may be expensive, time consuming and a distraction for management and if we experience a shutdown or delay at our

manufacturing facility we may be unable to produce our Lumivascular platform products, which would harm our business.

Our Lumivascular platform products may in the future be subject to product recalls that could harm our reputation.

FDA and similar governmental authorities in other countries have the authority to require the recall of commercialized products in the event of material regulatory deficiencies or defects in design or manufacture. A government mandated or voluntary recall by us could occur as a result of component failures, manufacturing errors or design or labeling defects. Recalls of our Lumivascular platform products would divert managerial attention, be expensive, harm our reputation with customers and harm our financial condition and results of operations. A recall announcement would negatively affect our stock price.

Changes in coverage and reimbursement for procedures using our Lumivascular platform products could affect the adoption of our Lumivascular platform and our future revenues.

Currently, our Lumivascular platform procedure is typically reimbursed by third-party payors, including Medicare and private healthcare insurance companies, under existing reimbursement codes. These payors may change their coverage and reimbursement policies, as well as payment amounts, in a way that would prevent or limit reimbursement for our products, which would significantly harm our business. Also, healthcare reform legislation or regulation may be proposed or enacted in the future, which may adversely affect such policies and amounts. We cannot predict whether and to what extent existing coverage and reimbursement will continue to be available. If physicians, hospitals and other providers are unable to obtain adequate coverage and reimbursement for procedures performed using our Lumivascular platform products, they are significantly less likely to use our Lumivascular platform products and our business would be harmed.

Healthcare reform measures could hinder or prevent our planned products' commercial success.

In the United States, there have been, and we expect there will continue to be, a number of legislative and regulatory changes to the healthcare system in ways that could harm our future revenues and profitability and the future revenues and profitability of our potential customers. Federal and state lawmakers regularly propose and, at times, enact legislation that would result in significant changes to the healthcare system, some of which are intended to contain or reduce the costs of medical products and services. For example, one of the most significant healthcare reform measures in decades, the Patient Protection and Affordable Care Act, as

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amended by the Health Care and Education Affordability Reconciliation Act, or Affordable Care Act, was enacted in 2010. The Affordable Care Act contains a number of provisions, including those governing enrollment in federal healthcare programs, reimbursement changes and fraud and abuse measures, all of which will impact existing government healthcare programs and will result in the development of new programs. The Affordable Care Act, among other things, imposed an excise tax of 2.3% on the sale of most medical devices, including ours, and any failure to pay this amount could result in the imposition of an injunction on the sale of our products, fines and penalties. Although this tax has been suspended through 2019, it is expected to apply to sales of our products in 2020 and thereafter. The current presidential administration and Congress may continue to attempt broad sweeping changes to the current health care laws. We face uncertainties that might result from modifications or repeal of any of the provisions of the Affordable Care Act, including as a result of current and future executive orders and legislative actions. The impact of those changes on us and potential effect on the medical device industry as a whole is currently unknown. Any changes to the Affordable Care Act are likely to have an impact on our results of operations, and may have a material adverse effect on our results of operations. We cannot predict what other health care programs and regulations will ultimately be implemented at the federal or state level or the effect of any future legislation or regulation in the United States may have on our business.

The continuing efforts of the government, insurance companies, managed care organizations and other payors of healthcare services to contain or reduce costs of health care may harm:

- our ability to set a price that we believe is fair for our products;
- our ability to generate revenues and achieve or maintain profitability; and
- the availability of capital.

If we fail to comply with healthcare regulations, we could face substantial penalties and our business, operations and financial condition could be adversely affected.

Even though we do not and will not control referrals of healthcare services or bill directly to Medicare, Medicaid or other third-party payors, certain federal and state healthcare laws and regulations pertaining to fraud and abuse and patients' rights are and will be applicable to our business. We could be subject to healthcare fraud and abuse and patient privacy regulation by both the federal government and the states in which we conduct our business. The regulations that will affect how we operate include:

- the federal healthcare program Anti-Kickback Statute, which prohibits, among other things, any person from knowingly and willfully offering, soliciting, receiving or providing remuneration, directly or indirectly, in exchange for or to induce either the referral of an individual for, or the purchase, order or recommendation of, any good or service for which payment may be made under federal healthcare programs, such as the Medicare and Medicaid programs;
- the federal False Claims Act, which prohibits, among other things, individuals or entities from knowingly presenting, or causing to be presented, false claims, or knowingly using false statements, to obtain payment from the federal government;
- federal criminal laws that prohibit executing a scheme to defraud any healthcare benefit program or making false statements relating to healthcare matters;
- the Sunshine Act, created under the Affordable Care Act, and its implementing regulations, which require manufacturers of drugs, medical devices, biologicals and medical supplies for which payment is available under Medicare, Medicaid, or the Children's Health Insurance Program to report annually to the HHS information related to payments or other transfers of value made to physicians and teaching hospitals, as well as ownership and investment interests held by physicians and their immediate family members;

- HIPAA, as amended by the HITECH Act, which protects the security and privacy of protected health information; and

- state law equivalents of each of the above federal laws, such as anti-kickback and false claims laws which may apply to items or services reimbursed by any third-party payor, including commercial insurers.

The Affordable Care Act, among other things, amends the intent requirement of the Federal Anti-Kickback Statute and criminal healthcare fraud statutes. A person or entity no longer needs to have actual knowledge of this statute or specific intent to violate it. In addition, the Affordable Care Act provides that the government may assert that a claim including items or services resulting from a violation of the Federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the False Claims Act.

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Efforts to ensure that our business arrangements will comply with applicable healthcare laws may involve substantial costs. It is possible that governmental and enforcement authorities will conclude that our business practices do not comply with current or future statutes, regulations or case law interpreting applicable fraud and abuse or other healthcare laws and regulations. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could have a significant impact on our business, including the imposition of civil, criminal and administrative penalties, damages, disgorgement, monetary fines, possible exclusion from participation in Medicare, Medicaid and other federal healthcare programs, contractual damages, reputational harm, diminished profits and future earnings, and curtailment of our operations, any of which could harm our ability to operate our business and our results of operations. In addition, the clearance or approval and commercialization of any of our products outside the United States will also likely subject us to foreign equivalents of the healthcare laws mentioned above, among other foreign laws.

Compliance with environmental laws and regulations could be expensive. Failure to comply with environmental laws and regulations could subject us to significant liability.

Our research and development and manufacturing operations involve the use of hazardous substances and are subject to a variety of federal, state, local and foreign environmental laws and regulations relating to the storage, use, discharge, disposal, remediation of, and human exposure to, hazardous substances and the sale, labeling, collection, recycling, treatment and disposal of products containing hazardous substances. In addition, our research and development and manufacturing operations produce biological waste materials, such as human and animal tissue, and waste solvents, such as isopropyl alcohol. These operations are permitted by regulatory authorities, and the resultant waste materials are disposed of in material compliance with environmental laws and regulations. Liability under environmental laws and regulations can be joint and several and without regard to fault or negligence. Compliance with environmental laws and regulations may be expensive and non-compliance could result in substantial liabilities, fines and penalties, personal injury and third party property damage claims and substantial investigation and remediation costs. Environmental laws and regulations could become more stringent over time, imposing greater compliance costs and increasing risks and penalties associated with violations. We cannot assure you that violations of these laws and regulations will not occur in the future or have not occurred in the past as a result of human error, accidents, equipment failure or other causes. The expense associated with environmental regulation and remediation could harm our financial condition and operating results.

Regulations related to "conflict minerals" may force us to incur additional expenses, may result in damage to our business reputation and may adversely impact our ability to conduct our business.

Pursuant to the Dodd-Frank Wall Street Reform and Consumer Protection Act, the SEC promulgated final rules regarding disclosure of the use of certain minerals, known as conflict minerals, that are mined from the Democratic Republic of the Congo and adjoining countries, as well as procedures regarding a manufacturer's efforts to prevent the sourcing of such minerals and metals produced from those minerals. These disclosure requirements require ongoing due diligence efforts and disclosure obligations. We have incurred and expect to incur additional costs to comply with these disclosure requirements, including costs related to determining the source of any of the relevant minerals and metals used in our products. Additional costs could include the cost of remediation and other changes to products, processes, or sources of supply as a consequence of such verification activities. In addition, our implementation of these rules could adversely affect the sourcing, supply, and pricing of materials used in our products. We may face reputational harm if we determine that certain of our components contain minerals not determined to be conflict free or if we are unable to alter our processes or sources of supply to avoid using such materials. Reputational harm could adversely affect our business, financial condition or results of operations.

Risks Related to Our Common Stock and Preferred Stock

Our stock price may be volatile, and purchasers of our common stock could incur substantial losses.

Our stock price has fluctuated significantly since our IPO and is likely to continue to fluctuate substantially. As a result of this price fluctuation, investors may experience losses on their investments in our stock. In addition, the development stage of our operations may make it difficult for investors to evaluate the success of our business to date and to assess our future viability. The market price for our common stock may be influenced by many factors, including:

- sales of stock by our existing stockholders, including our affiliates;

- market acceptance of our Lumivascular platform and products, including Pantheris;

- the results of our clinical trials;

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- changes in analysts' estimates, investors' perceptions, recommendations by securities analysts or our failure to achieve analysts' and our own estimates;

- the financial projections we may provide to the public, any changes in these projections or our failure to meet these projections;

- actual or anticipated fluctuations in our financial condition and operating results;

- quarterly variations in our or our competitors' results of operations;

- general market conditions and other factors unrelated to our operating performance or the operating performance of our competitors;
- changes in operating performance and stock market valuations of other technology companies generally, or those in the medical device industry in particular;
- the loss of key personnel, including changes in our board of directors and management;
- legislation or regulation of our business;
- lawsuits threatened or filed against us;
- the announcement of new products or product enhancements by us or our competitors;
- announcements related to patents issued to us or our competitors and to litigation; and
- developments in our industry.

From time to time, our affiliates may sell stock for reasons due to their personal financial circumstances. These sales may be interpreted by other stockholders as an indication of our performance and result in subsequent sales of our stock that have the effect of creating downward pressure on the market price of our common stock. In addition, the stock prices of many companies in the medical device industry have experienced wide fluctuations that have often been unrelated to the operating performance of those companies.

Our stock price has decreased significantly over the course of the past year. As a result of the decrease in our stock price, the options held by our employees are less valuable which make it more likely that certain of our employees may leave our company. The loss of key employees could have an adverse effect on our business.

We may fail to meet our publicly announced guidance or other expectations about our business and future operating results, which would cause our stock price to decline.

We have provided in the past and may provide guidance in the future about our business and future operating results. In developing this guidance, our management must make certain assumptions and judgments about our future performance, including projected revenues and the timing of regulatory approvals. Furthermore, analysts and investors may develop and publish their own projections of our business, which may form a consensus about our future performance. Our business results may vary significantly from such guidance or that consensus due to a number of factors, many of which are outside of our control, and which could adversely affect our operations and operating results. Furthermore, if we make downward revisions of our previously announced guidance, or if our publicly announced guidance of future operating results fails to meet expectations of securities analysts, investors or other interested parties, the price of our common stock would decline.

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

The trading market for our common stock will depend in part on the research and reports that securities or industry analysts publish about us or our business, our market and our competitors. We do not have any control over these analysts. The analysts who previously published research reports on our stock following our IPO have discontinued coverage. Although one new analyst initiated coverage of our business in March 2018, if additional analysts do not begin regularly publishing reports on us, we could lose visibility in the financial markets, which could cause our share price or trading volume to decline.

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Sales of a substantial number of shares of our common stock in the public market, including by our existing stockholders, could cause our stock price to fall.

Sales of a substantial number of shares of our common stock in the public market, or the perception that these sales might occur, could depress the market price of our common stock and could impair our ability to raise capital through the sale of additional equity securities. We are unable to predict the effect that these sales and others may have on the prevailing market price of our common stock.

We will need to raise additional funds through future equity or debt financings within the next five months to meet our operational needs and capital requirements for product development, clinical trials and commercialization. We can provide no assurance that we will be successful in raising funds pursuant to additional equity or debt financings or that such funds will be raised at prices that do not create substantial dilution for our existing stockholders. Given the recent decline in our stock price, any financing that we undertake in the next nine months could cause substantial dilution to our existing stockholders. On February 3, 2016, we filed a universal shelf registration statement (the “Shelf Registration Statement”) to offer up to $150.0 million of our securities and entered into an “at-the-market” program pursuant to a Sales Agreement with Cowen and Company (“Cowen”), through which we issued and sold approximately 200,000 shares of common stock having an aggregate offering value of approximately $8.7 million between the Shelf Registration Statement’s effectiveness on March 8, 2016 and September 2017. In July 2018, we sold a further 2,166,180 shares of our common stock (excluding warrants to purchase an additional 1,083,091 shares of our common stock issued in a concurrent private placement) pursuant to the Shelf Registration Statement, for gross proceeds of approximately $3.5 million. In addition, in August 2016, we issued and sold 200,000 shares of our common stock in our follow-on public offering at a public offering price of $140.00 per share, for net proceeds of approximately $31.5 million after deducting underwriting discounts and commissions of approximately $2.4 million and other expenses of approximately $0.6 million. We have established, and may in the future establish, “at-the-market” programs pursuant to which we may offer and sell shares of our common stock pursuant to the Shelf Registration Statement. During the year ended December 31, 2016, we sold 27,374 shares of common stock under our “at-the-market” program with Cowen at an average price of $194.74 and raised net proceeds of $5.2 million, after payment of $0.2 million in commissions and fees to Cowen. During the three and six months ended June 30, 2018, we sold no shares of common stock through the “at-the-market” program. Due to the SEC’s “baby shelf rules,” which prohibit companies with a public float of less than $75 million from issuing securities under a shelf registration statement in excess of one-third of such company’s public float in a twelve-month period, we are unable to issue more shares using the Shelf Registration Statement at this time. Accordingly, it was necessary to register the shares sold pursuant to the Purchase Agreement, the CRG Conversion and Series B Purchase Agreement on Form S-1. This has increased our transaction expenses and the number of shares required to be sold to finance our operations.

In addition, pursuant to our Securities Purchase Agreement with CRG, the Shelf Registration Statement also registered for resale 8,705 shares of common stock held by CRG, which may be sold freely in the public market. On November 3, 2017, we also entered into the Lincoln Park Purchase Agreement with Lincoln Park, pursuant to which Lincoln Park is obligated to purchase, at our request, up to $15.0 million of our common stock over a 30-month period, subject to certain limitations set forth in the Purchase Agreement. The warrants issued in connection with the Series B preferred stock prohibits us from entering into certain transactions involving the issuance of securities for a price determined by reference to the trading price of our common stock or otherwise subject to modification following the date of issuance, in each case for a period of three years from the closing date of the Series B Offering, other than purchases pursuant to the Series B Purchase Agreement, which may be made on the 120 day anniversary of the closing date of the Series B Offering. This prohibition may be waived by holders of two-thirds of the outstanding Series 1 and Series 2 warrants at any time. If these additional shares are sold, or if it is perceived that they will be sold, in the public market, the trading price of our common stock could decline. Sales of newly issued securities under any registration statement will result in dilution of our stockholders and could cause our stock price to fall.

Our directors and employees may sell our stock through 10b5-1 trading plans or in the market during open windows under our insider trading policy without such plans in place. Sales of our common stock by our directors and employees could be perceived negatively by investors or cause downward pressure on our common stock and cause a reduction in the price of our common stock as a result. We have also registered shares of our common stock that we may issue under our employee equity incentive plans. These shares will be able to be sold freely in the public market upon issuance.

Our 2017 financial statements contained disclosure that there is substantial doubt about our ability to continue as a going concern, and we will need additional financing to execute our business plan, to fund our operations and to continue as a going concern.

Since inception, we have experienced recurring operating losses and negative cash flows and we expect to continue to generate operating losses and consume significant cash resources for the foreseeable future. There is substantial doubt regarding our ability to continue as a going concern. Our independent registered public accounting firm has expressed in its auditors' report on our 2017 financial statements, included in our Annual Report on Form 10-K, as filed with the SEC on March 30, 2018, a "going concern" opinion, meaning that we have recurring losses from operations and negative cash flows from operations that raise substantial doubt regarding our ability to continue as a going concern. We have prepared our financial statements on a going concern basis, which contemplates the realization of assets and the satisfaction of liabilities and commitments in the normal course of business. Our 2017

financial statements do not include any adjustment to reflect the possible future effects on the recoverability and classification of assets or the amounts and classification of liabilities that may result from the outcome of this uncertainty.

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

As a public company, we are subject to the reporting requirements of the Securities Exchange Act of 1934, as amended, or the Exchange Act, the Sarbanes-Oxley Act, the Dodd-Frank Act, the listing requirements of Nasdaq and other applicable securities laws, rules and regulations. Compliance with these laws, rules and regulations have increased our legal and financial compliance costs and will make some activities more difficult, time-consuming or costly and increase demand on our systems and resources, particularly after we are no longer an "emerging growth company." The Exchange Act requires, among other things, that we file annual, quarterly and current reports with respect to our business and operating results. The Sarbanes-Oxley Act requires, among other things, that we maintain effective disclosure controls and procedures and internal control over financial reporting. In order to maintain and, if required, improve our disclosure controls and procedures and internal control over financial reporting to meet this standard, significant resources and management oversight may be required. Our management and other personnel now need to devote a substantial amount of time to these compliance initiatives. As a result, management's attention may be diverted from other business concerns and our costs and expenses will increase, which could harm our business and operating results. We may need to hire more employees in the future or engage outside consultants to comply with these requirements, which will increase our costs and expenses.

In addition, changing laws, regulations and standards relating to corporate governance and public disclosure are creating uncertainty for public companies, increasing legal and financial compliance costs and making some activities more time consuming. These laws, regulations and standards are subject to varying interpretations, in many cases due to their lack of specificity and, as a result, their application in practice may evolve over time as new guidance is provided by regulatory and governing bodies. This could result in continuing uncertainty regarding compliance matters and higher costs necessitated by ongoing revisions to disclosure and governance practices. We intend to invest resources to comply with evolving laws, regulations and standards, and this investment may result in increased general and administrative expenses and a diversion of management's time and attention from revenue-generating activities to compliance activities. If our efforts to comply with new laws, regulations and standards differ from the activities intended by regulatory or governing bodies due to ambiguities related to their application and practice, regulatory authorities may initiate legal proceedings against us and our business may be harmed.

We will incur additional compensation costs in the event that we decide to pay our executive officers cash compensation closer to that of executive officers of other public medical device companies, which would increase our general and administrative expense and could harm our profitability. Any future equity awards will also increase our compensation expense. We also expect that being a public company and compliance with applicable rules and regulations will make it more expensive for us to obtain director and officer liability insurance, and we may be required to accept reduced coverage or incur substantially higher costs to obtain coverage. These factors could also make it more difficult for us to attract and retain qualified executive officers and members of our board of directors, particularly to serve on our audit committee and compensation committee.

As a result of disclosure of information in this Quarterly Report on Form 10-Q and in filings required of a public company, our business and financial condition will become more visible, which could be advantageous to our competitors and clients and could result in threatened or actual litigation, including by competitors and other third parties. If such claims are successful, our business and operating results could be harmed, and even if the claims are resolved in our favor, these claims, and the time and resources necessary to resolve them, could divert the resources of our management and harm our business and operating results.

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

We are an emerging growth company. For as long as we continue to be an emerging growth company, we may take advantage of certain exemptions from reporting requirements that are applicable to other public companies including, but not limited to, not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act, reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements, and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved. We cannot predict if investors will find our common stock less attractive because we will rely on these exemptions.

If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may be more volatile or decline.

We will remain an emerging growth company until the earlier of (1) the last day of the fiscal year (a) following the fifth anniversary of our IPO, (b) in which we have total annual gross revenue of at least $1.0 billion, or (c) in which we are deemed to be a large accelerated filer, which means the market value of our common stock that is held by non-affiliates exceeds $700 million as of the prior June 30th, and (2) the date on which we have issued more than $1.0 billion in non-convertible debt securities during the prior

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three-year period. We cannot predict if investors will find our common stock less attractive because we may rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may suffer or be more volatile.

Nasdaq may delist our securities from its exchange, which could harm our business and limit our stockholders' liquidity.

Our common stock is currently listed on the Nasdaq Capital Market, which has qualitative and quantitative listing criteria.

On March 1, 2018, we regained compliance with all applicable Nasdaq listing criteria; however, there can be no assurance that we will continue to be compliant with such listing criteria. In the event of a delisting, we can provide no assurance that any action taken by us to restore compliance with listing requirements would allow our common stock to become listed again, stabilize the market price or improve the liquidity of our common stock, prevent our common stock from dropping below the Nasdaq minimum market value of listed securities and minimum closing bid price requirements or prevent future non-compliance with Nasdaq's listing requirements.

Anti-takeover provisions in our amended and restated certificate of incorporation and bylaws and Delaware law could discourage a takeover.

Our amended and restated certificate of incorporation and bylaws contain provisions that might enable our management to resist a takeover. These provisions include:

- a classified board of directors;
- advance notice requirements applicable to stockholders for matters to be brought before a meeting of stockholders and requirements as to the form and content of a stockholder's notice;
- a supermajority stockholder vote requirement for amending certain provisions of our amended and restated certificate of incorporation and bylaws;
- the right to issue preferred stock without stockholder approval, which could be used to dilute the stock ownership of a potential hostile acquirer;
- allowing stockholders to remove directors only for cause;
- a requirement that the authorized number of directors may be changed only by resolution of the board of directors;
- allowing all vacancies, including newly created directorships, to be filled by the affirmative vote of a majority of directors then in office, even if less than a quorum, except as otherwise required by law;
- a requirement that our stockholders may only take action at annual or special meetings of our stockholders and not by written consent;
- limiting the forum for certain litigation against us to Delaware; and
- limiting the persons that can call special meetings of our stockholders to our board of directors, the chairperson of our board of directors, the chief executive officer or the president (in the absence of a chief executive officer).

These provisions might discourage, delay or prevent a change in control of our company or a change in our management. The existence of these provisions could adversely affect the voting power of holders of common stock and limit the price that investors might be willing to pay in the future for shares of our common stock. In addition, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, which generally prohibits a Delaware corporation from engaging in any of a broad range of business combinations with any "interested" stockholder for a period of three years following the date on which the stockholder became an "interested" stockholder.

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

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Our amended and restated certificate of incorporation provides that, unless we consent to the selection of an alternative forum, the Court of Chancery of the State of Delaware is the sole and exclusive forum for (i) any derivative action or proceeding brought on our behalf, (ii) any action asserting a claim of breach of fiduciary duty owed by any of our directors, officers or other employees to us or to our stockholders, (iii) any action asserting a claim arising pursuant to the Delaware General Corporation Law or our certificate of incorporation or bylaws (iv) any action to interpret apply, enforce or determine the validity of our certificate of incorporation or bylaws or (v) any action asserting a claim governed by the internal affairs doctrine. The choice of forum provision may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers or other employees, which may discourage such lawsuits against us and our directors, officers and other employees. Alternatively, if a court were to find the choice of forum provision contained in our amended and restated certificate of incorporation to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could harm our business, operating results and financial condition.

We have not paid dividends in the past and do not expect to pay dividends in the future, and any return on investment may be limited to the value of our stock.

We have never paid cash dividends and do not anticipate paying cash dividends in the foreseeable future , except the cumulative dividend payable on our Series A preferred stock. The payment of all other dividends will depend on our earnings, capital requirements, financial condition, prospects and other factors our board of directors may deem relevant. In addition, our Loan Agreement with CRG prohibits us from, among other things, paying any dividends or making any other distribution or payment on account of our common stock. The terms of our Series A preferred stock and our Series B preferred stock provide that we may not pay dividends on our common stock without concurrently declaring dividends on each. If we do not pay dividends, our stock may be less valuable because a return on your investment will only occur if you sell our common stock after our stock price appreciates. For more information on restrictions governing our ability to pay dividends, see the section titled "*Dividend Policy*" in our Annual Report on Form 10-K, as filed with the SEC on March 30, 2018.

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

None.

ITEM 3. DEFAULTS UPON SENIOR SECURITIES

None.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

ITEM 5. OTHER INFORMATION

None.

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ITEM 6. EXHIBITS

The following exhibits are being filed herewith:

Exhibit Number	Exhibit Title
10.1	Separation Agreement and Release, dated as of August 1, 2018, between the Company and Matt Ferguson.
10.2	Master Consulting Agreement, dated as of August 1, 2018, between the Company and Matt Ferguson.
10.3	Employment Offer Letter, dated as of June 11, 2018, between the Company and Mark Weinswig.
10.4	Change of Control and Severance Agreement, dated as of June 25, 2018, between the Company and Mark Weinswig.
10.5	2015 Equity Incentive Plan, as amended
31.1	Certification of the Principal Executive Officer pursuant to Securities Exchange Act Rules 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Certification of the Principal Financial Officer pursuant to Securities Exchange Act Rules 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1*	Certifications of the Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Taxonomy Extension Label Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document

* The certifications filed as Exhibits 32.1 are not deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934 and are not to be incorporated by reference into any filing of the Company under the Securities Exchange Act of 1933 or the Securities Exchange Act of 1934, whether made before or after the date hereof irrespective of any general incorporation by reference language contained in any such filing, except to the extent that the registrant specifically incorporates it by reference.

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.

Avinger, Inc.
(Registrant)

Date: August 13, 2018

/s/ JEFFERY M. SOINSKI
Jeffrey M. Soinski
Chief Executive Officer
(Principal Executive Officer)

Date: August 13, 2018

/s/ MARK WEINSWIG
Mark Weinswig
Chief Financial Officer
(Principal Financial and Accounting Officer)

SEPARATION AGREEMENT AND RELEASE

This Separation Agreement and Release ("Agreement") is made by and between Matthew Ferguson ("Employee") and Avinger, Inc. (the "Company") (collectively referred to as the "Parties" or individually referred to as a "Party").

RECITALS

WHEREAS, Employee was employed by the Company;

WHEREAS, Employee signed an At-Will Employment, Confidential Information, Invention Assignment and Arbitration Agreement with the Company, which is attached as Exhibit A (the "Confidentiality Agreement");

WHEREAS, the Company and Employee have entered into stock option agreements granting Employee the option to purchase shares of the Company's common stock subject to the terms and conditions of the Company's 2015 Stock Plan and the stock option agreements (together the "Stock Agreements");

WHEREAS, Employee has notified the Company of his resignation from the Company effective August 1 st, 2018 (the "Termination Date"); and

WHEREAS, the Parties wish to resolve any and all disputes, claims, complaints, grievances, charges, actions, petitions, and demands that the Employee may have against the Company and any of the Releasees as defined below, including, but not limited to, any and all claims arising out of or in any way related to Employee's employment with or separation from the Company;

NOW, THEREFORE, in consideration of the mutual promises made herein, the Company and Employee hereby agree as follows:

COVENANTS

1. Consideration. Any bonus payments related to first half of 2018 performance will be paid at time of payment to other company employees regardless of the employment status as of that payment date.

2. Stock. The Parties agree that for purposes of determining the number of shares of the Company's common stock that Employee is entitled to purchase from the Company, pursuant to the exercise of outstanding options, Employee will be considered to have vested only up to the Termination Date. The exercise of Employee's vested options and shares shall continue to be governed by the terms and conditions of the Stock Agreements. A schedule of Employee's option vesting under the Stock Agreements through the Termination Date is attached as Exhibit B.

3. Benefits. Employee's health insurance benefits shall cease on the last day of August 2018, subject to Employee's right to continue his/her health insurance under COBRA. Employee's participation in all benefits and incidents of employment, including, but not limited to, vesting in stock options, and the accrual of bonuses, vacation, and paid time off, ceased as of the Termination Date.

4. Payment of Salary and Receipt of All Benefits. Employee acknowledges and represents that, other than the consideration set forth in this Agreement, the Company has paid or provided all salary, wages, bonuses, accrued vacation/paid time off, premiums, leaves, housing allowances, relocation costs, interest, severance, outplacement costs, fees, reimbursable expenses, commissions, stock, stock options, vesting, and any and all other benefits and compensation due to Employee.

5. Release of Claims. Employee agrees that the foregoing consideration represents settlement in full of all outstanding obligations owed to Employee by the Company and its current and former officers, directors, employees, agents, investors, attorneys, shareholders, administrators, affiliates, benefit plans, plan administrators, insurers, trustees, divisions, and subsidiaries, and predecessor and successor corporations and assigns (collectively, the "Releasees"). Employee, on his/her own behalf and on behalf of his/her respective heirs, family members, executors, agents, and assigns, hereby and forever releases the Releasees from, and agrees not to sue concerning, or in any manner to institute, prosecute, or pursue, any claim, complaint, charge, duty, obligation, demand, or cause of action relating to any matters of any kind, whether presently known or unknown, suspected or unsuspected, that Employee may possess against any of the Releasees arising from any omissions, acts, facts, or damages that have occurred up until and including the Effective Date of this Agreement, including, without limitation:

a. any and all claims relating to or arising from Employee's employment relationship with the Company and the termination of that relationship;

b. any and all claims relating to, or arising from, Employee's right to purchase, or actual purchase of shares of stock of the Company, including, without limitation, any claims for fraud, misrepresentation, breach of fiduciary duty, breach of duty under applicable state corporate law, and securities fraud under any state or federal law;

c. any and all claims for wrongful discharge of employment; termination in violation of public policy; discrimination; harassment; retaliation; breach of contract, both express and implied; breach of covenant of good faith and fair dealing, both express and implied; promissory estoppel; negligent or intentional infliction of emotional distress; fraud; negligent or intentional misrepresentation; negligent or intentional interference with contract or prospective economic advantage; unfair business practices; defamation; libel; slander; negligence; personal injury; assault; battery; invasion of privacy; false imprisonment; conversion; and disability benefits;

d. any and all claims for violation of any federal, state, or municipal statute, including, but not limited to, Title VII of the Civil Rights Act of 1964; the Civil Rights Act of 1991; the Rehabilitation Act of 1973; the Americans with Disabilities Act of 1990; the Equal Pay Act; the Fair Labor Standards Act; the Fair Credit Reporting Act; the Age Discrimination in Employment Act of 1967; the Older Workers Benefit Protection Act; the Employee Retirement Income Security Act of 1974; the Worker Adjustment and Retraining Notification Act; the Family and Medical Leave Act; the Sarbanes-Oxley Act of 2002; the California Family Rights Act; the California Labor Code; the California Workers' Compensation Act; and the California Fair Employment and Housing Act;

e. any and all claims for violation of the federal or any state constitution;

f. any and all claims arising out of any other laws and regulations relating to employment or employment discrimination;

g. any claim for any loss, cost, damage, or expense arising out of any dispute over the nonwithholding or other tax treatment of any of the proceeds received by Employee as a result of this Agreement; and

h. any and all claims for attorneys' fees and costs.

Employee agrees that the release set forth in this section shall be and remain in effect in all respects as a complete general release as to the matters released. This release does not extend to any obligations incurred under this Agreement. This release does not release claims that cannot be released as a matter of law, including, but not limited to, Employee's right to file a charge with or participate in a charge by the Equal Employment Opportunity Commission, or any other local, state, or federal administrative body or government agency that is authorized to enforce or administer laws related to employment, against the Company (with the understanding that any such filing or participation does not give Employee the right to recover any monetary damages against the Company; Employee's release of claims herein bars Employee from recovering such monetary relief from the Company). Notwithstanding the foregoing, Employee acknowledges that any and all disputed wage claims that are released herein shall be subject to binding arbitration in accordance with Paragraph 17, which precludes Employee from filing a claim with the Division of Labor Standards Enforcement. Employee represents that he/she has made no assignment or transfer of any right, claim, complaint, charge, duty, obligation, demand, cause of action, or other matter waived or released by this Section.

6. Acknowledgment of Waiver of Claims under ADEA. Employee acknowledges that he/she is waiving and releasing any rights he/she may have under the Age Discrimination in Employment Act of 1967 ("ADEA"), and that this waiver and release is knowing and voluntary. Employee agrees that this waiver and release does not apply to any rights or claims that may arise under the ADEA after the Effective Date of this Agreement. Employee acknowledges that the consideration given for this waiver and release is in addition to anything of value to which Employee was already entitled. Employee further acknowledges that he/she has been advised by this writing that: (a) he/she should consult with an attorney prior to executing this Agreement; (b) he/she has forty-five (45) days within which to consider this Agreement; (c) he/she has seven (7) days following his/her execution of this Agreement to revoke this Agreement; (d) this Agreement shall not be effective until after the revocation period has expired; (e) nothing in this Agreement prevents or precludes Employee from challenging or seeking a determination in good faith of the validity of this waiver under the ADEA, nor does it impose any condition precedent, penalties, or costs for doing so, unless specifically authorized by federal law. In the event Employee signs this Agreement and returns it to the Company in less than the 45-day period identified above, Employee hereby acknowledges that he/she has freely and voluntarily chosen to waive the time period allotted for considering this Agreement. Employee acknowledges and understands that revocation must be accomplished by a written notification to Human Resources at hr@avinger.com that is received prior to the Effective Date. The Parties agree that changes to this Agreement, whether material or immaterial, do not restart the running of the 45-day consideration period referenced above.

7. California Civil Code Section 1542. Employee acknowledges that he/she has been advised to consult with legal counsel and is familiar with the provisions of California Civil Code Section 1542, a statute that otherwise prohibits the release of unknown claims, which provides as follows:

> A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS WHICH THE CREDITOR DOES NOT KNOW OR SUSPECT TO EXIST IN his/her FAVOR AT THE TIME OF EXECUTING THE RELEASE, WHICH IF KNOWN BY HIM/HER MUST HAVE MATERIALLY AFFECTED his/her SETTLEMENT WITH THE DEBTOR.

Employee, being aware of said code section, agrees to expressly waive any rights he/she may have thereunder, as well as under any other statute or common law principles of similar effect.

8. No Pending or Future Lawsuits. Employee represents that he/she has no lawsuits, claims, or actions pending in his/her name, or on behalf of any other person or entity, against the Company or any of the other Releasees. Employee also represents that he/she does not intend to bring any claims on his/her own behalf or on behalf of any other person or entity against the Company or any of the other Releasees.

9. Application for Employment. Employee understands and agrees that, as a condition of this Agreement, Employee shall not be entitled to any employment with the Company, and Employee hereby waives any right, or alleged right, of employment or re-employment with the Company.

10. Confidentiality. Employee agrees to maintain in complete confidence the existence of this Agreement, the contents and terms of this Agreement, and the consideration for this Agreement (hereinafter collectively referred to as "Separation Information"). Except as required by law, Employee may disclose Separation Information only to his/her immediate family members, the Court in any proceedings to enforce the terms of this Agreement, Employee's attorney(s), and Employee's accountant and any professional tax advisor to the extent that they need to know the Separation Information in order to provide advice on tax treatment or to prepare tax returns, and must prevent disclosure of any Separation Information to all other third parties. Employee agrees that he/she will not publicize, directly or indirectly, any Separation Information.

Employee acknowledges and agrees that the confidentiality of the Separation Information is of the essence. The Parties agree that if the Company proves that Employee breached this Confidentiality provision, the Company shall be entitled to an award of its costs spent enforcing this provision, including all reasonable attorneys' fees associated with the enforcement action, without regard to whether the Company can establish actual damages from Employee's breach. Any such individual breach or disclosure shall not excuse Employee from his/her obligations hereunder, nor permit his/her to make additional disclosures. Employee warrants that he/she has not disclosed, orally or in writing, directly or indirectly, any of the Separation Information to any unauthorized party.

11. Trade Secrets and Confidential Information/Company Property. Employee reaffirms and agrees to observe and abide by the terms of the Confidentiality Agreement, specifically including the provisions therein regarding nondisclosure of the Company's trade secrets and

confidential and proprietary information, and nonsolicitation of Company employees. Employee's signature below constitutes his/her certification under penalty of perjury that he/she has returned all documents and other items provided to Employee by the Company, developed or obtained by Employee in connection with

his/her employment with the Company, or otherwise belonging to the Company.

12. No Cooperation. Employee agrees that he/she will not knowingly encourage, counsel, or assist any attorneys or their clients in the presentation or prosecution of any disputes, differences, grievances, claims, charges, or complaints by any third party against any of the Releasees, unless under a subpoena or other court order to do so. Employee agrees both to immediately notify the Company upon receipt of any such subpoena or court order, and to furnish, within three (3) business days of its receipt, a copy of such subpoena or other court order. If approached by anyone for counsel or assistance in the presentation or prosecution of any disputes, differences, grievances, claims, charges, or complaints against any of the Releasees, Employee shall state no more than that he/she cannot provide counsel or assistance.

13. Nondisparagement. Employee agrees to refrain from any disparagement, defamation, libel, or slander of any of the Releasees, and agrees to refrain from any tortious interference with the contracts and relationships of any of the Releasees. Employee shall direct any inquiries by potential future employers to the Company's human resources department.

14. Breach. In addition to the rights provided in the "Attorneys' Fees" section below, Employee acknowledges and agrees that any material breach of this Agreement or of any provision of the Confidentiality Agreement shall entitle the Company immediately to recover and/or cease providing the consideration provided to Employee under this Agreement and to obtain damages.

15. No Admission of Liability. Employee understands and acknowledges that this Agreement constitutes a compromise and settlement of any and all actual or potential disputed claims by Employee. No action taken by the Company hereto, either previously or in connection with this Agreement, shall be deemed or construed to be (a) an admission of the truth or falsity of any actual or potential claims or (b) an acknowledgment or admission by the Company of any fault or liability whatsoever to Employee or to any third party.

16. Costs. The Parties shall each bear their own costs, attorneys' fees, and other fees incurred in connection with the preparation of this Agreement.

17. ARBITRATION. THE PARTIES AGREE THAT ANY AND ALL DISPUTES ARISING OUT OF THE TERMS OF THIS AGREEMENT, THEIR INTERPRETATION, AND ANY OF THE MATTERS HEREIN RELEASED, SHALL BE SUBJECT TO ARBITRATION IN SAN MATEO COUNTY, BEFORE JUDICIAL ARBITRATION & MEDIATION SERVICES ("JAMS"), PURSUANT TO ITS EMPLOYMENT ARBITRATION RULES & PROCEDURES ("JAMS RULES"). THE ARBITRATOR MAY GRANT INJUNCTIONS AND OTHER RELIEF IN SUCH DISPUTES. THE ARBITRATOR SHALL ADMINISTER AND CONDUCT ANY ARBITRATION IN ACCORDANCE WITH CALIFORNIA LAW, INCLUDING THE CALIFORNIA CODE OF CIVIL PROCEDURE, AND THE ARBITRATOR SHALL APPLY SUBSTANTIVE AND PROCEDURAL CALIFORNIA LAW TO ANY DISPUTE OR CLAIM, WITHOUT REFERENCE TO ANY CONFLICT-OF-LAW PROVISIONS OF ANY JURISDICTION. TO THE EXTENT THAT THE JAMS RULES CONFLICT WITH

CALIFORNIA LAW, CALIFORNIA LAW SHALL TAKE PRECEDENCE. THE DECISION OF THE ARBITRATOR SHALL BE FINAL, CONCLUSIVE, AND BINDING ON THE PARTIES TO THE ARBITRATION. THE PARTIES AGREE THAT THE PREVAILING PARTY IN ANY ARBITRATION SHALL BE ENTITLED TO INJUNCTIVE RELIEF IN ANY COURT OF COMPETENT JURISDICTION TO ENFORCE THE ARBITRATION AWARD. THE PARTIES TO THE ARBITRATION SHALL EACH PAY AN EQUAL SHARE OF THE COSTS AND EXPENSES OF SUCH ARBITRATION, AND EACH PARTY SHALL SEPARATELY PAY FOR ITS RESPECTIVE COUNSEL FEES AND EXPENSES; PROVIDED, HOWEVER, THAT THE ARBITRATOR SHALL AWARD ATTORNEYS' FEES AND COSTS TO THE PREVAILING PARTY, EXCEPT AS PROHIBITED BY LAW. THE PARTIES HEREBY AGREE TO WAIVE THEIR RIGHT TO HAVE ANY DISPUTE BETWEEN THEM RESOLVED IN A COURT OF LAW BY A JUDGE OR JURY. NOTWITHSTANDING THE FOREGOING, THIS SECTION WILL NOT PREVENT EITHER PARTY FROM SEEKING INJUNCTIVE RELIEF (OR ANY OTHER PROVISIONAL REMEDY) FROM ANY COURT HAVING JURISDICTION OVER THE PARTIES AND THE SUBJECT MATTER OF THEIR DISPUTE RELATING TO THIS AGREEMENT AND THE AGREEMENTS INCORPORATED HEREIN BY REFERENCE. SHOULD ANY PART OF THE ARBITRATION AGREEMENT CONTAINED IN THIS PARAGRAPH CONFLICT WITH ANY OTHER ARBITRATION AGREEMENT BETWEEN THE PARTIES, THE PARTIES AGREE THAT THIS ARBITRATION AGREEMENT SHALL GOVERN.

18. Tax Consequences. The Company makes no representations or warranties with respect to the tax consequences of the payments and any other consideration provided to Employee or made on his/her behalf under the terms of this Agreement. Employee agrees and understands that he/she is responsible for payment, if any, of local, state, and/or federal taxes on the payments and any other consideration provided hereunder by the Company and any penalties or assessments thereon. Employee further agrees to indemnify and hold the Company harmless from any claims, demands, deficiencies, penalties, interest, assessments, executions, judgments, or recoveries by any government agency against the Company for any amounts claimed due on account of (a) Employee's failure to pay or delayed payment of federal or state taxes, or (b) damages sustained by the Company by reason of any such claims, including attorneys' fees and costs.

19. Authority. The Company represents and warrants that the undersigned has the authority to act on behalf of the Company and to bind the Company and all who may claim through it to the terms and conditions of this Agreement. Employee represents and warrants that he/she has the capacity to act on his/her own behalf and on behalf of all who might claim through his/her to bind them to the terms and conditions of this Agreement. Each Party warrants and represents that there are no liens or claims of lien or assignments in law or equity or otherwise of or against any of the claims or causes of action released herein.

20. No Representations. Employee represents that he/she has had an opportunity to consult with an attorney, and has carefully read and understands the scope and effect of the provisions of this Agreement. Employee has not relied upon any representations or statements made by the Company that are not specifically set forth in this Agreement.

21. Severability. In the event that any provision or any portion of any provision hereof or any surviving agreement made a part hereof becomes or is declared by a court of competent

jurisdiction or arbitrator to be illegal, unenforceable, or void, this Agreement shall continue in full force and effect without said provision or portion of provision.

22. Attorneys' Fees. Except with regard to a legal action challenging or seeking a determination in good faith of the validity of the waiver herein under the ADEA, in the event that either Party brings an action to enforce or effect its rights under this Agreement, the prevailing Party shall be entitled to recover its costs and expenses, including the costs of mediation, arbitration, litigation, court fees, and reasonable attorneys' fees incurred in connection with such an

action.

23. Entire Agreement. This Agreement represents the entire agreement and understanding between the Company and Employee concerning the subject matter of this Agreement and Employee's employment with and separation from the Company and the events leading thereto and associated therewith, and supersedes and replaces any and all prior agreements and understandings concerning the subject matter of this Agreement and Employee's relationship with the Company, with the exception of the Confidentiality Agreement and the Stock Agreement.

24. No Oral Modification. This Agreement may only be amended in a writing signed by Employee and the Company's Chief Executive Officer.

25. Governing Law. This Agreement shall be governed by the laws of the State of California, without regard for choice-of-law provisions.

26. Effective Date. Employee understands that this Agreement shall be null and void if not executed by him/her within forty-five (45) days. This Agreement will become effective on the date it has been signed by both Parties (the "Effective Date").

27. Counterparts. This Agreement may be executed in counterparts and by facsimile, and each counterpart and facsimile shall have the same force and effect as an original and shall constitute an effective, binding agreement on the part of each of the undersigned.

28. Voluntary Execution of Agreement. Employee understands and agrees that he/she executed this Agreement voluntarily, without any duress or undue influence on the part or behalf of the Company or any third party, with the full intent of releasing all of his/her claims against the Company and any of the other Releasees. Employee acknowledges that:

(a) he/she has read this Agreement;

(b) he/she has been represented in the preparation, negotiation, and execution of this Agreement by legal counsel of his/her own choice or has elected not to retain legal counsel;

(c) he/she understands the terms and consequences of this Agreement and of the releases it contains; and

(d) he/she is fully aware of the legal and binding effect of this Agreement.

29. Protected Activity Not Prohibited. I understand that nothing in this Agreement shall in any way limit or prohibit me from engaging for a lawful purpose in any Protected Activity. For

purposes of this Agreement, "Protected Activity" means filing a charge or complaint, or otherwise communicating, cooperating, or participating with, any state, federal, or other governmental agency, including the Securities and Exchange Commission, the Equal Employment Opportunity Commission, and the National Labor Relations Board. Notwithstanding any restrictions set forth in this Agreement, I understand that I am not required to obtain authorization from the Company prior to disclosing information to, or communicating with, such agencies, nor am I obligated to advise the Company as to any such disclosures or communications. Notwithstanding, in making any such disclosures or communications, I agree to take all reasonable precautions to prevent any unauthorized use or disclosure of any information that may constitute Company Confidential Information to any parties other than the relevant government agencies. I further understand that "Protected Activity" does not include the disclosure of any Company attorney-client privileged communications, and that any such disclosure without the Company's written consent shall constitute a material breach of this Agreement. In addition, I hereby acknowledge that the Company has provided me with notice in compliance with the Defend Trade Secrets Act of 2016 regarding immunity from liability for limited disclosures of trade secrets. The full text of the notice is attached in Exhibit C.

(signature page follows)

IN WITNESS WHEREOF, the Parties have executed this Agreement on the respective dates set forth below.

MATTHEW FERGUSON, an individual

Dated: August 1, 2018

/s/ Matthew Ferguson
Employee (Signature)

AVINGER, INC.

Dated: August 1, 2018

By /s/ Jeffrey Soinski
JEFFREY SOINSKI
Chief Executive Officer

EXHIBIT A

CONFIDENTIALITY AGREEMENT

EXHIBIT B

STOCK OPTION VESTING SCHEDULE — Refer to the fidelity portal at netbenefits.com

EXHIBIT C

SECTION 7 OF THE DEFEND TRADE SECRETS ACT OF 2016

"…An individual shall not be held criminally or civilly liable under any Federal or State trade secret law for the disclosure of a trade secret that-(A) is made-(i) in confidence to a Federal, State, or local government official, either directly or indirectly, or to an attorney; and (ii) solely for the purpose of reporting or investigating a suspected violation of law; or (B) is made in a complaint or other document filed in a lawsuit or other proceeding, if such filing is made under seal. . . . An individual who files a lawsuit for retaliation by an employer for reporting a suspected violation of law may disclose the trade secret to the attorney of the individual and use the trade secret information in the court proceeding, if the individual-(A) files any document containing the trade secret under seal; and (B) does not disclose the trade secret, except pursuant to court order."

MASTER CONSULTING AGREEMENT

This Master Consulting Agreement, including the attached Exhibits ("Agreement") is made and entered into as of August 1, 2018 (the "Effective Date") by and between **Avinger, Inc.** ("Avinger"), having offices at 400 Chesapeake Drive, Redwood City, California 94063 and **Matthew B. Ferguson** ("Consultant"), having offices or residing in Menlo Park, CA. Avinger desires to retain Consultant as an independent contractor to perform consulting services (the "Services") for Avinger and Consultant is willing to perform such Services, on terms set forth more fully below. In consideration of the mutual promises contained herein, the parties agree as follows:

1. Services; Payment; No Violation of Rights or Obligations. Consultant agrees to undertake and complete the Services, as set forth in one or more statements of work executed by the parties (each, a "SOW"), an example of which is set forth as Exhibit A. As the only consideration due to Consultant regarding the subject matter of this Agreement, Avinger will pay Consultant in accordance with each SOW; Consultant and Avinger agree that such payment represents fair market value for the Services to be provided by Consultant. In the event of a conflict between this Agreement and a SOW, this Agreement shall control. Consultant will be solely responsible for the payment of all taxes including, but not limited to, social security, unemployment and income taxes, that may be due from payments received by Consultant by Avinger hereunder. Unless otherwise specifically agreed upon by Avinger in writing (and notwithstanding any other provision of this Agreement), all activity relating to Services will be performed by and only by Consultant or by employees of Consultant and only those such employees who have been approved in writing in advance by Avinger. Consultant agrees that it will not (and will not permit others to) violate any agreement with or rights of any third party or, except as expressly authorized by Avinger in writing hereafter, use or disclose at any time Consultant's own or any third party's confidential information or intellectual property in connection with the Services or otherwise for or on behalf of Avinger.

2. Confidentiality.

a. "Confidential Information" means any Avinger proprietary information technical data, trade secrets or know-how, including, but not limited to, research and product plans, products, services, markets, developments, inventions, processes, formulas, technology, marketing, finances or other business information disclosed to Consultant by Avinger either directly or indirectly in writing, orally or otherwise.

b. Consultant will not, during or subsequent to the term of this Agreement, use Confidential Information for any purpose whatsoever other than the performance of the Services on behalf of Avinger, or disclose Confidential Information to any third party. Consultant shall disclose Confidential Information only to those Consultant employees, consultants and agents who need to know such Confidential Information for the performance of the Services (and shall ensure that all such persons or entities are bound in writing to protect Avinger's Confidential Information on terms no less restrictive than those set forth in this Agreement). Consultant agrees that Confidential Information shall remain the sole property of Avinger. Consultant further agrees to take all reasonable precautions to prevent any unauthorized disclosure of Confidential Information. Notwithstanding the above, Consultant's obligation under this Section 2(b) relating to Confidential Information shall not apply to information which (i) is known to Consultant at the time of disclosure to Consultant by Avinger as evidenced by written records of Consultant, (ii) has become publicly known and made generally available through no wrongful act of Consultant, or (iii) has been rightfully received by Consultant from a third party authorized to make such disclosure. Consultant agrees that any violation or threatened violation of the confidentiality obligations set forth in this Agreement may cause irreparable injury to Avinger, entitling Avinger to seek injunctive relief in addition to all legal remedies.

c. Consultant agrees that Consultant will not, during the term of this Agreement, improperly use or disclose to Avinger any proprietary information or trade secrets of any former or current employer or other person or entity with which Consultant has an agreement or duty to keep in confidence information acquired by Consultant in confidence and that Consultant will not bring onto the premises of Avinger any unpublished document or proprietary information belonging to such employer, person or entity unless consented to in writing by such employer, person or entity. Consultant will indemnify Avinger and hold it harmless from and against all claims, liabilities, damages and expenses, including reasonable attorneys' fees and costs of suit, arising out of or in connection with any violation or claimed violation by Avinger of such third party's rights resulting in whole or in part from Avinger's use of the work product of Consultant under this Agreement.

d. Consultant recognizes that Avinger has received and in the future will receive from third parties their confidential or proprietary information subject to a duty on Avinger's part to maintain the confidentiality of such information and to use it only for certain limited purposes. Consultant agrees that Consultant owes Avinger and such third parties, during the term of this Agreement and thereafter, a duty to hold all such confidential or proprietary information in the strictest confidence and not to disclose it to any person, firm or corporation or to use it except as necessary in carrying out the Services for Avinger consistent with Avinger's agreement with such third party.

e. Upon the termination of this Agreement, or upon Avinger's earlier request, Consultant will deliver to Avinger all of Avinger's property relating to, and all tangible embodiments of, Confidential Information in Consultant's possession or control.

f. Pursuant to federal law, an individual may not be held criminally or civilly liable under any federal or state trade secret law for disclosure of a trade secret (or Confidential Information under this Agreement): (i) made in confidence to a government official, either directly or indirectly, or to an attorney, solely for the purpose of reporting or investigating a suspected violation of law; and/or (ii) in a complaint or other document filed in a lawsuit or other proceeding, if such filing is made under seal.

3. Ownership; Rights; Proprietary Information; Publicity.

a. Avinger shall own all right, title and interest (including patent rights, copyrights, trade secret rights, mask work rights, trademark rights, *sui generis* database rights and all other intellectual property rights of any sort throughout the world) relating to any and all work product, deliverables, inventions (whether or not patentable), works of authorship, mask works, designations, designs, know-how, ideas and information made or conceived or reduced to practice, in whole or in part, by or for or on behalf of Consultant during the term of this Agreement that relate to the subject matter of or arise out of or in connection with the Services or any Proprietary Information (as defined below) (collectively, "Inventions") and Consultant will promptly disclose and provide all Inventions to Avinger. Consultant agrees to assign, and hereby assigns, all Inventions to Avinger; further, Consultant shall ensure that any consultant, agent, subcontractor or other third party that performs Services hereunder that result in any Inventions shall assign all such Inventions to Avinger. Consultant shall assist

Avinger, at Avinger's expense, to further evidence, record and perfect such assignments, and to perfect, obtain, maintain, enforce and defend any rights assigned. Consultant hereby irrevocably designates and appoints Avinger as its agent and attorney-in-fact, coupled with an interest, to act for and on Consultant's behalf to execute and file any document and to do all other lawfully permitted acts to further the foregoing with the same legal force and effect as if executed by Consultant and all other creators or owners of the

applicable Invention.

b. Consultant agrees that all Inventions and all other business, technical and financial information (including, without limitation, the identity of and information relating to customers or employees) developed, learned or obtained by or for or on behalf of Consultant during the period that Consultant is to be providing the Services that relate to Avinger or the business or demonstrably anticipated business of Avinger or in connection with the Services or that are received by or for Avinger in confidence, constitute "Proprietary Information." Consultant shall hold in confidence and not disclose or, except in performing the Services, use any Proprietary Information. However, Consultant shall not be obligated under this paragraph with respect to information Consultant can document is or becomes readily publicly available without restriction through no fault of Consultant. Upon termination or as otherwise requested by Avinger, Consultant will promptly provide to Avinger all items and copies containing or embodying Proprietary Information, except that Consultant may keep its personal copies of its compensation records and this Agreement. Consultant also recognizes and agrees that Consultant has no expectation of privacy with respect to Avinger's telecommunications, networking or information processing systems (including, without limitation, stored computer files, email messages and voice messages) and that Consultant's activity, and any files or messages, on or using any of those systems may be monitored at any time without notice.

c. As additional protection for Proprietary Information, Consultant agrees that during the period over which it is to be providing the Services and for one year thereafter, Consultant will not directly or indirectly encourage or solicit any employee or consultant of Avinger to leave Avinger for any reason. Consultant also agrees that during the period over which it is to be providing the Services, Consultant will not engage in any activity that is in any way competitive with the business or demonstrably anticipated business of Avinger, and Consultant will not assist any other person or organization in competing or in preparing to compete with any business or demonstrably anticipated business of Avinger. Without limiting the foregoing, Consultant may perform services for other persons, provided that such services do not represent a conflict of interest or a breach of Consultant's obligation under this Agreement or otherwise.

d. To the extent allowed by law, any license granted to Avinger hereunder includes all rights of paternity, integrity, disclosure and withdrawal and any other rights that may be known as or referred to as "moral rights," "artist's rights," "droit moral," or the like. Furthermore, Consultant agrees that notwithstanding any rights of publicity, privacy or otherwise (whether or not statutory) anywhere in the world, and without any further compensation, Avinger may and is hereby authorized to (and to allow others to) use Consultant's name in connection with promotion of its business, products or services. To the extent any of the foregoing is ineffective under applicable law, Consultant hereby provides any and all ratifications and consents necessary to accomplish the purposes of the foregoing to the extent possible. Consultant will confirm any such ratifications and consents from time to time as requested by Avinger. If any other person is in any way involved in any Services, Consultant will obtain the foregoing ratifications, consents and authorizations from such person for Avinger's exclusive benefit.

e. If any part of the Services, Inventions, work product or information provided hereunder is based on, incorporates, or is an improvement or derivative of, or cannot be reasonably and fully made, used, reproduced, distributed and otherwise exploited without using or violating technology or intellectual property rights owned by or licensed to Consultant (or any person involved in the Services) and not assigned hereunder, Consultant shall grant to Avinger, and hereby grants to Avinger and its successors and agents, a perpetual, irrevocable, worldwide royalty-free, non-exclusive, sub-licensable right and license to exploit and exercise all such technology and intellectual property rights in support of Avinger's exercise or exploitation of the Services, Inventions, other work (including work product) or information performed or provided hereunder, or any assigned rights (including any modifications, improvements

and derivatives of any of them).

4. Representations, Warranties and Other Obligations/HCP and HCO Reporting/Non-Referral .

a. Consultant represents, warrants and covenants that: (i) Consultant has the authority to enter into this Agreement and perform the Services; (ii) this Agreement does not conflict with any other duty and/or obligation owed by Consultant, including, without limitation, any duty or obligation to Consultant's employer; (iii) Consultant is free to disclose any and all information Consultant will furnish to Avinger in connection with this Agreement; (iv) Consultant shall perform the Services using best efforts in accordance with the highest standards of ethical business conduct; and (v) Consultant shall perform the Services in accordance with all applicable Federal, state, local and foreign laws and regulations and all applicable export or import laws of the United States or any foreign jurisdiction, including, without limitation, the (x) U.S. laws known as the Foreign Corrupt Practices Act, as amended (15 U.S.C. §§ 78dd-1, et seq.,), and its counterparts and similar laws in other countries as applicable under this Agreement, the (y) Federal "Anti- Kickback" statute (42 U.S.C. § 1320a-7b(b)), and (z) insider trading laws. If Consultant's work requires a license, Consultant has obtained that license and the license is and shall remain in full force and effect.

b. Consultant represents, warrants and covenants that he or she is not on any Exclusion Lists, as defined herein; he or she is not an Ineligible Person, as defined herein; and within the five (5) years preceding the Effective Date of this Agreement, he or she has not been convicted of any offense required to be listed under United States FDA regulations. "**Exclusion Lists**" shall mean the then-current: (i) HHS/OIG List of Excluded Individuals/Entities (available through the Internet at http://www.oig.hhs.gov); (ii) General Services Administration's List of Parties Excluded from Federal Programs (available through the Internet at http://www.epls.gov); and (iii) FDA Debarment List (available through the Internet at http://www.fda.gov/ora/compliance_ref/debar/). "**Ineligible Person**" shall mean a person who: (x) is currently excluded, debarred, suspended, or otherwise ineligible to participate in the Federal Health Care Program (as defined in 42 U.S.C. § 1320a (7b(f)) or in Federal procurement or non-procurement programs, including, without limitation, Section 306 (a) or 306 (b) of the Federal Food, Drug and Cosmetic Act (codified at 21 U.S.C. 335(a) and 335(b)), the Generic Drug Enforcement Act of 1992 (21 U.S.C. § 301 et. seq.) as amended from time to time, or 21 C.F.R. § 312.70, as amended from time to time; (y) has been convicted of a criminal offense that falls within the ambit of 42 U.S.C. § 1320a-7(a), but has not yet been excluded, debarred, suspended, or otherwise declared ineligible; or (z) is listed on an Exclusion List. Consultant shall promptly notify Avinger, in writing, if Consultant becomes listed on any of the sites identified in this Section 4(b) during the term and for three (3) years after its termination.

c. Consultant represents, warrants and covenants that with respect to any committee or other group of which Consultant is a member and which evaluates or provides guidance or input about devices for adoption or purchase or inclusion on approved lists and/or develops clinical practice guidelines ("**Committee**"), Consultant shall, promptly after executing this Agreement: (i) disclose the existence of this Agreement to the Committee; and (ii) inform such

Committee of the nature of the Services to be provided by Consultant hereunder and of the fact that Consultant is paid by Avinger for such Services. Such Consultant disclosure to the Committee may be made on a confidential basis to the Committee. Furthermore, Consultant shall follow the procedures set forth by the Committee to avoid both the appearance of impropriety and any actual impropriety that may result from Consultant's performance of the Services (and/or payment therefor), which may include the Consultant recusing him/herself from decisions relating to the subject matter of this Agreement.

d. Avinger is required to abide by aggregate spend disclosure and reporting laws and regulations concerning healthcare professionals and healthcare organizations. Such disclosures and reports may include, but are not limited to, with respect to Consultant, names, titles, credentials, affiliated facility, amounts paid, dates paid, and the reason for payments ("**HCP/HCO Information**"). Consultant agrees that Avinger may disclose and report the HCP/HCO Information that Avinger deems, in Avinger's sole discretion, should be disclosed and reported. If Consultant is independently obligated to disclose any information concerning Agreement activities and compensation, Consultant shall make timely and accurate disclosures as well. Consultant and Avinger acknowledge and agree that their entrance into this Agreement is not conditioned upon any referral or recommendation by Consultant of Avinger's products or services, and, accordingly, they further acknowledge and agree that the compensation for the Services is not determined based on the volume or value of any referral or recommendation.

5. Term and Termination. This Agreement will commence on the Effective Date and will continue until termination as provided below. If either party breaches a material provision of this Agreement, the other party may terminate this Agreement (or any SOW) upon ten (10) days' notice, unless the breach is cured within the notice period. Either party also may terminate this Agreement (or any SOW) at any time, with or without cause, upon fifteen (15) days' notice, but, if (and only if) such termination is without cause, Avinger shall upon such termination pay Consultant all unpaid, undisputed amounts due for the Services completed prior to notice of such termination. Sections 2 through 8 of this Agreement and any remedies for breach of this Agreement shall survive any termination or expiration. Avinger may communicate such surviving obligations contained in this Agreement to any other (or potential) client or employer of Consultant.

6. Relationship of the Parties; Independent Contractor; No Employee Benefits. Notwithstanding any provision hereof, Consultant is an independent contractor and is not an employee, agent, partner or joint venturer of Avinger and shall not bind nor attempt to bind Avinger to any contract. Consultant shall accept any directions issued by Avinger pertaining to the goals to be attained and the results to be achieved by Consultant, but Consultant shall be solely responsible for the manner and hours in which the Services are performed under this Agreement. Consultant shall not be eligible to participate in any of Avinger's employee benefit plans, fringe benefit programs, group insurance arrangements or similar programs. Avinger shall not provide workers' compensation, disability insurance, Social Security or unemployment compensation coverage or any other statutory benefit to Consultant. Consultant shall comply at Consultant's expense with all applicable provisions of workers' compensation laws, unemployment compensation laws, federal Social Security law, the Fair Labor Standards Act, federal, state and local income tax laws, and all other applicable federal, state and local laws, regulations and codes relating to terms and conditions of employment required to be fulfilled by employers or independent contractors. Consultant will ensure that its employees, contractors and others involved in the Services, if any, are bound in writing to the foregoing, and to all of Consultant's obligations under any provision of this Agreement, for Avinger's benefit and Consultant will be responsible for any noncompliance by them. Consultant agrees to indemnify Avinger from any and all claims, damages, liability, settlement, attorneys' fees and expenses, as incurred, on account of the foregoing or any breach of this Agreement or any other action or inaction by or for or on behalf of Consultant.

7. Assignment. This Agreement and the Services contemplated hereunder are personal to Consultant and Consultant shall not have the right or ability to assign, transfer or subcontract any rights or obligations under this Agreement without the written consent of Avinger. Any attempt to do so shall be void. Avinger may fully assign and transfer this Agreement in whole or part.

8. Notice. All notices under this Agreement shall be in writing and shall be deemed given when personally delivered, or three days after being sent by prepaid certified or registered U.S. mail to the address of the party to be noticed as set forth herein or to such other address as such party last provided to the other by written notice.

9. Miscellaneous. Any breach of Section 2 or 3 will cause irreparable harm to Avinger for which damages would not be an adequate remedy, and therefore, Avinger will be entitled to seek injunctive relief with respect thereto in addition to any other remedies. The failure of either party to enforce its rights under this Agreement at any time for any period shall not be construed as a waiver of such rights. No changes or modifications or waivers to this Agreement will be effective unless in writing and signed by both parties. In the event that any provision of this Agreement shall be determined to be illegal or unenforceable, that provision will be limited or eliminated to the minimum extent necessary so that this Agreement shall otherwise remain in full force and effect and enforceable. The parties hereto acknowledge that this Agreement and any Exhibits hereto (and all SOWs entered into in connection with this Agreement) set forth the entire agreement and understanding of the parties as to the subject matter hereof, and supersedes and prevails over any prior or contemporaneous understandings or agreements, whether written or oral, in respect of such subject matter, including, without limitation, any additional or conflicting terms in any invoice or quote or bid submitted by Consultant to Avinger, which are expressly rejected by Avinger and shall be of no effect. This Agreement shall be governed by and construed in accordance with the laws of the State of California without regard to the conflicts of laws provisions thereof, and the federal and state courts serving Santa Clara County, California shall have exclusive jurisdiction with respect to any claims or disputes arising between the parties with regard to any matters related to this Agreement. Neither of the parties hereto shall assign or transfer its interest in this Agreement or any portion thereof without the prior written consent of the other; provided that, Avinger may freely assign this Agreement in connection with a merger or a sale of all or substantially all of its assets. This Agreement shall be binding upon, and inure to the benefit of, the successors and permitted assigns of the parties hereto. In any action or proceeding to enforce rights under this Agreement, the prevailing party will be entitled to recover costs and attorneys' fees. Headings herein are for convenience of reference only and shall in no way affect interpretation of the Agreement. Each person signing this Agreement hereby certifies that he or she is duly authorized to execute this Agreement on behalf of the respective party. This Agreement may be executed in identical counterparts, each of which shall be deemed to be an original instrument, and all of which together will constitute one and the same Agreement.

IN WITNESS WHEREOF, the Parties, by their undersigned duly authorized representatives, have entered into this Master Consulting Agreement as of the Effective Date.

Avinger, Inc.	**Matthew B. Ferguson**
By: /s/ Jeffrey M. Soinski	By: /s/ Matthew B. Ferguson
Name: Jeffrey M. Soinski	

Title: President and Chief Executive Officer

EXHIBIT A
[MODEL ONLY — NOT TO BE COMPLETED AS ACTUAL STATEMENT OF WORK]
FORM OF STATEMENT OF WORK

This Statement of Work (this "SOW") is entered into by and between **Avinger Inc.** (the "Avinger" or "Avinger") and Consultant X (the "Consultant"). The Services set forth in this SOW (as defined below) shall be performed pursuant to the terms and conditions of that certain Master Consulting Agreement, having an effective date of January X, 20XX, by and between Avinger and Consultant (the "Agreement"). Capitalized terms not otherwise defined herein shall have their respective meanings in the Agreement. In the event of a conflict between the terms of this SOW and the Agreement, the terms of the Agreement shall control.

SERVICES

Consultant shall perform the following services ("the "Services"): SERVICES

TERM

This SOW is effective as of January X, 20XX (the "Effective Date") and will expire on January X, 20XX (the "Term").

FEES/EXPENSES

Hourly fee of **$X** (exclusive of travel time; billed in quarter-hour increments; payable monthly in arrears). Fees shall not exceed $X during the term, unless otherwise agreed by Avinger.

Expense reimbursement is subject at all times to Avinger's Travel Policy and in any event is limited to (1) required, reasonable long distance telephone expenses and (2) coach class (or equivalent) travel (transportation, lodging and meals). Expenses must be authorized in writing by Avinger in advance, and will be reimbursed 30 days after receipt of itemized invoice and all receipts. Avinger may decline to reimburse expenses that are not accompanied by adequate receipts.

INVOICING AND TRACKING REQUIREMENTS

Invoices detailing hours logged, work completed, and expense reimbursement shall be sent no later than thirty (30) days after the end of each calendar month in which Services are rendered to: accountspayable@avinger.com. Except as otherwise agreed by Avinger, Avinger shall pay undisputed invoices within thirty (30) days of receipt.

IN WITNESS WHEREOF, the Parties, by their undersigned duly authorized representatives, have entered into this SOW as of the Effective Date set forth herein.

Avinger, Inc.	**Consultant X**
By: *EXAMPLE ONLY – DO NOT FILL*	By: *EXAMPLE ONLY – DO NOT FILL*
Name: *EXAMPLE ONLY – DO NOT FILL*	Name: *EXAMPLE ONLY – DO NOT FILL*
Title: *EXAMPLE ONLY – DO NOT FILL*	Title: *EXAMPLE ONLY – DO NOT FILL*

STATEMENT OF WORK #1

This Statement of Work #1 (this "SOW") is entered into by and between **Avinger, Inc.** (the "Company" or "Avinger") and **Matthew B. Ferguson** (the "Consultant"). The Services (as defined below) set forth in this SOW shall be performed pursuant to the terms and conditions of that certain Master Consulting Agreement, having an effective date of August 1, 2018 by and between Avinger and Consultant (the "Agreement"). Capitalized terms not otherwise defined herein shall have their respective meanings in the Agreement. In the event of a conflict between the terms of this SOW and the Agreement, the terms of the Agreement shall control.

SERVICES

Consultant shall perform the following services (the "Services"):

Services relating to Avinger's financial operations and strategy and other services upon mutual agreement. Consultant shall perform no more than twenty (20) hours of Services in each week during the Term (to the extent requested by the Company).

TERM

This SOW is effective as of August 1, 2018 (the "Effective Date") and will expire on December 31, 2018 (the "Term").

FEES/EXPENSES

In consideration of Consultant's performance of the Services, Avinger will pay the Consultant as follows:

- For the period August 1 through August 31, 2018 - *$12,500*;
- For the period September 1 through September 30, 2018 - *$12,500*;
- For the period October 1 through October 31, 2018 - *$12,500*;
- For the period November 1 through November 30, 2018 - *$12,500*;
- For the period December 1 through December 31, 2018 - *$12,500*;

The above compensation shall be payable for any amount of Services performed by Consultant in a given month between zero through eighty (80) hours of Services, to the extent requested by the Company. Fees shall not exceed $62,500 during the Term, unless otherwise agreed in writing by Avinger.

Expense reimbursement is subject at all times to the Avinger Travel Policy and in any event is limited to (1) required, reasonable long distance telephone expenses and (2) coach class (or equivalent) travel (transportation, lodging and meals). Expenses must be authorized in writing by Company in advance, and will be reimbursed 30 days after receipt of itemized invoice and all receipts. The Company may decline to reimburse expenses that are not approved in advance or accompanied by adequate receipts.

INVOICING/TRACKING REQUIREMENTS

Not later than thirty (30) days after the end of each calendar month in which Services are performed or expenses are incurred, Consultant shall send an invoice (to: accountspayable@avinger.com) detailing hours logged (if applicable), Services performed, fees due and expense reimbursement. Except as otherwise agreed by Avinger, Avinger will pay undisputed invoices within thirty (30) days of receipt.

IN WITNESS WHEREOF, the Parties, by their undersigned duly authorized representatives, have entered into this SOW as of the Effective Date.

Avinger, Inc.		**Matthew B. Ferguson**	
By:	/s/ Jeffrey M. Soinski	By:	/s/ Matthew B. Ferguson
Name:	Jeffrey M. Soinski		
Title:	President and Chief Executive Officer		

June 11, 2018

Mark Weinswig
Menlo Park, CA

Dear Mark:

Avinger, Inc. (the "Company") is pleased to offer you employment with the Company under the terms described below. This offer is contingent upon your successful completion of our background check process, your execution of an At-Will Employment, Confidential Information, Invention Assignment, and Arbitration Agreement, and your presentation of appropriate documentation showing that you are legally authorized to work in the United States.

By signing this letter, you confirm with the Company that you are under no contractual or other legal obligations that would prohibit you from performing your duties with the Company.

Following are the terms of the offer of employment with the Company:

Title: Chief Financial Officer
Reports To: Chief Executive Officer
Status: Full-Time; Exempt
Start Date: June 25, 2018

Base Salary: Annual gross starting salary of $300,000 paid in semi-monthly installments of $12,500 on the Company's regular payroll dates. All forms of compensation referred to in this letter are subject to applicable withholding and payroll taxes.

2018 Bonus Program: You will be eligible to be considered for a discretionary, bi-annual bonus based upon the achievement of the Company's 2018 financial goals and key milestones. Goals will be established separately for the first and second halves of 2018. Target bonus payouts for eligible employees will be expressed as a percentage of annual base salary. At the Chief Financial Officer Level, the target bonus equals 40% annually. Employees starting on or after April 1, 2018 and before July 1, 2018 will be eligible for the second half portion of the bonus, equating to 20% of annual base salary at the Chief Financial Officer level. Bonuses will be calculated and paid at the discretion of the Board of Directors or its Compensation Committee and based upon achievement of applicable first- and/or second-half goals when financial results are available. Employees must remain actively employed and in compliance with the Company's policies and directives concerning job performance and conduct as of each payout date in order to be eligible for a bonus payment. Employees separated from the Company for any reason prior to bonus payout, and employees on unpaid leave at the time of the bonus payout, will not be eligible for full or pro rata bonus payout under the plan.

Equity Incentives: Subject to the approval of the Company's Board of Directors or its Compensation Committee and assuming that you have performed to the Company's satisfaction and have not resigned or been terminated, you will be eligible for a grant of stock options (or restricted stock units) to purchase shares of the Company's common stock. If granted, these options will vest over 4 years, with 25% of the shares subject to the option vesting upon one year of employment and one forty-eighth (1/48th) of the shares subject to the option vesting upon completion of each month of continuous service thereafter. Restricted stock units (RSUs) will also vest over four years, with 25% of the RSUs vesting each year. Options and RSUs will be subject to the terms and conditions applicable to such equity awards granted under the current equity incentive plan and the applicable equity incentive grant agreement.

Benefits: Avinger-provided benefits for eligible employees, include the following: medical, dental, and vision to which you will become eligible on the 1st day of the month after the Start Date, and subject to any additional eligibility requirements; paid time off per the Company's Paid Time Off policy; and Avinger's 401(k) Plan.

Additional terms of employment are described below:

Employment Relationship: Please note that, if hired, you will be employed at all times as an at-will employee, meaning that either you or the Company may terminate the employment relationship at any time and for any reason, with or without cause or notice. Although your job duties, title, compensation and benefits, as well as the Company's personnel policies and procedures, may change from time to time, the "at will" nature of your employment may not be changed or be modified, except in writing, executed by the CEO of the Company.

Outside Activities: While you render services to the Company, you agree that you will not engage in any other employment, consulting or other business activity without the written consent of the Company. In addition, while you render services to the Company, you will not assist any person or entity in competing with the Company, in preparing to compete with the Company or in hiring any employees or consultants of the Company.

Prior Obligations: Please keep in mind Avinger's ethical and contractual obligations that our employees owe to their former employers. Please do not to disclose, transfer, or utilize any proprietary information of third parties (including former employers) in connection with your work for us. In addition, Avinger must emphasize that you must abide by any contractual obligations that you have consented to in agreements with previous employers or third parties. If we receive notification that any employee is breaching an obligation regarding specific proprietary information or employment terms, then the company must investigate it.

Entire Agreement: This letter supersedes and replaces any prior understandings or agreements, whether oral, written or implied, between you and the Company regarding the matters described in this letter.

On or before your first day of work, please provide evidence of your U.S. citizenship or proof of your legal right to work in this country. We are required by federal law to examine documentation of your employment eligibility within three business days after you begin employment. Also within your offer package are the following documents for your review: 1) At-Will Employment, Confidential Information, Invention Assignment, and Arbitration Agreement; 2) Change of Control and Severance Agreement; and 3) Benefits Overview.

If you choose to accept this offer, please sign and date this offer letter and At-Will Employment, Confidential Information, Invention Assignment, and Arbitration Agreement. Please email the signed copies to hr@avinger.com.

We are very excited about Avinger's prospects, and are confident you will be an important contributor to our success. If you have questions or concerns, please feel free to contact me.

Sincerely,

/s/ Jeffrey M. Soinski
Jeffrey M. Soinski
President and Chief Executive Officer

I have read and accept this offer of employment:

Signature: /s/ Mark Weinswig

Date: June 13, 2018

AVINGER, INC.

CHANGE OF CONTROL AND SEVERANCE AGREEMENT

This Change of Control and Severance Agreement (the "Agreement") is entered into as of June 25, 2018 (the " **Effective Date**") by and between Avinger, Inc. (the "**Company**"), and Mark Weinswig ("**Executive**").

1. Severance.

(a) Termination for other than Cause, Death or Disability or Good Reason in the Event of a Change of Control. If upon or within eighteen (18) months following a Change of Control (i) the Company (or any parent or subsidiary or successor of the Company) terminates Executive's employment with the Company other than for Cause, death or disability, or (ii) the Executive resigns from such employment for Good Reason, then, subject to Section 2, Executive will be entitled to: (A) receive continuing payments of severance pay at a rate equal to Executive's base salary and target bonus, as then in effect, for twelve (12) months from the date of such termination, which will be paid in accordance with the Company's regular payroll procedures; (B) if Executive timely elects continuation coverage pursuant to the Consolidated Omnibus Budget Reconciliation Act of 1985, as amended ("**COBRA**") for Executive and Executive's dependents, within the time period prescribed pursuant to COBRA, the Company will reimburse Executive for the COBRA premiums for such coverage for Executive and his covered dependents for twelve (12) months from the date of Executive's termination of employment or such earlier date if Executive no longer constitutes a "Qualified Beneficiary" (as such term is defined in Section 4980B(g) of the Code); (C) accelerated vesting as to 100% of Executive's outstanding unvested stock options and/or restricted stock; and (D) the extension of the post-termination exercise period for any options held by Executive for a period of one (1) year.

(b) Termination for Cause, Death or Disability; Resignation without Good Reason . If Executive's employment with the Company (or any parent or subsidiary or successor of the Company) terminates voluntarily by Executive (except upon resignation for Good Reason upon or within eighteen (18) months following a Change of Control), for Cause by the Company or due to Executive's death or disability, then (i) all vesting will terminate immediately with respect to Executive's outstanding equity awards, (ii) all payments of compensation by the Company to Executive hereunder will terminate immediately (except as to amounts already earned), and (iii) Executive will only be eligible for severance benefits in accordance with the Company's established policies, if any, as then in effect.

(c) Option/Stock Acceleration in the Event of a Change of Control . Upon a Change of Control of the Company, Executive will be entitled to accelerated vesting as to 50% of Executive's outstanding unvested stock options and/or restricted stock, provided that any remaining shares shall continue to vest per the schedules previously implemented by the Company.

(d) Exclusive Remedy. In the event of a termination of Executive's employment with the Company (or any parent or subsidiary or successor of the Company), the provisions of this Section 1 are intended to be and are exclusive and in lieu of any other rights or remedies to which Executive or the Company may otherwise be entitled, whether at law, tort or contract, in equity, or

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under this Agreement. Executive will be entitled to no severance or other benefits upon termination of employment with respect to acceleration of award vesting or severance pay other than those benefits expressly set forth in this Section 1.

2. Conditions to Receipt of Severance; No Duty to Mitigate .

(a) Separation Agreement and Release of Claims . The receipt of any severance pursuant to Section 1(a) will be subject to Executive signing and not revoking a standard separation agreement and release of claims with the Company (the "**Release**") and provided that such Release becomes effective and irrevocable no later than sixty (60) days following the termination date (such deadline, the "**Release Deadline**"). If the Release does not become effective and irrevocable by the Release Deadline, Executive will forfeit any rights to severance or benefits under this Agreement. In no event will severance payments or benefits be paid or provided until the Release becomes effective and irrevocable.

(b) Nonsolicitation. The receipt of any severance benefits pursuant to Section 1(a) will be subject to Executive not violating the provisions of Section 4. In the event Executive breaches the provisions of Section 4, all continuing payments and benefits to which Executive may otherwise be entitled pursuant to Section 1(a) will immediately cease.

(c) Section 409A.

(i) Notwithstanding anything to the contrary in this Agreement, no severance pay or benefits to be paid or provided to Executive, if any, pursuant to this Agreement that, when considered together with any other severance payments or separation benefits, are considered deferred compensation under Code Section 409A, and the final regulations and any guidance promulgated thereunder ("**Section 409A**") (together, the "**Deferred Payments**") will be paid or otherwise provided until Executive has a "separation from service" within the meaning of Section 409A. Similarly, no severance payable to Executive, if any, pursuant to this Agreement that otherwise would be exempt from Section 409A pursuant to Treasury Regulation Section 1.409A-1(b)(9) will be payable until Executive has a "separation from service" within the meaning of Section 409A.

(ii) Any severance payments or benefits under this Agreement that would be considered Deferred Payments will be paid on, or, in the case of installments, will not commence until, the sixtieth (60^{th}) day following Executive's separation from service, or, if later, such time as required by Section 2(c)(iii). Any installment payments that would have been made to Executive during the sixty (60) day period immediately following Executive's separation from service but for the preceding sentence will be paid to Executive on the sixtieth (60^{th}) day following Executive's separation from service and the remaining payments shall be made as provided in this Agreement.

(iii) Notwithstanding anything to the contrary in this Agreement, if Executive is a "specified employee" within the meaning of Section 409A at the time of Executive's termination (other than due to death), then the Deferred Payments that are payable within the first six (6) months following Executive's separation from service, will become payable on the first payroll date that occurs on or after the date six (6) months and one (1) day following the date of Executive's separation from service. All subsequent Deferred Payments, if any, will be payable in accordance

with the payment schedule applicable to each payment or benefit. Notwithstanding anything herein to the contrary, if Executive dies following Executive's separation from service, but prior to the six (6) month anniversary of the separation from service, then any payments delayed in accordance with this paragraph will be payable in a lump sum as soon as administratively practicable after the date of Executive's death and all other Deferred Payments will be payable in accordance with the payment schedule applicable to each payment or benefit. Each payment and benefit payable under this Agreement is intended to constitute a separate payment for purposes of Section 1.409A-2(b)(2) of the Treasury Regulations.

(iv) Any amount paid under this Agreement that satisfies the requirements of the "short-term deferral" rule set forth in Section 1.409A-1(b)(4) of the Treasury Regulations will not constitute Deferred Payments for purposes of clause (i) above.

(v) Any amount paid under this Agreement that qualifies as a payment made as a result of an involuntary separation from service pursuant to Section 1.409A-1(b)(9)(iii) of the Treasury Regulations that does not exceed the Section 409A Limit (as defined below) will not constitute Deferred Payments for purposes of clause (i) above.

(vi) The foregoing provisions are intended to comply with the requirements of Section 409A so that none of the severance payments and benefits to be provided hereunder will be subject to the additional tax imposed under Section 409A, and any ambiguities herein will be interpreted to so comply. The Company and Executive agree to work together in good faith to consider amendments to this Agreement and to take such reasonable actions which are necessary, appropriate or desirable to avoid imposition of any additional tax or income recognition prior to actual payment to Executive under Section 409A.

(d) No Duty to Mitigate. Executive will not be required to mitigate the amount of any payment contemplated by this Agreement, nor will any earnings that Executive may receive from any other source reduce any such payment.

3. Definitions.

(a) Cause. For purposes of this Agreement, "**Cause**" is defined as (i) an act of dishonesty made by Executive in connection with Executive's responsibilities as an employee, (ii) Executive's conviction of, or plea of nolo contendere to, a felony or any crime involving fraud, embezzlement or any other act of moral turpitude, causing material harm to the standing and reputation of the Company, in each case as determined in good faith by the board of directors of the Company (the "**Board**"); (iii) Executive's gross misconduct, (iv) Executive's unauthorized use or disclosure of any proprietary information or trade secrets of the Company or any other party to whom Executive owes an obligation of nondisclosure as a result of Executive's relationship with the Company; (v) Executive's willful breach of any obligations under any written agreement or covenant with the Company; (vi) Executive's continued failure to perform his employment duties after Executive has received a written demand of performance from the Company which specifically sets forth the factual basis for the Company's belief that Executive has not substantially performed his duties and has failed to cure such non-performance to the Company's satisfaction within 10 business days after receiving such notice provided that such nonperformance has resulted or is likely to result in substantial and material damage to the Company or its subsidiaries; or (vii) Executive's repeated unexplained or unjustified absence from the Company.

(b) Change of Control. For purposes of this Agreement, "**Change of Control**" of the Company is defined as:

(i) any "person" (as such term is used in Sections 13(d) and 14(d) of the Securities Exchange Act of 1934, as amended) is or becomes the "beneficial owner" (as defined in Rule 13d-3 under said Act), directly or indirectly, of securities of the Company representing more than 50% of the total voting power represented by the Company's then outstanding voting securities; or

(ii) the date of the consummation of a merger or consolidation of the Company with any other corporation that has been approved by the stockholders of the Company, other than a merger or consolidation which would result in the voting securities of the Company outstanding immediately prior thereto continuing to represent (either by remaining outstanding or by being converted into voting securities of the surviving entity or its parent) at least fifty percent (50%) of the total voting power represented by the voting securities of the Company or such surviving entity or its parent outstanding immediately after such merger or consolidation;

(iii) the date of the consummation of the sale or disposition by the Company of all or substantially all the Company's assets; or

(iv) the date that a majority of members of the Board is replaced during any twelve (12) month period by directors whose appointment or election is not endorsed by a majority of the members of the Board prior to the date of the appointment or election. For purposes of this clause (iv), if any person is considered to be in effective control of the Company, the acquisition of additional control of the Company by the same person will not be considered a Change of Control.

Notwithstanding the foregoing provisions of this definition, a transaction will not be deemed a Change of Control unless the transaction qualifies as a "change in control event" within the meaning of Section 409A.

Further, notwithstanding the foregoing provisions of this definition, the following shall not constitute a Change of Control:

(x) any bona fide equity financing for capital raising purposes;

(y) any merger or acquisition done exclusively to effect a change of domicile of the Company; and

(z) any transfer of assets by the Company to a new company for tax planning purposes.

(c) Code. For purposes of this Agreement, "**Code**" means the Internal Revenue Code of 1986, as amended.

(d) Good Reason. For the purposes of this Agreement, "**Good Reason**" means Executive's resignation within ninety (90) days following

the expiration of any Company cure period (discussed below) following the occurrence of one or more of the following, without Executive's express written consent: (i) a material reduction of Executive's duties, position or responsibilities, or the removal of Executive from such position and responsibilities, either of which results in a material diminution of Executive's authority, duties or responsibilities, unless Executive is provided with a comparable position (i.e., a position of equal or greater organizational level, duties, authority, compensation and status); provided, however, that a reduction in duties, position or responsibilities solely by virtue of the Company being acquired and made part of a larger entity (as, for example, when the Chief Executive Officer of the Company remains as such following a Change of Control but is not made the Chief Executive Officer of the acquiring corporation) will not constitute "Good Reason"; (ii) a material reduction in Executive's base salary (in other words, a reduction of more than ten percent (10%) of Executive's base salary in any one year); (iii) a material change in the geographic location of Executive's primary work facility or location; provided, that a relocation of less than fifty (50) miles from Executive's then present location will not be considered a material change in geographic location; or (iv) a material breach of this Agreement by the Company. Executive will not resign for Good Reason without first providing the Company with written notice of the acts or omissions constituting the grounds for "Good Reason" within ninety (90) days of the initial existence of the grounds for "Good Reason" and a reasonable cure period of not less than thirty (30) days following the date of such notice.

(e) Section 409A Limit. For purposes of this Agreement, "**Section 409A Limit**" will mean the lesser of two (2) times: (i) Executive's annualized compensation based upon the annual rate of pay paid to Executive during the Executive's taxable year preceding the Executive's taxable year of his or her termination of employment as determined under Treasury Regulation Section 1.409A-1(b)(9)(iii)(A)(1) and any Internal Revenue Service guidance issued with respect thereto; or (ii) the maximum amount that may be taken into account under a qualified plan pursuant to Section 401(a)(17) of the Internal Revenue Code for the year in which Executive's employment is terminated.

4. Non-Solicitation. Until the date one (1) year after the termination of Executive's employment with the Company for any reason, Executive agrees not, either directly or indirectly, to solicit, induce, attempt to solicit, recruit, or encourage any employee of the Company (or any parent or subsidiary of the Company) to leave his or her employment either for Executive or for any other entity or person. Executive represents that he (i) is familiar with the foregoing covenant not to solicit, and (ii) is fully aware of his obligations hereunder, including, without limitation, the reasonableness of the length of time, scope and geographic coverage of these covenants. This Section 4 supersedes all prior or contemporaneous agreements whether written or oral as to the subject matter herein.

5. Assignment. This Agreement will be binding upon and inure to the benefit of (a) the heirs, executors and legal representatives of Executive upon Executive's death and (b) any successor of the Company. Any such successor of the Company will be deemed substituted for the Company under the terms of this Agreement for all purposes. For this purpose, "**successor**" means any person, firm, corporation or other business entity which at any time, whether by purchase, merger or otherwise, directly or indirectly acquires all or substantially all of the assets or business of the Company. None of the rights of Executive to receive any form of compensation payable pursuant to

this Agreement may be assigned or transferred except by will or the laws of descent and distribution. Any other attempted assignment, transfer, conveyance or other disposition of Executive's right to compensation or other benefits will be null and void.

6. Notices. All notices, requests, demands and other communications called for hereunder will be in writing and will be deemed given (i) on the date of delivery if delivered personally, (ii) one (1) day after being sent by a well established commercial overnight service, or (iii) four (4) days after being mailed by registered or certified mail, return receipt requested, prepaid and addressed to the parties or their successors at the following addresses, or at such other addresses as the parties may later designate in writing:

If to the Company:

Avinger, Inc.
Attn: Chief Financial Officer at the time

400 Chesapeake Drive
Redwood City, CA 94063

If to Executive:

at the last residential address known by the Company.

7. Severability. In the event that any provision hereof becomes or is declared by a court of competent jurisdiction to be illegal, unenforceable or void, this Agreement will continue in full force and effect without said provision.

8. Arbitration.

(a) Arbitration. In consideration of Executive's employment with the Company, its promise to arbitrate all employment-related disputes, and Executive's receipt of the compensation, pay raises and other benefits paid to Executive by the Company, at present and in the future, Executive agrees that any and all controversies, claims, or disputes with anyone (including the Company and any employee, officer, director, shareholder or benefit plan of the Company in their capacity as such or otherwise) arising out of, relating to, or resulting from Executive's employment with the Company or termination thereof, including any breach of this Agreement, will be subject to binding arbitration under the Arbitration Rules set forth in California Code of Civil Procedure Section 1280 through 1294.2, including Section 1281.8 (the "**Act**"), and pursuant to California law. The Federal Arbitration Act shall also apply with full force and effect, notwithstanding the application of procedural rules set forth under the Act.

(b) Dispute Resolution. **Disputes that Executive agrees to arbitrate, and thereby agrees to waive any right to a trial by jury, include any statutory claims under local, state, or federal law**, including, but not limited to, claims under Title VII of the Civil Rights Act of 1964, the Americans with Disabilities Act of 1990, the Age Discrimination in Employment Act of 1967, the Older Workers Benefit Protection Act, the Sarbanes Oxley Act, the Worker Adjustment and Retraining Notification Act, the California Fair Employment and Housing Act, the Family and Medical Leave Act, the California Family Rights Act, the California Labor Code, claims of

harassment, discrimination, and wrongful termination, and any statutory or common law claims. Executive further understands that this Agreement to arbitrate also applies to any disputes that the Company may have with Executive.

(c) Procedure. Executive agrees that any arbitration will be administered by the Judicial Arbitration & Mediation Services, Inc. (" **JAMS**"), pursuant to its Employment Arbitration Rules & Procedures (the "**JAMS Rules**"). The arbitrator shall have the power to decide any motions brought by any party to the arbitration, including motions for summary judgment and/or adjudication, motions to dismiss and demurrers, and motions for class certification, prior to any arbitration hearing. The arbitrator shall have the power to award any remedies available under applicable law, and the arbitrator shall award attorneys' fees and costs to the prevailing party, except as prohibited by law. The Company will pay for any administrative or hearing fees charged by the administrator or JAMS, and all arbitrator's fees, except that Executive shall pay any filing fees associated with any arbitration that Executive initiates, but only so much of the filing fee as Executive would have instead paid had Executive filed a complaint in a court of law. Executive agrees that the arbitrator shall administer and conduct any arbitration in accordance with California law, including the California Code of Civil Procedure and the California Evidence Code, and that the arbitrator shall apply substantive and procedural California law to any dispute or claim, without reference to the rules of conflict of law. To the extent that the JAMS Rules conflict with California law, California law shall take precedence. The decision of the arbitrator shall be in writing. Any arbitration under this Agreement shall be conducted in Santa Clara County, California.

(d) Remedy. Except as provided by the Act, arbitration shall be the sole, exclusive, and final remedy for any dispute between Executive and the Company. **Accordingly, except as provided by the Act and this Agreement, neither Executive nor the Company will be permitted to pursue court action regarding claims that are subject to arbitration**. Notwithstanding, the arbitrator will not have the authority to disregard or refuse to enforce any lawful Company policy, and the arbitrator will not order or require the Company to adopt a policy not otherwise required by law which the Company has not adopted.

(e) Administrative Relief. Executive is not prohibited from pursuing an administrative claim with a local, state, or federal administrative body or government agency that is authorized to enforce or administer laws related to employment, including, but not limited to, the Department of Fair Employment and Housing, the Equal Employment Opportunity Commission, the National Labor Relations Board, or the Workers' Compensation Board. However, Executive may not pursue court action regarding any such claim, except as permitted by law.

(f) Voluntary Nature of Agreement. Executive acknowledges and agrees that Executive is executing this Agreement voluntarily and without any duress or undue influence by the Company or anyone else. Executive further acknowledges and agrees that Executive has carefully read this Agreement and that Executive has asked any questions needed for Executive to understand the terms, consequences and binding effect of this Agreement and fully understands it, including that ***EXECUTIVE IS WAIVING EXECUTIVE'S RIGHT TO A JURY TRIAL***. Finally, Executive agrees that Executive has been provided an opportunity to seek the advice of an attorney of Executive's choice before signing this Agreement.

9. Integration. This Agreement represents the entire agreement and understanding between the parties as to the subject matter herein and supersedes all prior or contemporaneous agreements whether written or oral. With respect to stock options granted on or after the date of this Agreement, the acceleration of vesting provisions provided herein will apply to such stock options except to the extent otherwise explicitly provided in the applicable stock option agreement. This Agreement may be modified only by agreement of the parties by a written instrument executed by the parties that is designated as an amendment to this Agreement.

10. Waiver of Breach. The waiver of a breach of any term or provision of this Agreement, which must be in writing, will not operate as or be construed to be a waiver of any other previous or subsequent breach of this Agreement. Notwithstanding anything to the contrary in this Agreement, the failure of the Company to obtain the assumption of this Agreement by a successor and/or acquirer shall be a material breach of this Agreement.

11. Headings. All captions and section headings used in this Agreement are for convenient reference only and do not form a part of this Agreement.

12. Tax Withholding. All payments made pursuant to this Agreement will be subject to withholding of applicable taxes.

13. Governing Law. This Agreement will be governed by the laws of the State of California (with the exception of its conflict of laws provisions).

14. Acknowledgment. Executive acknowledges that he has had the opportunity to discuss this matter with and obtain advice from his private attorney, has had sufficient time to, and has carefully read and fully understands all the provisions of this Agreement, and is knowingly and voluntarily entering into this Agreement.

15. Counterparts. This Agreement may be executed in counterparts, and each counterpart will have the same force and effect as an original and will constitute an effective, binding agreement on the part of each of the undersigned.

[Signature Page Follows]

IN WITNESS WHEREOF, each of the parties has executed this Agreement, in the case of the Company by their duly authorized officers, as of the day and year first above written.

COMPANY:

AVINGER, INC.

By: /s/ Jeffrey M. Soinski Date: June 13, 2018

Title: President and Chief Executive Officer

EXECUTIVE:

/s/ Mark Weinswig Date: June 13, 2018

Mark Weinswig

[SIGNATURE PAGE TO AVINGER, INC. CHANGE OF CONTROL AND SEVERANCE AGREEMENT]

2015 Equity Incentive Plan, as amended

AVINGER, INC.

2015 EQUITY INCENTIVE PLAN

1. Purposes of the Plan. The purposes of this Plan are:

- to attract and retain the best available personnel for positions of substantial responsibility,
- to provide additional incentive to Employees, Directors and Consultants, and
- to promote the success of the Company's business.

The Plan permits the grant of Incentive Stock Options, Nonstatutory Stock Options, Restricted Stock, Restricted Stock Units, Stock Appreciation Rights, Performance Units and Performance Shares.

2. Definitions. As used herein, the following definitions will apply:

(a) "Administrator" means the Board or any of its Committees as will be administering the Plan, in accordance with Section 4 of the Plan.

(b) "Applicable Laws" means the requirements relating to the administration of equity-based awards under U.S. state corporate laws, U.S. federal and state securities laws, the Code, any stock exchange or quotation system on which the Common Stock is listed or quoted and the applicable laws of any foreign country or jurisdiction where Awards are, or will be, granted under the Plan.

(c) "Award" means, individually or collectively, a grant under the Plan of Options, Stock Appreciation Rights, Restricted Stock, Restricted Stock Units, Performance Units or Performance Shares.

(d) "Award Agreement" means the written or electronic agreement setting forth the terms and provisions applicable to each Award granted under the Plan. The Award Agreement is subject to the terms and conditions of the Plan.

(e) "Board" means the Board of Directors of the Company.

(f) "Change in Control" means the occurrence of any of the following events:

(i) A change in the ownership of the Company which occurs on the date that any one person, or more than one person acting as a group ("Person"), acquires ownership of the stock of the Company that, together with the stock held by such Person, constitutes more than fifty percent (50%) of the total voting power of the stock of the Company; provided, however, that for purposes of this subsection, the acquisition of additional stock by any one Person, who is considered to own more than fifty percent (50%) of the total voting power of the stock of the Company will not be considered a Change in Control; or

(ii) A change in the effective control of the Company which occurs on the date that a majority of members of the Board is replaced during any twelve (12) month period by Directors whose appointment or election is not endorsed by a majority of the members of the Board prior to the date of the appointment or election. For purposes of this clause (ii), if any Person is considered to be in effective control of the Company, the acquisition of additional control of the Company by the same Person will not be considered a Change in Control; or

(iii) A change in the ownership of a substantial portion of the Company's assets which occurs on the date that any Person acquires (or has acquired during the twelve (12) month period ending on the date of the most recent acquisition by such person or persons) assets from the Company that have a total gross fair market value equal to or more than fifty percent (50%) of the total gross fair market value of all of the assets of the Company immediately prior to such acquisition or acquisitions; provided, however, that for purposes of this subsection (iii), the following will not constitute a change in the ownership of a substantial portion of the Company's assets: (A) a transfer to an entity that is controlled by the Company's stockholders immediately after the transfer, or (B) a transfer of assets by the Company to: (1) a stockholder of the Company (immediately before the asset transfer) in exchange for or with respect to the Company's stock, (2) an entity, fifty percent (50%) or more of the total value or voting power of which is owned, directly or indirectly, by the Company, (3) a Person, that owns, directly or indirectly, fifty percent (50%) or more of the total value or voting power of all the outstanding stock of the Company, or (4) an entity, at least fifty percent (50%) of the total value or voting power of which is owned, directly or indirectly, by a Person described in this subsection (iii)(B)(3). For purposes of this subsection (iii), gross fair market value means the value of the assets of the Company, or the value of the assets being disposed of, determined without regard to any liabilities associated with such assets.

For purposes of this definition, persons will be considered to be acting as a group if they are owners of a corporation that enters into a merger, consolidation, purchase or acquisition of stock, or similar business transaction with the Company.

Notwithstanding the foregoing, a transaction will not be deemed a Change in Control unless the transaction qualifies as a change in control event within the meaning of Code Section 409A, as it has been and may be amended from time to time, and any proposed or final Treasury Regulations and Internal Revenue Service guidance that has been promulgated or may be promulgated thereunder from time to time.

Further and for the avoidance of doubt, a transaction will not constitute a Change in Control if: (i) its sole purpose is to change the state of the Company's incorporation, or (ii) its sole purpose is to create a holding company that will be owned in substantially the same proportions by the persons who held the Company's securities immediately before such transaction.

(g) "Code" means the Internal Revenue Code of 1986, as amended. Reference to a specific section of the Code or regulation thereunder will include such section or regulation, any valid regulation promulgated under such section, and any comparable provision of any future legislation or regulation amending, supplementing or superseding such section or regulation.

(h) "Committee" means a committee of Directors or of other individuals satisfying Applicable Laws appointed by the Board, or a duly authorized committee of the Board, in accordance with Section 4 hereof.

(i) "Common Stock" means the common stock of the Company.

(j) "Company" means Avinger, Inc., a Delaware corporation, or any successor thereto.

(k) "Consultant" means any natural person, including an advisor, engaged by the Company or a Parent or Subsidiary to render bona fide services to such entity, provided the services (i) are not in connection with the offer or sale of securities in a capital-raising transaction, and (ii) do not directly promote or maintain a market for the Company's securities.

(l) "Director" means a member of the Board.

(m) "Disability" means total and permanent disability as defined in Section 22(e)(3) of the Code, provided that in the case of Awards other than Incentive Stock Options, the Administrator in its discretion may determine whether a permanent and total disability exists in accordance with uniform and non-discriminatory standards adopted by the Administrator from time to time.

(n) "Employee" means any person, including Officers and Directors, employed by the Company or any Parent or Subsidiary of the Company. Neither service as a Director nor payment of a director's fee by the Company will be sufficient to constitute "employment" by the Company.

(o) "Exchange Act" means the Securities Exchange Act of 1934, as amended.

(p) "Exchange Program" means a program under which (i) outstanding Awards are surrendered or cancelled in exchange for awards of the same type (which may have higher or lower exercise prices and different terms), awards of a different type, and/or cash, (ii) Participants would have the opportunity to transfer any outstanding Awards to a financial institution or other person or entity selected by the Administrator, and/or (iii) the exercise price of an outstanding Award is increased or reduced. The Administrator will determine the terms and conditions of any Exchange Program in its sole discretion.

(q) "Fair Market Value" means, as of any date, the value of Common Stock determined as follows:

(i) If the Common Stock is listed on any established stock exchange or a national market system, including without limitation the New York Stock Exchange, the NASDAQ Global Select Market, the NASDAQ Global Market or the NASDAQ Capital Market of The NASDAQ Stock Market, its Fair Market Value will be the closing sales price for such stock (or the closing bid, if no sales were reported) as quoted on such exchange or system on the day of determination, as reported in *The Wall Street Journal* or such other source as the Administrator deems reliable;

(ii) If the Common Stock is regularly quoted by a recognized securities dealer but selling prices are not reported, the Fair Market Value of a Share will be the mean between the high bid and low asked prices for the Common Stock on the date of determination (or, if no bids and asks were reported on that date, as applicable, on the last trading date such bids and asks were reported), as reported in *The Wall Street Journal* or such other source as the Administrator deems reliable;

(iii) For purposes of any Awards granted on the Registration Date, the Fair Market Value will be the initial price to the public as set forth in the final prospectus included within the registration statement on Form S-1 filed with the Securities and Exchange Commission for the initial public offering of the Common Stock; or

(iv) In the absence of an established market for the Common Stock, the Fair Market Value will be determined in good faith by the Administrator.

(r) "Fiscal Year" means the fiscal year of the Company.

(s) "Incentive Stock Option" means an Option that by its terms qualifies and is intended to qualify as an incentive stock option within the meaning of Section 422 of the Code.

(t) "Inside Director" means a Director who is an Employee.

(u) "Nonstatutory Stock Option" means an Option that by its terms does not qualify or is not intended to qualify as an Incentive Stock Option.

(v) "Officer" means a person who is an officer of the Company within the meaning of Section 16 of the Exchange Act and the rules and regulations promulgated thereunder.

(w) "Option" means a stock option granted pursuant to the Plan.

(x) "Outside Director" means a Director who is not an Employee.

(y) "Parent" means a "parent corporation," whether now or hereafter existing, as defined in Section 424(e) of the Code.

(z) "Participant" means the holder of an outstanding Award.

(aa) "Performance Share" means an Award denominated in Shares which may be earned in whole or in part upon attainment of performance goals or other vesting criteria as the Administrator may determine pursuant to Section 10.

(bb) "Performance Unit" means an Award which may be earned in whole or in part upon attainment of performance goals or other vesting criteria as the Administrator may determine and which may be settled for cash, Shares or other securities or a combination of the foregoing pursuant to Section 10.

(cc) "Period of Restriction" means the period during which the transfer of Shares of Restricted Stock are subject to restrictions and therefore, the Shares are subject to a substantial risk of forfeiture. Such restrictions may be based on the passage of time, the achievement of target levels of performance, or the occurrence of other events as determined by the Administrator.

(dd) "Plan" means this 2015 Equity Incentive Plan.

(ee) "Registration Date" means the effective date of the first registration statement that is filed by the Company and declared effective pursuant to Section 12(b) of the Exchange Act, with respect to any class of the Company's securities.

(ff) "Restricted Stock" means Shares issued pursuant to a Restricted Stock award under Section 7 of the Plan, or issued pursuant to the early exercise of an Option.

(gg) "Restricted Stock Unit" means a bookkeeping entry representing an amount equal to the Fair Market Value of one Share, granted pursuant to Section 8. Each Restricted Stock Unit represents an unfunded and unsecured obligation of the Company.

(hh) "Rule 16b-3" means Rule 16b-3 of the Exchange Act or any successor to Rule 16b-3, as in effect when discretion is being exercised with respect to the Plan.

(ii) "Section 16(b)" means Section 16(b) of the Exchange Act.

(jj) "Service Provider" means an Employee, Director or Consultant.

(kk) "Share" means a share of the Common Stock, as adjusted in accordance with Section 14 of the Plan.

(ll) "Stock Appreciation Right" means an Award, granted alone or in connection with an Option, that pursuant to Section 9 is designated as a Stock Appreciation Right.

(mm) "Subsidiary" means a "subsidiary corporation," whether now or hereafter exist-ing, as defined in Section 424(f) of the Code.

3. Stock Subject to the Plan.

(a) Stock Subject to the Plan. Subject to the provisions of Section 14 of the Plan, the maximum aggregate number of Shares that may be issued under the Plan is 1,320,000 Shares, plus the sum of any Shares subject to stock options or similar awards granted under the Company's 2009 Stock Plan, as amended (the "Existing Plan") that, on or after the Registration Date, expire or otherwise terminate without having been exercised in full and Shares issued pursuant to awards granted under the Existing Plan that are forfeited to or repurchased by the Company, with the maximum number of Shares to be added to the Plan from previously granted awards under the Existing Plan equal to 3,000,000. The Shares may be authorized, but unissued, or reacquired Common Stock.

(b) Automatic Share Reserve Increase. Subject to the provisions of Section 14 of the Plan, the number of Shares available for issuance under the Plan will be increased on the first day of each Fiscal Year beginning with the 2016 Fiscal Year, in an amount equal to the least of (i) 1,690,000 Shares, (ii) five percent (5%) of the outstanding Shares on the last day of the immediately preceding Fiscal Year or (iii) such number of Shares determined by the Board; provided, however, that such determination under clause (iii) will be made no later than the last day of the immediately preceding Fiscal Year.

(c) Lapsed Awards. If an Award expires or becomes unexercisable without having been exercised in full, is surrendered pursuant to an Exchange Program, or, with respect to Restricted Stock, Restricted Stock Units, Performance Units or Performance Shares, is forfeited to, or repurchased by, the Company due to failure to vest, then the unpurchased Shares (or for Awards other than Options or Stock Appreciation Rights the forfeited or repurchased Shares), which were subject thereto will become available for future grant or sale under the Plan (unless the Plan has terminated). With respect to Stock Appreciation Rights, only Shares actually issued (i.e., the net Shares issued) pursuant to a Stock Appreciation Right will cease to be available under the Plan; all remaining Shares under Stock Appreciation Rights will remain available for future grant or sale under the Plan (unless the Plan has terminated). Shares that actually have been issued under the Plan under any Award will not be returned to the Plan and will not become available for future distribution under the Plan; provided, however, that if Shares issued pursuant to Awards of Restricted Stock, Restricted Stock Units, Performance Shares or Performance Units are repurchased by the Company or are forfeited to the Company, such Shares will become available for future grant under the Plan. Shares used to pay the exercise price of an Award or to satisfy the tax withholding obligations related to an Award will become available for future grant or sale under the Plan. To the extent an Award under the Plan is paid out in cash rather than Shares, such cash payment will not result in reducing the number of Shares available for issuance under the Plan. Notwithstanding the foregoing and, subject to adjustment as provided in Section 14, the maximum number of Shares that may be issued upon the exercise of Incentive Stock Options will equal the aggregate Share number stated in Section 3(a), plus, to the extent allowable under Section 422 of the Code, any Shares that become available for issuance under the Plan pursuant to Sections 3(b) and 3(c).

(d) Share Reserve. The Company, during the term of this Plan, will at all times reserve and keep available such number of Shares as will be sufficient to satisfy the requirements of the Plan.

4. Administration of the Plan.

(a) Procedure.

(i) Multiple Administrative Bodies. Different Committees with respect to different groups of Service Providers may administer the Plan.

(ii) Section 162(m). To the extent that the Administrator determines it to be desirable to qualify Awards granted hereunder as "performance-based compensation" within the meaning of Section 162(m) of the Code, the Plan will be administered by a Committee of two (2) or more "outside directors" within the meaning of Section 162(m) of the Code.

(iii) Rule 16b-3. To the extent desirable to qualify transactions hereunder as exempt under Rule 16b-3, the transactions contemplated hereunder will be structured to satisfy the requirements for exemption under Rule 16b-3.

(iv) Other Administration. Other than as provided above, the Plan will be administered by (A) the Board or (B) a Committee, which committee will be constituted to satisfy Applicable Laws.

(b) Powers of the Administrator. Subject to the provisions of the Plan, and in the case of a Committee, subject to the specific duties delegated by the Board to such Committee, the Administrator will have the authority, in its discretion:

(i) to determine the Fair Market Value;

(ii) to select the Service Providers to whom Awards may be granted hereunder;

(iii) to determine the number of Shares to be covered by each Award granted hereunder;

(iv) to approve forms of Award Agreements for use under the Plan;

(v) to determine the terms and conditions, not inconsistent with the terms of the Plan, of any Award granted hereunder. Such terms and conditions include, but are not limited to, the exercise price, the time or times when Awards may be exercised (which may be based on performance criteria), any vesting acceleration or waiver of forfeiture restrictions, and any restriction or limitation regarding any Award or the Shares relating thereto, based in each case on such factors as the Administrator will determine;

(vi) to institute and determine the terms and conditions of an Exchange Program;

(vii) to construe and interpret the terms of the Plan and Awards granted pursuant to the Plan;

(viii) to prescribe, amend and rescind rules and regulations relating to the Plan, including rules and regulations relating to sub-plans established for the purpose of satisfying applicable foreign laws or for qualifying for favorable tax treatment under applicable foreign laws;

(ix) to modify or amend each Award (subject to Section 19 of the Plan), including but not limited to the discretionary authority to extend the post-termination exercisability period of Awards and to extend the maximum term of an Option (subject to Section 6(b) of the Plan regarding Incentive Stock Options);

(x) to allow Participants to satisfy tax withholding obligations in such manner as prescribed in Section 15 of the Plan;

(xi) to authorize any person to execute on behalf of the Company any instrument required to effect the grant of an Award previously granted by the Administrator;

(xii) to allow a Participant to defer the receipt of the payment of cash or the delivery of Shares that otherwise would be due to such Participant under an Award; and

(xiii) to make all other determinations deemed necessary or advisable for administering the Plan.

(c) Effect of Administrator's Decision. The Administrator's decisions, determinations and interpretations will be final and binding on all Participants and any other holders of Awards.

5. Eligibility. Nonstatutory Stock Options, Stock Appreciation Rights, Restricted Stock, Restricted Stock Units, Performance Shares and Performance Units may be granted to Service Providers. Incentive Stock Options may be granted only to Employees.

6. Stock Options.

(a) Limitations. Each Option will be designated in the Award Agreement as either an Incentive Stock Option or a Nonstatutory Stock Option. However, notwithstanding such designation, to the extent that the aggregate Fair Market Value of the Shares with respect to which Incentive Stock Options are exercisable for the first time by the Participant during any calendar year (under all plans of the Company and any Parent or Subsidiary) exceeds one hundred thousand dollars ($100,000), such Options will be treated as Nonstatutory Stock Options. For purposes of this Section 6(a), Incentive Stock Options will be taken into account in the order in which they were granted. The Fair Market Value of the Shares will be determined as of the time the Option with respect to such Shares is granted.

(b) Term of Option. The term of each Option will be stated in the Award Agreement. In the case of an Incentive Stock Option, the term will be ten (10) years from the date of grant or such shorter term as may be provided in the Award Agreement. Moreover, in the case of an Incentive Stock Option granted to a Participant who, at the time the Incentive Stock Option is granted, owns stock representing more than ten percent (10%) of the total combined voting power of all classes of stock of the Company or any Parent or Subsidiary, the term of the Incentive Stock Option will be five (5) years from the date of grant or such shorter term as may be provided in the Award Agreement.

(c) Option Exercise Price and Consideration.

(i) Exercise Price. The per share exercise price for the Shares to be issued pursuant to exercise of an Option will be determined by the Administrator, subject to the following:

(1) In the case of an Incentive Stock Option

(A) granted to an Employee who, at the time the Incentive Stock Option is granted, owns stock representing more than ten percent (10%) of the voting power of all classes of stock of the Company or any Parent or Subsidiary, the per Share exercise price will be no less than one hundred ten percent (110%) of the Fair Market Value per Share on the date of grant.

(B) granted to any Employee other than an Employee described in paragraph (A) immediately above, the per Share exercise price will be no less than one hundred percent (100%) of the Fair Market Value per Share on the date of grant.

(2) In the case of a Nonstatutory Stock Option, the per Share exercise price will be no less than one hundred percent (100%) of the Fair Market Value per Share on the date of grant.

(3) Notwithstanding the foregoing, Options may be granted with a per Share exercise price of less than one hundred percent (100%) of the Fair Market Value per Share on the date of grant pursuant to a transaction described in, and in a manner consistent with, Section 424(a) of the Code.

(ii) Waiting Period and Exercise Dates. At the time an Option is granted, the Administrator will fix the period within which the Option may be exercised and will determine any conditions that must be satisfied before the Option may be exercised.

(iii) Form of Consideration. The Administrator will determine the acceptable form of consideration for exercising an Option, including the method of payment. In the case of an Incentive Stock Option, the Administrator will determine the acceptable form of consideration at the time of grant. Such consideration may consist entirely of: (1) cash; (2) check; (3) promissory note, to the extent permitted by Applicable Laws, (4) other Shares, provided that such Shares have a Fair Market Value on the date of surrender equal to the aggregate exercise price of the Shares as to which such Option will be exercised and provided that accepting such Shares will not result in any adverse accounting consequences to the Company, as the Administrator determines in its sole discretion; (5) consideration received by the Company under a broker-assisted (or other) cashless exercise program (whether through a broker or otherwise) implemented by the Company in connection with the Plan; (6) by net exercise; (7) such other consideration and method of payment for the issuance of Shares to the extent permitted by Applicable Laws; or (8) any combination of the foregoing methods of payment.

(d) Exercise of Option.

(i) Procedure for Exercise; Rights as a Stockholder . Any Option granted hereunder will be exercisable according to the terms of the Plan and at such times and under such conditions as determined by the Administrator and set forth in the Award Agreement. An Option may not be exercised for a fraction of a Share.

An Option will be deemed exercised when the Company receives: (i) a notice of exercise (in such form as the Administrator may specify from time to time) from the person entitled to exercise the Option, and (ii) full payment for the Shares with respect to which the Option is exercised (together with applicable withholding taxes). Full payment may consist of any consideration and method of payment authorized by the Administrator and permitted by the Award Agreement and the Plan. Shares issued upon exercise of an Option will be issued in the name of the Participant or, if requested by the Participant, in the name of the Participant and his or her spouse. Until the Shares are issued (as evidenced by the appropriate entry on the books of the Company or of a duly authorized transfer agent of the Company), no right to vote or receive dividends or any other rights as a stockholder will exist with respect to the Shares subject to an Option, notwithstanding the exercise of the Option. The Company will issue (or cause to be issued) such Shares promptly after the Option is exercised. No adjustment will be made for a dividend or other right for which the record date is prior to the date the Shares are issued, except as provided in Section 14 of the Plan.

Exercising an Option in any manner will decrease the number of Shares thereafter available, both for purposes of the Plan and for sale under the Option, by the number of Shares as to which the Option is exercised.

(ii) Termination of Relationship as a Service Provider . If a Participant ceases to be a Service Provider, other than upon the Participant's termination as the result of the Participant's death or Disability, the Participant may exercise his or her Option within such period of time as is specified in the Award Agreement to the extent that the Option is vested on the date of termination (but in no event later than the expiration of the term of such Option as set forth in the Award Agreement). In the absence of a specified time in the Award Agreement, the Option will remain exercisable for three (3) months following the Participant's termination. Unless otherwise provided by the Administrator, if on the date of termination the Participant is not vested as to his or her entire Option, the Shares covered by the unvested portion of the Option will revert to the Plan. If after termination the Participant does not exercise his or her Option within the time specified by the Administrator, the Option will terminate, and the Shares covered by such Option will revert to the Plan.

(iii) Disability of Participant. If a Participant ceases to be a Service Provider as a result of the Participant's Disability, the Participant may exercise his or her Option within such period of time as is specified in the Award Agreement to the extent the Option is vested on the date of termination (but in no event later than the expiration of the term of such Option as set forth in the Award Agreement). In the absence of a specified time in the Award Agreement, the Option will remain exercisable for twelve (12) months following the Participant's termination. Unless otherwise provided by the Administrator, if on the date of termination the Participant is not vested as to his or her entire Option, the Shares covered by the unvested portion of the Option will revert to the Plan. If after termination the Participant does not exercise his or her Option within the time specified herein, the Option will terminate, and the Shares covered by such Option will revert to the Plan.

(iv) Death of Participant. If a Participant dies while a Service Provider, the Option may be exercised following the Participant's death within such period of time as is specified in the Award Agreement to the extent that the Option is vested on the date of death (but in no event may the option be exercised later than the expiration of the term of such Option as set forth in the Award Agreement), by the Participant's designated beneficiary, provided such beneficiary has been designated prior to Participant's death in a form acceptable to the Administrator. If no such beneficiary has been designated by the

Participant, then such Option may be exercised by the personal representative of the Participant's estate or by the person(s) to whom the Option is transferred pursuant to the Participant's will or in accordance with the laws of descent and distribution. In the absence of a specified time in the Award Agreement, the Option will remain exercisable for twelve (12) months following Participant's death. Unless otherwise provided by the Administrator, if at the time of death Participant is not vested as to his or her entire Option, the Shares covered by the unvested portion of the Option will immediately revert to the Plan. If the Option is not so exercised within the time specified herein, the Option will terminate, and the Shares covered by such Option will revert to the Plan.

7. Restricted Stock.

(a) Grant of Restricted Stock. Subject to the terms and provisions of the Plan, the Administrator, at any time and from time to time, may grant Shares of Restricted Stock to Service Providers in such amounts as the Administrator, in its sole discretion, will determine.

(b) Restricted Stock Agreement. Each Award of Restricted Stock will be evidenced by an Award Agreement that will specify the Period of Restriction, the number of Shares granted, and such other terms and conditions as the Administrator, in its sole discretion, will determine. Unless the Administrator determines otherwise, the Company as escrow agent will hold Shares of Restricted Stock until the restrictions on such Shares have lapsed.

(c) Transferability. Except as provided in this Section 7 or the Award Agreement, Shares of Restricted Stock may not be sold, transferred, pledged, assigned, or otherwise alienated or hypothecated until the end of the applicable Period of Restriction.

(d) Other Restrictions. The Administrator, in its sole discretion, may impose such other restrictions on Shares of Restricted Stock as it may deem advisable or appropriate.

(e) Removal of Restrictions. Except as otherwise provided in this Section 7, Shares of Restricted Stock covered by each Restricted Stock grant made under the Plan will be released from escrow as soon as practicable after the last day of the Period of Restriction or at such other time as the Administrator may determine. The Administrator, in its discretion, may accelerate the time at which any restrictions will lapse or be removed.

(f) Voting Rights. During the Period of Restriction, Service Providers holding Shares of Restricted Stock granted hereunder may exercise full voting rights with respect to those Shares, unless the Administrator determines otherwise.

(g) Dividends and Other Distributions. During the Period of Restriction, Service Providers holding Shares of Restricted Stock will be entitled to receive all dividends and other distributions paid with respect to such Shares, unless the Administrator provides otherwise. If any such dividends or distributions are paid in Shares, the Shares will be subject to the same restrictions on transferability and forfeitability as the Shares of Restricted Stock with respect to which they were paid.

(h) Return of Restricted Stock to Company. On the date set forth in the Award Agreement, the Restricted Stock for which restrictions have not lapsed will revert to the Company and again will become available for grant under the Plan.

8. Restricted Stock Units.

(a) Grant. Restricted Stock Units may be granted at any time and from time to time as determined by the Administrator. After the Administrator determines that it will grant Restricted Stock Units under the Plan, it will advise the Participant in an Award Agreement of the terms, conditions, and restrictions related to the grant, including the number of Restricted Stock Units.

(b) Vesting Criteria and Other Terms. The Administrator will set vesting criteria in its discretion, which, depending on the extent to which the criteria are met, will determine the number of Restricted Stock Units that will be paid out to the Participant. The Administrator may set vesting criteria based upon the achievement of Company-wide, divisional, business unit, or individual goals (including, but not limited to, continued employment or service), applicable federal or state securities laws or any other basis determined by the Administrator in its discretion.

(c) Earning Restricted Stock Units. Upon meeting the applicable vesting criteria, the Participant will be entitled to receive a payout as determined by the Administrator. Notwithstanding the foregoing, at any time after the grant of Restricted Stock Units, the Administrator, in its sole discretion, may reduce or waive any vesting criteria that must be met to receive a payout.

(d) Form and Timing of Payment. Payment of earned Restricted Stock Units will be made as soon as practicable after the date(s) determined by the Administrator and set forth in the Award Agreement. The Administrator, in its sole discretion, may only settle earned Restricted Stock Units in cash, Shares, or a combination of both.

(e) Cancellation. On the date set forth in the Award Agreement, all unearned Restricted Stock Units will be forfeited to the Company.

9. Stock Appreciation Rights.

(a) Grant of Stock Appreciation Rights. Subject to the terms and conditions of the Plan, a Stock Appreciation Right may be granted to Service Providers at any time and from time to time as will be determined by the Administrator, in its sole discretion.

(b) Number of Shares. The Administrator will have complete discretion to determine the number of Stock Appreciation Rights granted to any Service Provider.

(c) Exercise Price and Other Terms. The per share exercise price for the Shares to be issued pursuant to exercise of a Stock Appreciation Right will be determined by the Administrator and will be no less than one hundred percent (100%) of the Fair Market Value per Share on the date of grant. Otherwise, the Administrator, subject to the provisions of the Plan, will have complete discretion to determine the terms and conditions of Stock Appreciation Rights granted under the Plan.

(d) Stock Appreciation Right Agreement. Each Stock Appreciation Right grant will be evidenced by an Award Agreement that will specify the

exercise price, the term of the Stock Appreciation Right, the conditions of exercise, and such other terms and conditions as the Administrator, in its sole discretion, will determine.

(e) Expiration of Stock Appreciation Rights. A Stock Appreciation Right granted under the Plan will expire ten (10) years from the date of grant or such shorter term as may be provided in the Award Agreement, as determined by the Administrator, in its sole discretion. Notwithstanding the foregoing, the rules of Section 6(d) relating to exercise also will apply to Stock Appreciation Rights.

(f) Payment of Stock Appreciation Right Amount. Upon exercise of a Stock Appreciation Right, a Participant will be entitled to receive payment from the Company in an amount determined by multiplying:

(i) The difference between the Fair Market Value of a Share on the date of exercise over the exercise price; times

(ii) The number of Shares with respect to which the Stock Appreciation Right is exercised.

At the discretion of the Administrator, the payment upon Stock Appreciation Right exercise may be in cash, in Shares of equivalent value, or in some combination thereof.

10. Performance Units and Performance Shares.

(a) Grant of Performance Units/Shares. Performance Units and Performance Shares may be granted to Service Providers at any time and from time to time, as will be determined by the Administrator, in its sole discretion. The Administrator will have complete discretion in determining the number of Performance Units and Performance Shares granted to each Participant.

(b) Value of Performance Units/Shares. Each Performance Unit will have an initial value that is established by the Administrator on or before the date of grant. Each Performance Share will have an initial value equal to the Fair Market Value of a Share on the date of grant.

(c) Performance Objectives and Other Terms. The Administrator will set performance objectives or other vesting provisions (including, without limitation, continued status as a Service Provider) in its discretion which, depending on the extent to which they are met, will determine the number or value of Performance Units/Shares that will be paid out to the Service Providers. The time period during which the performance objectives or other vesting provisions must be met will be called the "Performance Period." Each Award of Performance Units/Shares will be evidenced by an Award Agreement that will specify the Performance Period, and such other terms and conditions as the Administrator, in its sole discretion, will determine. The Administrator may set performance objectives based upon the achievement of Company-wide, divisional, business unit or individual goals (including, but not limited to, continued employment or service), applicable federal or state securities laws, or any other basis determined by the Administrator in its discretion.

(d) Earning of Performance Units/Shares. After the applicable Performance Period has ended, the holder of Performance Units/Shares will be entitled to receive a payout of the number of Performance Units/Shares earned by the Participant over the Performance Period, to be determined as a function of the extent to which the corresponding performance objectives or other vesting provisions have been achieved. After the grant of a Performance Unit/Share, the Administrator, in its sole discretion, may reduce or waive any performance objectives or other vesting provisions for such Performance Unit/Share.

(e) Form and Timing of Payment of Performance Units/Shares. Payment of earned Performance Units/Shares will be made as soon as practicable after the expiration of the applicable Performance Period. The Administrator, in its sole discretion, may pay earned Performance Units/Shares in the form of cash, in Shares (which have an aggregate Fair Market Value equal to the value of the earned Performance Units/Shares at the close of the applicable Performance Period) or in a combination thereof.

(f) Cancellation of Performance Units/Shares. On the date set forth in the Award Agreement, all unearned or unvested Performance Units/Shares will be forfeited to the Company, and again will be available for grant under the Plan.

11. Outside Director Limitations. No Outside Director may be granted, in any Fiscal Year, Awards with a grant date fair value (determined in accordance with U.S. generally accepted accounting principles) of greater than $500,000, increased to $1,500,000 in the Fiscal Year of his or her initial service as an Outside Director. Any Awards granted to an individual while he or she was an Employee, or while he or she was a Consultant but not an Outside Director, will not count for purposes of the limitations under this Section 11.

12. Leaves of Absence/Transfer Between Locations. Unless the Administrator provides otherwise, vesting of Awards granted hereunder will be suspended during any unpaid leave of absence. A Participant will not cease to be an Employee in the case of (i) any leave of absence approved by the Company or (ii) transfers between locations of the Company or between the Company, its Parent, or any Subsidiary. For purposes of Incentive Stock Options, no such leave may exceed three (3) months, unless reemployment upon expiration of such leave is guaranteed by statute or contract. If reemployment upon expiration of a leave of absence approved by the Company is not so guaranteed, then six (6) months following the first (1st) day of such leave any Incentive Stock Option held by the Participant will cease to be treated as an Incentive Stock Option and will be treated for tax purposes as a Nonstatutory Stock Option.

13. Transferability of Awards. Unless determined otherwise by the Administrator, an Award may not be sold, pledged, assigned, hypothecated, transferred, or disposed of in any manner other than by will or by the laws of descent or distribution and may be exercised, during the lifetime of the Participant, only by the Participant. If the Administrator makes an Award transferable, such Award will contain such additional terms and conditions as the Administrator deems appropriate.

14. Adjustments; Dissolution or Liquidation; Change in Control.

(a) Adjustments. In the event that any dividend or other distribution (whether in the form of cash, Shares, other securities, or other property), recapitalization, stock split, reverse stock split, reorganization, merger, consolidation, split-up, spin-off, combination, repurchase, or exchange of Shares or other securities of the Company, or other change in the corporate structure of the Company affecting the Shares occurs, the Administrator, in order to prevent diminution or enlargement of the benefits or potential benefits intended to be made available under the Plan, will adjust the number and class of Shares that may

be delivered under the Plan and/or the number, class, and price of Shares covered by each outstanding Award, and the numerical Share limit in Section 3 of the Plan.

(b) Dissolution or Liquidation. In the event of the proposed dissolution or liquidation of the Company, the Administrator will notify each Participant as soon as practicable prior to the effective date of such proposed transaction. To the extent it previously has not been exercised, an Award will terminate immediately prior to the consummation of such proposed action.

(c) Change in Control. In the event of a Change in Control, each outstanding Award will be treated as the Administrator determines, including, without limitation, that (i) Awards may be assumed, or substantially equivalent Awards will be substituted, by the acquiring or succeeding corporation (or an affiliate thereof) with appropriate adjustments as to the number and kind of shares and prices; (ii) upon written notice to a Participant, that the Participant's Awards will terminate upon or immediately prior to the consummation of such Change in Control; (iii) outstanding Awards will vest and become exercisable, realizable, or payable, or restrictions applicable to an Award will lapse, in whole or in part prior to or upon consummation of such Change in Control, and, to the extent the Administrator determines, terminate upon or immediately prior to the effectiveness of such merger or Change in Control; (iv) (A) the termination of an Award in exchange for an amount of cash and/or property, if any, equal to the amount that would have been attained upon the exercise of such Award or realization of the Participant's rights as of the date of the occurrence of the transaction (and, for the avoidance of doubt, if as of the date of the occurrence of the transaction the Administrator determines in good faith that no amount would have been attained upon the exercise of such Award or realization of the Participant's rights, then such Award may be terminated by the Company without payment), or (B) the replacement of such Award with other rights or property selected by the Administrator in its sole discretion; or (v) any combination of the foregoing. In taking any of the actions permitted under this Section 14(c), the Administrator will not be required to treat all Awards similarly in the transaction.

In the event that the successor corporation does not assume or substitute for the Award, the Participant will fully vest in and have the right to exercise all of his or her outstanding Options and Stock Appreciation Rights, including Shares as to which such Awards would not otherwise be vested or exercisable, all restrictions on Restricted Stock and Restricted Stock Units will lapse, and, with respect to Awards with performance-based vesting, all performance goals or other vesting criteria will be deemed achieved at one hundred percent (100%) of target levels and all other terms and conditions met. In addition, if an Option or Stock Appreciation Right is not assumed or substituted in the event of a Change in Control, the Administrator will notify the Participant in writing or electronically that the Option or Stock Appreciation Right will be exercisable for a period of time determined by the Administrator in its sole discretion, and the Option or Stock Appreciation Right will terminate upon the expiration of such period.

For the purposes of this subsection (c), an Award will be considered assumed if, following the Change in Control, the Award confers the right to purchase or receive, for each Share subject to the Award immediately prior to the Change in Control, the consideration (whether stock, cash, or other securities or property) received in the Change in Control by holders of Common Stock for each Share held on the effective date of the transaction (and if holders were offered a choice of consideration, the type of consideration chosen by the holders of a majority of the outstanding Shares); provided, however, that if such consideration received in the Change in Control is not solely common stock of the successor corporation or its Parent, the Administrator may, with the consent of the successor corporation, provide for the consideration to be received upon the exercise of an Option or Stock Appreciation Right or upon the payout of a Restricted Stock Unit, Performance Unit or Performance Share, for each Share subject to such Award, to be solely common stock of the successor corporation or its Parent equal in fair market value to the per share consideration received by holders of Common Stock in the Change in Control.

Notwithstanding anything in this Section 14(c) to the contrary, an Award that vests, is earned or paid-out upon the satisfaction of one or more performance goals will not be considered assumed if the Company or its successor modifies any of such performance goals without the Participant's consent; provided, however, a modification to such performance goals only to reflect the successor corporation's post-Change in Control corporate structure will not be deemed to invalidate an otherwise valid Award assumption.

(d) Outside Director Awards. With respect to Awards granted to an Outside Director, in the event of a Change in Control, the Participant will fully vest in and have the right to exercise Options and/or Stock Appreciation Rights as to all of the Shares underlying such Award, including those Shares which otherwise would not be vested or exercisable, all restrictions on Restricted Stock and Restricted Stock Units will lapse, and, with respect to Awards with performance-based vesting, all performance goals or other vesting criteria will be deemed achieved at one hundred percent (100%) of target levels and all other terms and conditions met.

15. Tax.

(a) Withholding Requirements. Prior to the delivery of any Shares or cash pursuant to an Award (or exercise thereof) or such earlier time as any tax withholding obligations are due, the Company will have the power and the right to deduct or withhold, or require a Participant to remit to the Company, an amount sufficient to satisfy federal, state, local, foreign or other taxes (including the Participant's FICA obligation) required to be withheld with respect to such Award (or exercise thereof).

(b) Withholding Arrangements. The Administrator, in its sole discretion and pursuant to such procedures as it may specify from time to time, may permit a Participant to satisfy such tax withholding obligation, in whole or in part by (without limitation) (a) paying cash, (b) electing to have the Company withhold otherwise deliverable cash or Shares having a Fair Market Value equal to the minimum statutory amount required to be withheld, or (c) delivering to the Company already-owned Shares having a Fair Market Value equal to the minimum statutory amount required to be withheld. The Fair Market Value of the Shares to be withheld or delivered will be determined as of the date that the taxes are required to be withheld.

(c) Compliance With Code Section 409A. Awards will be designed and operated in such a manner that they are either exempt from the application of, or comply with, the requirements of Code Section 409A such that the grant, payment, settlement or deferral will not be subject to the additional tax or interest applicable under Code Section 409A, except as otherwise determined in the sole discretion of the Administrator. The Plan and each Award Agreement under the Plan is intended to meet the requirements of Code Section 409A and will be construed and interpreted in accordance with such intent, except as otherwise determined in the sole discretion of the Administrator. To the extent that an Award or payment, or the settlement or deferral thereof, is subject to Code Section 409A, the Award will be granted, paid, settled or deferred in a manner that will meet the requirements of Code Section 409A, such that the grant, payment, settlement or deferral will not be subject to the additional tax or interest applicable under Code Section 409A.

16. No Effect on Employment or Service. Neither the Plan nor any Award will confer upon a Participant any right with respect to continuing the Participant's relationship as a Service Provider with the Company, nor will they interfere in any way with the Participant's right or the Company's right to

terminate such relationship at any time, with or without cause, to the extent permitted by Applicable Laws.

17. Date of Grant. The date of grant of an Award will be, for all purposes, the date on which the Administrator makes the determination granting such Award, or such other later date as is determined by the Administrator. Notice of the determination will be provided to each Participant within a reasonable time after the date of such grant.

18. Term of Plan. Subject to Section 22 of the Plan, the Plan will become effective upon the later to occur of (i) its adoption by the Board or (ii) the business day immediately prior to the Registration Date. It will continue in effect for a term of ten (10) years from the date adopted by the Board, unless terminated earlier under Section 19 of the Plan.

19. Amendment and Termination of the Plan.

(a) Amendment and Termination. The Administrator may at any time amend, alter, suspend or terminate the Plan.

(b) Stockholder Approval. The Company will obtain stockholder approval of any Plan amendment to the extent necessary and desirable to comply with Applicable Laws.

(c) Effect of Amendment or Termination. No amendment, alteration, suspension or termination of the Plan will materially impair the rights of any Participant, unless mutually agreed otherwise between the Participant and the Administrator, which agreement must be in writing and signed by the Participant and the Company. Termination of the Plan will not affect the Administrator's ability to exercise the powers granted to it hereunder with respect to Awards granted under the Plan prior to the date of such termination.

20. Conditions Upon Issuance of Shares.

(a) Legal Compliance. Shares will not be issued pursuant to the exercise of an Award unless the exercise of such Award and the issuance and delivery of such Shares will comply with Applicable Laws and will be further subject to the approval of counsel for the Company with respect to such compliance.

(b) Investment Representations. As a condition to the exercise of an Award, the Company may require the person exercising such Award to represent and warrant at the time of any such exercise that the Shares are being purchased only for investment and without any present intention to sell or distribute such Shares if, in the opinion of counsel for the Company, such a representation is required.

21. Inability to Obtain Authority. The inability of the Company to obtain authority from any regulatory body having jurisdiction or to complete or comply with the requirements of any registration or other qualification of the Shares under any state, federal or foreign law or under the rules and regulations of the Securities and Exchange Commission, the stock exchange on which Shares of the same class are then listed, or any other governmental or regulatory body, which authority, registration, qualification or rule compliance is deemed by the Company's counsel to be necessary or advisable for the issuance and sale of any Shares hereunder, will relieve the Company of any liability in respect of the failure to issue or sell such Shares as to which such requisite authority, registration, qualification or rule compliance will not have been obtained.

22. Stockholder Approval. The Plan will be subject to approval by the stockholders of the Company within twelve (12) months after the date the Plan is adopted by the Board. Such stockholder approval will be obtained in the manner and to the degree required under Applicable Laws.

AMENDMENT NO. 1 TO 2015 EQUITY INCENTIVE PLAN

WHEREAS, Avinger, Inc. (the "***Company***") sponsors and maintains the Company's 2015 Equity Incentive Plan (the " ***2015 Plan***"); and

WHEREAS, the Company wishes to amend the 2015 Plan to increase the number of shares of the Company's Common Stock reserved for issuance thereunder, subject to the approval of the Company's stockholders at the Company's 2018 annual meeting of stockholders (the "***Annual Meeting***") and effective as of the date of such approval (the "***Effective Date***").

Subject to the approval of the Company's stockholders at the Annual Meeting (the " ***Stockholder Approval***"), the 2015 Plan is hereby amended as of the Effective Date as follows:

1. Amendments to 2015 Plan.

(a) Section 3(a) of the 2015 Plan is hereby amended and restated to read in its entirety as follows:

"3(a) Stock Subject to the Plan. Subject to the provisions of Section 14 of the Plan, the maximum aggregate number of Shares that may be issued under the Plan 3,167,801 Shares, plus the sum of any Shares subject to stock options or similar awards granted under the Company's 2009 Stock Plan, as amended (the "Existing Plan") that, on or after the Registration Date, expire or otherwise terminate without having been exercised in full and Shares issued pursuant to awards granted under the Existing Plan that are forfeited to or repurchased by the Company, with the maximum number of Shares to be added to the Plan from previously granted awards under the Existing Plan equal to 75,000. The Shares may be authorized, but unissued, or reacquired Common Stock."

(b) Section 3(b) of the 2015 Plan is hereby amended and restated to read in its entirety as follows:

"3(b) Automatic Share Reserve Increase. Subject to the provisions of Section 14 of the Plan, the number of Shares available for issuance under the Plan will be increased on the first day of each Fiscal Year beginning with the 2016 Fiscal Year, in an amount equal to the least of (i) 42,250 Shares, (ii) five percent (5%) of the outstanding Shares on the last day of the immediately preceding Fiscal Year or (iii) such number of Shares determined by the Board; provided, however, that such determination under clause (iii) will be made no later than the last day of the immediately preceding Fiscal Year."

2. Failure to Obtain Stockholder Approval. If the Stockholder Approval is not obtained, then this Amendment No. 1 to 2015 Equity Incentive Plan shall become null and void and shall immediately terminate.

3. Effect of this Amendment. Except as expressly amended hereby, the 2015 Plan shall continue in full force and effect in accordance with the provisions thereof.

CERTIFICATION OF THE CHIEF EXECUTIVE OFFICER
Pursuant to
Securities Exchange Act Rules 13a-14(a) and 15d-14(a),
As Adopted Pursuant to
Section 302 of the Sarbanes-Oxley Act of 2002

I, Jeffrey Soinski, certify that:

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

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

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

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

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

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

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

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

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

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

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

Dated: August 13, 2018

/s/ JEFFREY M. SOINSKI
Jeffrey M. Soinski
Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATION OF THE CHIEF FINANCIAL OFFICER
Pursuant to
Securities Exchange Act Rules 13a-14(a) and 15d-14(a),
As Adopted Pursuant to
Section 302 of the Sarbanes-Oxley Act of 2002

I, Mark Weinswig, certify that:

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

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

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

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

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

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

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

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

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

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

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

Dated: August 13, 2018

/s/ MARK WEINSWIG
Mark Weinswig
Chief Financial Officer
(Principal Financial and Accounting Officer)

Exhibit 32.1

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

In connection with the Quarterly Report of Avinger, Inc. (the "Company") on Form 10-Q for the period ended June 30, 2018, as filed with the Securities and Exchange Commission (the "Report"), Jeffrey Soinski, Chief Executive Officer of the Company, and Mark Weinswig, Chief Financial Officer of the Company, each hereby certifies, pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (18 U.S.C. Section 1350), to his knowledge:

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

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

IN WITNESS WHEREOF, the undersigned have set their hands hereto as of the 13th day of August, 2018.

/s/ JEFFREY M. SOINSKI	/s/ MARK WEINSWIG
Jeffrey M. Soinski	Mark Weinswig
Chief Executive Officer	*Chief Financial Officer*
(Principal Executive Officer)	*(Principal Financial and Accounting Officer)*

This certification accompanies the Form 10-Q to which it relates, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of the Registrant 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 the Form 10-Q), irrespective of any general incorporation language contained in such filing.