UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, D.C. 20549

FORM 10-Q

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

For the quarterly period ended September 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: 0-51891

INTERNATIONAL STEM CELL CORPORATION

(Exact name of Registrant as specified in its charter)

Delaware	**20-4494098**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
5950 Priestly Drive Carlsbad, CA	**92008**
(Address of Principal Executive Offices)	**(Zip Code)**

(760) 940-6383
(Registrant's telephone number)

Indicated 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 X NO ☐

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

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

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

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

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). YES ☐ NO X

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

As of November 9, 2018 the Registrant had 6,771,425 shares of Common Stock outstanding.

International Stem Cell Corporation and Subsidiaries
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PART I—FINANCIAL INFORMATION

Item 1. Financial Statements

International Stem Cell Corporation and Subsidiaries
Condensed Consolidated Balance Sheets
(in thousands, except share data)

	September 30, 2018	December 31, 2017
Assets	(Unaudited)	
Cash	$ 1,161	$ 304
Accounts receivable, net of allowance for doubtful accounts of $12	1,545	465
Inventory, net	1,474	1,307
Prepaid expenses and other current assets	512	779
Total current assets	4,692	2,855
Non-current inventory	774	692
Property and equipment, net	347	321
Intangible assets, net	2,848	2,922
Deposits and other assets	64	74
Total assets	$ 8,725	$ 6,864
Liabilities and Stockholders' Equity		
Accounts payable	$ 799	$ 830
Accrued liabilities	844	607
Related party payable	2,025	—
Advances	250	250
Fair value of warrant liability	2,021	3,113
Total current liabilities	5,939	4,800
Commitments and contingencies		
Stockholders' Equity		
Series B Convertible Preferred stock, $0.001 par value, 5,000,000 shares authorized, 250,000 issued and outstanding, with liquidation preferences of $405 and $396 at September 30, 2018 and December 31, 2017, respectively	—	—
Series D Convertible Preferred stock, $0.001 par value, 50 shares authorized, 43 issued and outstanding, with liquidation preference of $4,320	—	—
Series G Convertible Preferred stock, $0.001 par value, 5,000,000 shares authorized, issued and outstanding, with liquidation preference of $5,000	5	5
Series I-1 Convertible Preferred stock, $0.001 par value, 2,000 shares authorized, 1,094 and 1,304 issued and outstanding, with liquidation preferences of $1,094 and $1,304 at September 30, 2018 and December 31, 2017, respectively	—	—
Series I-2 Convertible Preferred stock, $0.001 par value, 4,310 shares authorized, issued and outstanding with liquidation preference of $4,310	—	—
Common stock, $0.001 par value, 120,000,000 shares authorized, 6,599,739 and 6,057,132 shares issued and outstanding at September 30, 2018 and December 31, 2017, respectively	7	6
Additional paid-in capital	108,409	106,585
Accumulated deficit	(105,635)	(104,532)
Total stockholders' equity	2,786	2,064
Total liabilities and stockholders' equity	$ 8,725	$ 6,864

See accompanying notes to the unaudited condensed consolidated financial statements.

International Stem Cell Corporation and Subsidiaries
Condensed Consolidated Statements of Operations
(in thousands, except per share data)
(Unaudited)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	2017	2018	2017
Revenues				
Product sales	$ 3,195	$ 1,847	$ 8,866	$ 5,614
Total revenues	3,195	1,847	8,866	5,614
Expenses				
Cost of sales	1,315	474	3,235	1,498
Research and development	616	670	1,879	2,054
Selling and marketing	608	657	1,940	1,790
General and administrative	1,319	1,016	4,026	3,290
Total expenses	3,858	2,817	11,080	8,632
Loss from operations	(663)	(970)	(2,214)	(3,018)
Other income (expense)				
Change in fair value of warrant liability	758	(1,174)	1,092	(1,622)
Interest expense	(17)	(20)	(26)	(40)
Miscellaneous income	43	—	45	—
Total other income (expense)	784	(1,194)	1,111	(1,662)
Income (loss) before income taxes	121	(2,164)	(1,103)	(4,680)
Provision for income taxes	—	—	—	—
Net income (loss)	$ 121	$ (2,164)	$ (1,103)	$ (4,680)
Net income (loss) applicable to common stockholders	$ 121	$ (2,164)	$ (1,103)	$ (4,680)
Net income (loss) per common share-basic	$ 0.02	$ (0.54)	$ (0.18)	$ (1.17)
Net income (loss) per common share-diluted	$ 0.02	$ (0.54)	$ (0.18)	$ (1.17)
Weighted average shares-basic	6,337	4,020	6,233	3,989
Weighted average shares-diluted	6,404	4,020	6,233	3,989

See accompanying notes to the unaudited condensed consolidated financial statements.

International Stem Cell Corporation and Subsidiaries
Condensed Consolidated Statements of Changes in Stockholders' Equity
For the Year Ended December 31, 2017 and the Nine Months Ended September 30, 2018
(in thousands)
(2018 Unaudited)

	Common Stock		Convertible Preferred Stock					
			Series B		Series D		Series G	
	Shares	Amount	Shares	Amount	Shares	Amount	Shares	Amount
Balance at December 31, 2016	3,951	4	250	—	—	—	5,000	5
Issuance of common stock								
for services	30	—						
for cash	286	—						
Conversion of preferred stock	215	—						
Conversion of debt	1,575	2						
Stock-based compensation								
Net loss for the year ended December 31, 2017								
Balance at December 31, 2017	6,057	$ 6	250	$ —	—	$ —	5,000	$ 5
Issuance of common stock								
for services	10	—						
for cash	286	1						
from exercise of options	127	—						
Conversion of preferred stock	120	—						
Stock-based compensation								
Net loss for the period ended September 30, 2018								
Balance at September 30, 2018	6,600	$ 7	250	$ —	—	$ —	5,000	$ 5

See accompanying notes to the unaudited condensed consolidated financial statements.

	Series I-1		Series I-2		Additional Paid-In Capital	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount	Shares	Amount			
Balance at December 31, 2016	2	—	4	—	101,898	(98,463)	3,444
Issuance of common stock							
for services					49		49
for cash					500		500
Conversion of preferred stock	(1)	—			—		—
Conversion of debt					2,754		2,756
Stock-based compensation					1,384		1,384
Net loss for the year ended December 31, 2017						(6,069)	(6,069)
Balance at December 31, 2017	1	$ —	4	$ —	$ 106,585	$ (104,532)	$ 2,064
Issuance of common stock							
for services					15		15
for cash					499		500
from exercise of options					145		145
Conversion of preferred stock	—	—			—		—
Stock-based compensation					1,165		1,165
Net loss for the period ended September 30, 2018						(1,103)	(1,103)
Balance at September 30, 2018	1	$ —	4	$ —	$ 108,409	$ (105,635)	$ 2,786

See accompanying notes to the unaudited condensed consolidated financial statements.

International Stem Cell Corporation and Subsidiaries
Condensed Consolidated Statements of Cash Flows
(in thousands)
(Unaudited)

	Nine Months Ended September 30,	
	2018	**2017**
Cash flows from operating activities		
Net loss	$ (1,103)	$ (4,680)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	215	248
Stock-based compensation expense	1,165	1,010
Common stock issued for services	15	40
Change in fair value of warrant liability	(1,092)	1,622
Gain on settlement of trade payables	(32)	—
Allowance for inventory obsolescence	62	36
Interest expense on bridge loan from related party	25	—
Loss on disposal of property and equipment	1	—
Impairment of intangible assets	361	238
Changes in operating assets and liabilities		
Increase in accounts receivable	(1,080)	(110)
Increase in inventory	(311)	(84)
Decrease (increase) in prepaid assets and other assets	267	(169)
Decrease (increase) in deposits	10	(16)
Increase in accounts payable	249	7
Increase in accrued liabilities	132	159
Increase in related party payable	—	50
Net cash used in operating activities	(1,116)	(1,649)
Cash flows from investing activities		
Purchases of property and equipment	(157)	(89)
Payments for patent licenses and trademarks	(372)	(562)
Net cash used in investing activities	(529)	(651)
Cash flows from financing activities		
Proceeds from a bridge loan from a related party	2,000	2,700
Proceeds from sale of common stock	500	—
Proceeds from exercise of stock options	145	—
Payments on financed insurance premiums	(143)	—
Net cash provided by financing activities	2,502	2,700
Net increase in cash	857	400
Cash, beginning of period	304	110
Cash, end of period	$ 1,161	$ 510

See accompanying notes to the unaudited condensed consolidated financial statements.

1. Organization and Significant Accounting Policies

Business Combination and Corporate Restructure

BTHC III, Inc. ("BTHC III" or the "Company") was organized in Delaware in June 2005 as a shell company to effect the reincorporation of BTHC III, L a Texas limited liability company. On December 28, 2006, the Company effected a Share Exchange pursuant to which it acquired all of the stock of International Stem Cell Corporation, a California corporation ("ISC California"). After giving effect to the Share Exchange, the stockholders of ISC Californ owned 93.7% of issued and outstanding shares of common stock. As a result of the Share Exchange, ISC California is now the wholly-owned subsidiary though for accounting purposes it was deemed to have been the acquirer in a "reverse merger." In the reverse merger, BTHC III is considered the lega acquirer and ISC California is considered the accounting acquirer. On January 29, 2007, the Company changed its name from BTHC III, Inc. to Internatio Stem Cell Corporation.

Lifeline Cell Technology, LLC ("LCT") was formed in the State of California on August 17, 2001. LCT is in the business of developing and manufacturir purified primary human cells and optimized reagents for cell culture. LCT's scientists have used a technology, called basal medium optimization, to systematically produce products designed to culture specific human cell types and to elicit specific cellular behaviors. These techniques also produce products that do not contain non-human animal proteins, a feature desirable to the research and therapeutic markets. LCT distinguishes itself in the industry by having in place scientific and manufacturing staff with the experience and knowledge to set up systems and facilities to produce a source of consistent, standardized, non-human animal protein free cell products, some of which are suitable for FDA approval.

On July 1, 2006, LCT entered into an agreement among LCT, ISC California and the holders of membership units and warrants. Pursuant to the terms of th agreement, all the membership units in LCT were exchanged for 133,334 shares of ISC California Common Stock and for ISC California's assumption LCT's obligations under the warrants. LCT became a wholly-owned subsidiary of ISC California.

Lifeline Skin Care, Inc. ("LSC") was formed in the State of California on June 5, 2009 and is a wholly-owned subsidiary of ISC California. LSC develo manufactures and markets cosmetic products, utilizing an extract derived from the Company's human parthenogenetic stem cells and the Company's proprietary targeted molecule technology.

Cyto Therapeutics Pty. Ltd. ("Cyto Therapeutics') was registered in the state of Victoria, Australia, on December 19, 2014 and is a limited proprietar company and a wholly-owned subsidiary of the Company. Cyto Therapeutics is a research and development company for the Therapeutic Market, which is conducting clinical trial in Australia for the use of ISC-hpNSC® in the treatment of Parkinson's disease.

Going Concern

The Company has sustained recurring losses and needs to raise additional working capital. The timing and degree of any future capital requirements will depend on many factors. The Company's burn rate for the nine months ended September 30, 2018 was approximately $124,000 per month, excluding capital expenditures and patent costs averaging $59,000 per month. There can be no assurance that the Company will be successful in maintaining its normal operating cash flow or raising additional funds, and that such cash flows will be sufficient to sustain the Company's operations at least through one year after the issuance date of the Company's condensed consolidated financial statements. Based on the above, there is substantial doubt about the Company's ability to continue as a going concern. The condensed consolidated financial statements were prepared assuming that the Company will continue as a going concern. The condensed consolidated financial statements do not include any adjustments 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.

Management's plans in regard to these matters are focused on managing its cash flow, the proper timing of its capital expenditures, and raising additional capital or financing in the future.

Basis of Presentation

The Company is a biotechnology company focused on therapeutic and clinical product development with multiple long-term therapeutic opportunities and two revenue-generating subsidiaries with potential for increased future revenues.

The accompanying unaudited condensed consolidated financial statements included herein have been prepared in accordance with accounting principles generally accepted in the United States for interim financial information and with the instructions to Form 10-Q.

These financial statements do not include all information and notes required by generally accepted accounting principles for complete financial statements. However, except as disclosed herein, there has been no material change to the information disclosed in the notes to consolidated financial statements included in the annual report on Form 10-K of International Stem Cell Corporation and Subsidiaries for the year ended December 31, 2017.

The unaudited condensed consolidated financial information for the interim periods presented reflects all adjustments, consisting of only normal and recurring adjustments, necessary for a fair presentation of the Company's consolidated results of operations, financial position and cash flows. The unaudited condensed consolidated financial statements and the related notes should be read in conjunction with the Company's audited consolidated financial statements for the year ended December 31, 2017 included in the Company's annual report on Form 10-K. Operating results for interim periods are not necessarily indicative of the operating results for any other interim period or an entire year.

Principles of Consolidation

The Company's consolidated financial statements include the accounts of International Stem Cell Corporation and its subsidiaries after intercompany balances and transactions have been eliminated.

Cash and Cash Equivalents

The Company considers all highly liquid investments with original maturities of three months or less when purchased to be cash equivalents. There were no cash equivalents as of September 30, 2018 and December 31, 2017.

Inventory

Inventory is accounted for using the average cost and first-in, first-out (FIFO) method for the Company's LCT cell culture media and reagents, average cost and specific identification methods for the Company's LSC products, and specific identification method for the Company's LCT products. Inventory balances are stated at the lower of cost or net realizable value. Lab supplies used in the research and development process are expensed as consumed. Inventory is reviewed periodically for product expiration and obsolescence and is adjusted accordingly. The value of the inventory that is not expected to be sold within twelve months of the current period end is classified as non-current inventory on the balance sheet.

Accounts Receivable

Trade accounts receivable are recorded at the net invoice value and are not interest bearing. Accounts receivable primarily consist of trade accounts receivable from the sales of LCT's products, timing of cash receipts by the Company related to LSC credit card sales to customers, as well as LSC trade receivable amounts related to spa and distributor sales. The Company considers receivables past due based on the contractual payment terms. The Company reviews its exposure to accounts receivable and reserves specific amounts if collectability is no longer reasonably assured. As of September 30, 2018 and December 31, 2017, the Company had an allowance for doubtful accounts totaling $12,000.

Property and Equipment

Property and equipment are stated at cost. The provision for depreciation and amortization is computed using the straight-line method over the estimated useful lives of the assets, generally over three to five years. The costs of major remodeling and leasehold improvements are capitalized and amortized over the shorter of the remaining term of the lease or the life of the asset.

Intangible Assets

Intangible assets consist of acquired research and development rights used in research and development, and capitalized legal fees related to the acquisition, filing, maintenance, and defense of patents and trademarks. Patent or patent license amortization only begins once a patent license is acquired or a patent is issued by the appropriate authoritative bodies. In the period in which a patent application is rejected or efforts to pursue the patent are abandoned, all the related accumulated costs are expensed. Patents and other intangible assets are recorded at cost of $3,774,000 and $3,763,000 at September 30, 2018 and December 31, 2017, respectively, and are amortized on a straight-line basis over the shorter of the lives of the underlying patents or the useful life of the license. Amortization expense for the three months ended September 30, 2018 and 2017 was $30,000 and $35,000, respectively. Amortization expense for the nine months ended September 30, 2018 and 2017 was $85,000 and $102,000, respectively. All amortization expense

related to intangible assets is included in general and administrative expense. Accumulated amortization as of September 30, 2018 and December 31, 2017 was $926,000 and $841,000, respectively.

Long-Lived Asset Impairment

The Company reviews long-lived assets for impairment when events or changes in business conditions indicate that their carrying value may not be recovered and at least annually. The Company considers assets to be impaired and writes them down to fair value if expected associated undiscounted cash flows are less than the carrying amounts. Fair value is the present value of the associated cash flows. The Company recognized $157,000 and $158,000 of impairment losses on its intangible assets during the three months ended September 30, 2018 and 2017, respectively. The Company recognized $361,000 and $238,000 of impairment losses on its intangible assets during the nine months ended September 30, 2018 and 2017, respectively, due to abandonment of efforts to pursue certain patents or patented technologies.

Revenue Recognition

Revenue is recognized pursuant to Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2014 - 09, *Revenue from Contracts with Customers (Topic 606)*. Accordingly, revenue is recognized at an amount that reflects the consideration to which the Company expects to be entitled in exchange for transferring goods or services to a customer. This principle is applied using the following 5-step process:

1. Identify the contract with the customer
2. Identify the performance obligations in the contract
3. Determine the transaction price
4. Allocate the transaction price to the performance obligations in the contract
5. Recognize revenue when (or as) each performance obligation is satisfied

Under Topic 606, the Company recognizes revenue when it satisfies a performance obligation by transferring control of the promised goods or services to its customers, in an amount that reflects the consideration the Company expects to be entitled to in exchange for those goods or services.

The following table presents the Company's revenue disaggregated by segment, product and geography, based on management's assessment of available data:

Biomedical Market:

	Three Months Ended September 30, 2018				Three Months Ended September 30, 2017			
	U.S.	OUS*	Total Revenues	% of Total Revenues	U.S.	OUS*	Total Revenues	% of Total Revenues
Biomedical products								
cells	$ 326	$ 84	$ 410	15%	$ 341	$ 136	$ 477	36%
media	2,337	83	2,420	85%	778	77	855	64%
other	5	-	5	-%	-	-	-	-%
Total	$ 2,668	$ 167	$ 2,835	100.0%	$ 1,119	$ 213	$ 1,332	100.0%

	Nine Months Ended September 30, 2018				Nine Months Ended September 30, 2017			
	U.S.	OUS*	Total Revenues	% of Total Revenues	U.S.	OUS*	Total Revenues	% of Total Revenues
Biomedical products								
cells	$ 873	$ 288	$ 1,161	15%	$ 864	$ 395	$ 1,259	31%
media	6,055	387	6,442	85%	2,403	383	2,786	69%
other	18	-	18	-%	-	-	-	-%
Total	$ 6,946	$ 675	$ 7,621	100.0%	$ 3,267	$ 778	$ 4,045	100.0%

*Outside the United States

Cosmetic Market:

	Three Months Ended September 30, 2018		Three Months Ended September 30, 2017	
	Total Revenues	% of Total Revenues	Total Revenues	% of Total Revenues
Cosmetic sales channels				
ecommerce	$ 200	56%	$ 290	56%
professional	160	44%	225	44%
international	-	-%	-	-%
Total	$ 360	100.0%	$ 515	100.0%

	Nine Months Ended September 30, 2018		Nine Months Ended September 30, 2017	
	Total Revenues	% of Total Revenues	Total Revenues	% of Total Revenues
Cosmetic sales channels				
ecommerce	$ 771	62%	$ 875	56%
professional	474	38%	689	44%
international	-	-%	5	-%
Total	$ 1,245	100.0%	$ 1,569	100.0%

The Company's revenue consists primarily of sales of products from its two revenue-generating operating segments, the cosmetics products and biomedical products business segments. The cosmetic market segment markets and sells a line of luxury skincare products sold through three sales channels: ecommerce, professional, and international. The ecommerce channel sells direct to customers through online orders, while the professional sales are to spas, salons and other skincare providers. International sales are primarily through distributors. The biomedical market segment markets and sells primary human cell research products with two product categories, cells and media, sold both within and outside the United States.

Contract terms for unit price, quantity, shipping and payment are governed by sales agreements, invoices or online order forms which the Company considers to be a customer's contract in all cases. The unit price is considered the observable stand-alone selling price for the arrangements. Any promotional or volume sales discounts are applied evenly to the units sold for purposes of calculating standalone selling price.

Product sales generally consist of a single performance obligation that the Company satisfies at a point in time. The Company recognizes product revenue when the following events have occurred: (a) the Company has transferred physical possession of the products, (b) the Company has a present right to payment, (c) the customer has legal title to the products, and (d) the customer bears significant risks and rewards of ownership of the products.

For Lifeline Skincare products ecommerce sales are primarily paid through credit card charges, while professional and international sales are invoiced. The professional sales and biomedical products' standard payment terms for its customers are generally 30 days after the Company satisfies the performance obligations. For cosmetic products, the Company honors a 30 days return policy, but historical returns have been minimal. The Company has estimated the historical rate of returns for the 30-day product return guarantee, which has remained consistent for the three and nine months ended September 30, 2018 as compared to the years ended December 31, 2017 and 2016. At September 30, 2018 and December 31, 2017, the estimated allowance for sales returns for LSC was $10,000.

All amounts billed to a customer in a sales transaction related to shipping and handling, if any, represent revenues earned for the goods provided. Costs related to such shipping and handling billing are classified as cost of sales.

Variable Consideration

The Company records revenue from customers in an amount that reflects the transaction price it expects to be entitled to after transferring control of those goods or services. From time to time, the Company offers sales promotions on its skincare products such as discounts and free product offers. Variable consideration is estimated at contract inception only to the extent that it is probable that a significant reversal of revenue will not occur, and updated at the end of each reporting period as additional information becomes available.

Contract Balances

The Company records a receivable when it has an unconditional right to receive consideration after the performance obligations are satisfied. As of September 30, 2018 and December 31, 2017, accounts receivable, net, totaled $1,545,000 and $465,000, respectively. For the three and nine months ended September 30, 2018, the Company did not incur material impairment losses with respect to its receivables.

Practical Expedients

The Company has elected the practical expedient not to determine whether contacts with customers contain significant financing components. The Company pays commissions on certain sales for its biomedical and cosmetic market(s) once the customer payment has been received, which are accrued at the time of the sale. The Company generally expenses sales commissions when incurred because the amortization period would have been one year or less. These costs are recorded within sales and marketing expenses. In addition, the Company has elected to exclude sales taxes in consideration of the transaction price.

Cost of Sales

Cost of sales consists primarily of salaries and benefits associated with employee efforts expended directly on the production of the Company's products and include related direct materials, general laboratory supplies and allocation of overhead. Certain of the agreements under which the Company has licensed technology will require the payment of royalties based on the sale of its future products. Such royalties will be recorded as a component of cost of sales. Additionally, the amortization of license fees or milestone payments related to developed technologies used in the Company's products will be classified as a component of cost of sales to the extent such payments become due in the future.

Research and Development Costs

Research and development costs, which are expensed as incurred, are primarily comprised of costs and expenses for salaries and benefits associated with research and development personnel, overhead and occupancy, contract services, and amortization of license costs for technology used in research and development with alternative future uses.

Stock-Based Compensation

The Company recognized stock-based compensation expense associated with stock options and other stock-based awards in accordance with the authoritative guidance for stock-based compensation. The cost of a stock-based award is measured at the grant date based on the estimated fair value of the award, and is recognized as expense on a straight-line basis, net of estimated forfeitures over the requisite service period of the award. The fair value of stock options is estimated using the Black-Scholes option valuation model, which requires the input of subjective assumptions, including price volatility of the underlying stock, risk-free interest rate, dividend yield, and expected life of the option. The fair value of restricted stock awards is based on the market value of the Company's common stock on the date of grant.

Fair Value Measurements

Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants at the measurement date. Assets and liabilities that are measured at fair value are reported using a three-level fair value hierarchy that prioritizes the inputs used to measure fair value. This hierarchy maximizes the use of observable inputs and minimizes the use of unobservable inputs. The three levels of inputs used to measure fair value are as follows:

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

Level 2 Quoted prices in markets that are not active, or inputs that are observable, either directly or indirectly, for substantially the full term of the asset or liability; and

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

Assets and liabilities are classified in their entirety based on the lowest level of input that is significant to the fair value measurement.

The table below sets forth a summary of the Company's liabilities which are measured at fair value on a recurring basis as of September 30, 2018 (in thousands):

	Total	Level 1	Level 2	Level 3
LIABILITIES:				
Warrants to purchase common stock	$ 2,021	$ —	$ —	$ 2,021

The table below sets forth a summary of the Company's liabilities which are measured at fair value on a recurring basis as of December 31, 2017 (in thousands):

	Total	Level 1	Level 2	Level 3
LIABILITIES:				
Warrants to purchase common stock	$ 3,113	$ —	$ —	$ 3,113

The following table displays the rollforward activity of liabilities with inputs that are both significant to the fair value measurement and unobservable (supported by little or no market activity) (in thousands):

	Warrants to purchase common stock
Beginning balance at December 31, 2016	$ 2,045
Adjustments to estimated fair value	1,068
Ending balance at December 31, 2017	$ 3,113
Adjustments to estimated fair value	(1,092)
Ending balance at September 30, 2018	$ 2,021

Income Taxes

The Company accounts for income taxes in accordance with applicable authoritative guidance, which requires the Company to provide a net deferred tax asset/liability equal to the expected future tax benefit/expense of temporary reporting differences between book and tax accounting methods and any available operating loss or tax credit carryforwards.

Use of Estimates

The preparation of consolidated financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the amounts reported in the unaudited condensed consolidated financial statements. Significant estimates include patent life (remaining legal life versus remaining useful life), inventory carrying values, allowance for excess and obsolete inventories, allowance for sales returns and doubtful accounts, and transactions using the Black-Scholes option pricing model, e.g., warrants and stock options, as well as the Monte-Carlo valuation method for certain warrants. Actual results could differ from those estimates.

Fair Value of Financial Instruments

The Company believes that the carrying value of its cash, receivables, accounts payable, accrued liabilities and related party note payable as of September 30 2018 and December 31, 2017 approximate their fair values because of the short-term nature of those instruments. The fair value of certain warrants was determined at each issuance and quarterly reporting date as necessary using the Monte-Carlo valuation methodology.

Income (Loss) Per Common Share

The computation of net loss per common share is based on the weighted average number of shares outstanding during each period. The computation of diluted earnings per common share is based on the weighted average number of shares outstanding during the period plus the common stock equivalents, which would arise from the exercise of stock options and warrants outstanding using the treasury stock method and the average market price per share during the period. At September 30, 2018, there were 1,570,227 vested and 2,922,462 non-vested stock options outstanding, and 3,951,052 warrants outstanding; and at September 30, 2017, there were 828,773 vested and 1,508,166 non-vested stock options outstanding, and 4,001,469 warrants outstanding. Stock options exercisable into approximately 249,783 common shares were considered dilutive for the three months ended September 30, 2018 and included in the diluted loss per share, but anti-dilutive for the nine months ended September 30, 2018 and excluded from the diluted

loss per share. For the three and nine months ended September 30, 2017 stock options and warrants were excluded from the calculation of diluted loss per share because their effect would be anti-dilutive.

Comprehensive Income

Comprehensive income or loss includes all changes in equity except those resulting from investments by owners and distributions to owners. The Company did not have any items of comprehensive income or loss other than net income or loss from operations for the three and nine months ended September 30, 2018 and 2017.

Registration Payment Arrangements

In accordance with applicable authoritative guidance, the Company is required to separately recognize and measure registration payment arrangements, whether issued as a separate agreement or included as a provision of a financial instrument or other agreement. Such payments include penalties for failure to effect a registration of securities.

Recent Accounting Pronouncements

On December 22, 2017, the Securities and Exchange Commission issued Staff Accounting Bulletin
No. 118 (" SAB 118") to address the application of U.S. GAAP in situations when a registrant does not have the necessary information available, prepared, or analyzed in reasonable detail to complete the accounting for certain income tax effects of the Tax Cuts and Jobs Act ("U.S. Tax Cuts and Jobs Act of 2017") This new law did not have a significant impact on the Company's consolidated financial statements for the three and nine months ended September 30, 2018 and 2017, because the Company maintains a valuation allowance on the entirety of its deferred tax assets. However, the reduction of the U.S. federal corporate tax rate from 35% to 21% resulted in a remeasurement of the Company's deferred tax assets.

In July 2017, the FASB issued ASU No. 2017-11, *"Earnings Per Share (Topic 260), Distinguishing Liabilities from Equity (Topic 480), and Derivatives and Hedging (Topic 815)"* ("ASU 2017-11"). ASU 2017-11 changes the classification analysis of certain equity-linked financial instruments (or embedded features) with down round features. The amendments require entities that present earnings per share ("EPS") in accordance with Topic 260 to recognize the effect of the down round feature when triggered with the effect treated as a dividend and as a reduction of income available to common shareholders in basic EPS. The new standard is effective for fiscal years beginning after December 15, 2018, including interim periods within those fiscal years. The Company is currently evaluating the impact of the adoption of this accounting standard update.

In February 2016, the FASB issued ASU No. 2016-02 *Leases* (Topic 842), which requires lessees to recognize "right of use" assets and liabilities for all leases with lease terms of more than 12 months. The ASU requires additional quantitative and qualitative financial statement footnote disclosures about the leases significant judgments made in accounting for those leases and amounts recognized in the financial statements about those leases. The effective date will be the first quarter of fiscal year 2019. The Company is performing a full evaluation during the fourth quarter of 2018 to enable efficient and effective implementation of this standard.

In May 2014, the FASB issued ASU No. 2014 - 09, *Revenue from Contracts with Customers (Topic 606),* which outlines a single comprehensive model for entities to use in accounting for revenue arising from contracts with customers. The standard's core principle is that an entity will recognize revenue when it transfers promised 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 Company adopted the standard on January 1, 2018 using the modified retrospective method applied to those contracts which were not completed as of December 31, 2017. Results for reporting periods beginning after January 1, 2018 are presented under Topic 606, while prior-period amounts have not been retrospectively adjusted and continue to be reported in accordance with Topic 605, *Revenue Recognition*. Based upon the Company's contracts which were not completed as of December 31, 2017, the Company was not required to make an adjustment to the opening balance of accumulated deficit as of January 1, 2018.

2. Inventory

The components of inventories are as follows (in thousands):

	September 30, 2018	December 31, 2017
Raw materials	$ 698	$ 609
Work in process	572	472
Finished goods	1,276	1,154
Total	2,546	2,235
Less: allowance for inventory excess and obsolescence	(298)	(236)
Inventory, net	$ 2,248	$ 1,999

3. Property and Equipment

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

	September 30, 2018	December 31, 2017
Machinery and equipment	$ 1,610	$ 1,459
Computer equipment and software	431	429
Office equipment	215	214
Leasehold improvements	807	805
	3,063	2,907
Less: accumulated depreciation and amortization	(2,716)	(2,586)
Property and equipment, net	$ 347	$ 321

Depreciation expense for the three and nine months ended September 30, 2018 was $45,000 and $130,000, respectively, and during the same periods in the prior year depreciation expense was $48,000 and $146,000, respectively.

4. Patent Licenses

On December 31, 2003, LCT entered into an*Option to License Intellectual Property* agreement with Advanced Cell Technology, Inc., which changed its name to Ocata Therapeutics, Inc. and was subsequently acquired by Astellas Pharma Inc. ("Astellas"), for patent rights and paid Astellas $340,000 in optio and license fees. On February 13, 2004, LCT and Astellas amended the Option agreement and LCT paid Astellas additional option fees of $22,500 for fee related to registering Astellas' patents in selected international countries.

On May 14, 2004, LCT amended the licensing agreement with Astellas for the exclusive worldwide patent rights for the following Astellas technologies: UMass IP, ACT IP and Infigen IP. The additional license fees paid were $400,000.

On February 7, 2013, the Company and Astellas entered into Amended and Restated License Agreements (the "Amendment") for the purpose of completel amending and restating the terms of the license agreements. Under the terms of the Amendment, the Company acquired exclusive world-wide rights to al human therapeutic uses and cosmetic uses from Astellas and Infigen's early work on parthenogenic-derived embryonic stem cells, as well as certain rights to patents covering Single Blastomere technology.

Pursuant to the Amendment, all minimum R&D requirements and all milestone payments due to Astellas under the Exclusive License Agreement have beer eliminated. The Company will no longer pay any royalties under the ACT IP Agreement and Infigen IP Agreement. The obligation to pay royalties that range from 6%-12% under the UMass IP Agreement has been reduced to 0.25% of the net sales of products using technology covered by the UMass II Agreement; and the obligation to pay a minimum annual license fee of $150,000 has been reduced to $75,000 annually, payable in two installments to Astellas.

As of September 30, 2018, the total amounts capitalized related to the acquired Astellas licenses were $747,000, and $3,027,000 related to the other patent acquisition costs and trademarks.

At September 30, 2018, future amortization expense related to intangible assets subject to amortization is expected to be as follows (in thousands):

	Amount
2018 (remaining three months)	$ 32
2019	94
2020	77
2021	77
2022	98
Thereafter	2,384
Total	$ 2,762

5. Advances

On June 18, 2008, the Company entered into an agreement with BioTime, Inc. ("Bio Time"), where Bio Time will pay an advance of $250,000 to LCT to produce, make, and distribute Joint Products. The $250,000 advance will be paid down with the first $250,000 of net revenues that otherwise would be allocated to LCT under the agreement. As of September 30, 2018, no revenues were realized from this agreement.

	September 30, 2018	December 31, 2017
BioTime, Inc. (in thousands)	$ 250	$ 250

6. Capital Stock

As of September 30, 2018, the Company is authorized to issue 120,000,000 shares of common stock, $0.001 par value per share, and 20,000,000 shares of preferred stock, $0.001 par value per share.

Capital Transactions

September 2018 Private Placement

On September 21, 2018, to obtain funding for working capital, the Company entered into a private placement transaction with an accredited investor for the sale of a total of 285,714 shares of the Company's common stock for an aggregate purchase price of $500,000 at $1.75 per share.

Series B Preferred Stock

On May 12, 2008, to obtain funding for working capital, the Company entered into a series of subscription agreements with five accredited investors for the sale of a total of 400,000 Series B Units, each Series B Unit consisting of one share of Series B Preferred Stock ("Series B Preferred") and two Series B Warrants ("Series B Warrants") to purchase common stock for each $1.00 invested.

The total purchase price received by the Company was $400,000. The Series B Preferred is convertible into shares of common stock at the initial conversion ratio of 0.0134 shares of common stock for each share of Series B Preferred converted (which was established based on an initial conversion price of $75.00 per share), and the Series B Warrants were exercisable at $75.00 per share until five years from the issuance of the Series B Warrants, which expired unexercised in May 2013. The Series B Preferred contain anti-dilution clauses whereby, if the Company issues equity securities or securities convertible into equity at a price below the conversion price of the Series B Preferred, such conversion price shall be adjusted downward to equal the price of the new securities. The Series B Preferred has a priority (senior to the shares of common stock and Series I Preferred) on any sale or liquidation of the Company equal to the purchase price of the Series B Units, plus a liquidation premium of 6% per year. If the Company elects to declare a dividend in any year, it must first pay to the Series B Preferred holder a dividend equal to the amount of the dividend the Series B Preferred holder would receive if the Series B Preferred were converted just prior to the dividend declaration. Each share of Series B Preferred has the same voting rights as the number of shares of common stock into which it would be convertible on the record date. As of September 30, 2018 and December 31, 2017, there were 250,000 shares of the Series B Preferred issued and outstanding.

In December 2016, the Company issued Restricted Stock to its non-employee directors at a price of $1.08. Accordingly, such transactions triggered adjustments in the current conversion price of the Series B Preferred to $1.08.

Series D Preferred Stock

On December 30, 2008, the Company entered into a Series D Preferred Stock Purchase Agreement (the "Series D Agreement") with accredited investors (th "Investors") and sold 43 shares of Series D Preferred Stock ("Series D Preferred") at a price of $100,000 per Series D Preferred share.

Ten shares of the Series D Preferred were issued to X-Master Inc., which is a related party and affiliated with the Company's Chief Executive Officer an Co-Chairman of the Board of Directors, Dr. Andrey Semechkin and Dr. Russell Kern, Executive Vice President and Chief Scientific Officer and a directo and 33 shares of the Series D Preferred were issued to Dr. Andrey Semechkin. As of September 30, 2018 and December 31, 2017, there were 43 shares o the Series D Preferred issued and outstanding.

The Series D Preferred was initially convertible into shares of common stock at $37.50 per share, resulting in an initial conversion ratio of 2,667 shares o common stock for every share of Series D Preferred. The Series D Preferred has an anti-dilution clause whereby, if the Company issues equity securities o securities convertible into equity at a price below the conversion price of the Series D Preferred, the conversion price of the Series D Preferred shall b adjusted downward to equal the price of the new securities. The Series D Preferred has priority over the Series B Preferred Stock, Series G Preferred Stoc Series I-1 Preferred, Series I-2 Preferred and Common Stock on the proceeds from any sale or liquidation of the Company in an amount equal to the purchas price of the Series D Preferred.

In March 2016, the Company issued Series I Preferred Stock which had an initial conversion price of $1.75, as well as three series of warrants. Accordingly such transaction triggered an adjustment in the current conversion price of the Series D Preferred to $1.75.

Series G Preferred Stock

On March 9, 2012, the Company entered into a Series G Preferred Stock Purchase Agreement with AR Partners, LLC (the "Purchaser") to s 5,000,000 shares of Series G Preferred Stock ("Series G Preferred") at a price of $1.00 per Series G Preferred share, for a total purchase price of $5,000,00 The Purchaser is an affiliate of Dr. Andrey Semechkin, the Company's Co-Chairman and Chief Executive Officer, and Dr. Russell Kern, Executive Vic President and Chief Scientific Officer and a director.

The Series G Preferred was initially convertible into shares of common stock at $60.00 per share, resulting in an initial conversion ratio of 0.0167 shares o common stock for every share of Series G Preferred. The conversion price may be adjusted for stock splits and other combinations, dividends and distributions recapitalizations and reclassifications, exchanges or substitutions and is subject to a weighted-average adjustment in the event of the issuance of additional shares of common stock below the conversion price.

The Series G Preferred shares have priority over the Series B Preferred, Series I-1 Preferred, Series I-2 Preferred and common stock on the proceeds fro any sale or liquidation of the Company in an amount equal to the purchase price of the Series G Preferred, but such payment may be made only after paymen in full of the liquidation preferences payable to holders of any shares of Series D Preferred then outstanding. Each share of Series G Preferred has the sam voting rights as the number of shares of common stock into which it would be convertible on the record date. As long as there are at least 1,000,000 shares of Series G Preferred outstanding, the holders of Series G Preferred have (i) the initial right to propose the nomination of two members of the Board, at least on of which such nominees shall be subject to the approval of the Company's independent directors, for election by the stockholder's at the Company's next annual meeting of stockholders, or, elected by the full board of directors to fill a vacancy, as the case may be, and (ii) the right to approve any amendment to the certificate of incorporation, certificates of designation or bylaws, in manner adverse to the Series G Preferred, alter the percentage of board seats held by the Series G Preferred directors or increase the authorized number of shares of Series G Preferred. At least one of the two directors nominated by holders o the Series G Preferred shall be independent based on the NASDAQ listing requirements.

As of September 30, 2018 and December 31, 2017, there were 5,000,000 shares of the Series G Preferred issued and outstanding.

In September 2018, the Company sold $500,000 of common stock at $1.75 per share triggering an adjustment to the conversion price and conversion ratio of the Series G Preferred Stock to $9.98 per share and 0.10 shares, respectively.

Series I Preferred Stock

On March 9, 2016, the Company, entered into a Securities Purchase Agreement (the "Series I Agreement") with three investors, which included tw institutional investors and Andrey Semechkin, the Company's Chief Executive Officer and Co-Chairman providing for the issuance (the "Offering") of (i) 2,00 shares of Series I-1 convertible preferred stock (the "Series I-1 Preferred Stock") issuable to the institutional investors at a price of $1,000 per share, (ii) 4,31 shares of Series I-2 convertible preferred stock (the "Series I-2 Preferred Stock", and together with the Series I-1 Preferred Stock, the "Preferred Stock issuable to Andrey Semechkin at a price of $1,000 per share, (iii) Series A Warrants (the "Series A Warrants") to purchase up to approximately 3.6 million shares of common

stock at an initial exercise price of $3.64 per share with a term of five years, (iv) Series B Warrants (the "Series B Warrants") to purchase up to approximately 3.6 million shares of common stock at an initial exercise price of $1.75 per share with a term of six months and (v) Series C Warrants (the "Series C Warrants", together with the Series A Warrants and the Series B Warrants, collectively, the "Investor Warrants") to purchase up to approximately 3.6 million shares of common stock at an initial exercise price of $1.75 per share with a term of twelve months. The closing of the Offering occurred on March 15,2016 (the "Closing Date"). The Series I Agreement also contains representations, warranties, indemnification and other provisions customary for transactions of this nature. The Company received cash proceeds of $2.5 million on the closing date. On September 15, 2016, the remaining unexercised Series B Warrants then outstanding expired unexercised. On March 15, 2017, the remaining unexercised Series C Warrants then outstanding expired unexercised.

Rodman & Renshaw, a unit of H.C. Wainwright & Co., LLC. (the "Placement Agent") acted as the exclusive placement agent for the Offering pursuant to a placement agency engagement letter, dated as of March 9, 2016, by and between the Placement Agent and the Company (the "Engagement Letter"). Upon the closing of the Offering, pursuant to the Engagement Letter, the Placement Agent received a placement agent fee of $200,000 and a warrant to purchase approximately 343,000 shares of common stock (the "Placement Agent Warrant", together with the Investor Warrants, the "Warrants") as well as the reimbursement of fees and expenses up to $50,000. Similar to the Series A Warrant, the Placement Warrant has an initial exercise price of $3.64 per share, and is immediately exercisable and will terminate on five years after the date of issuance.

Subject to certain ownership limitations with respect to the Series I-1 Preferred Stock, the Series I Preferred Stock is convertible at any time into shares of Common Stock at an initial conversion price of $1.75 per share. The Series I Preferred Stock is non-voting, is only entitled to dividends in the event that dividends are paid on the Common Stock, and will not have any preferences over the Common Stock, except that the Preferred Stock shall have preferential liquidation rights over the Common Stock. Other than the Series I-1 Preferred Stock having a beneficial ownership limitation, the Series I-1 Preferred Stock and Series I-2 Preferred Stock are substantially identical. The conversion price of the Series I Preferred Stock is subject to certain resets as set forth in the Certificates of Designation, including the date of any future amendment to the certificate of incorporation with respect to a reverse stock split, the effectiveness dates of the registration statements and, in certain instances, the six and twelve month anniversaries of the Closing Date. During the nine months ended September 30, 2018, the investors converted 210 shares of the Series I Preferred Stock into 120,000 shares of the Company's common stock. There were no conversions of Series I Preferred Stock in the third quarter of 2018. As of September 30, 2018 and December 31, 2017, there were 5,404 and 5,614 shares of Series I Preferred Stock outstanding, respectively.

See Note 9, Stock Options and Warrants,*Warrants Issued in connection with the March 2016 Financing* for detailed discussion of the anti-dilution provisions of the Series A Warrants and Placement Agent Warrants.

Reserved Shares

At September 30, 2018, the Company had shares of common stock reserved for future issuance as follows:

Options outstanding	4,492,689
Commitment to issue shares to trade creditor	160,192
Options available for future grant	4,952,088
Convertible preferred stock	6,277,626
Warrants	3,951,052
	19,833,647

At the 2018 Annual Meeting, stockholders approved an amendment to the Company's 2010 Equity Participation Plan increasing the share reserve from 3,700,000 shares to 9,700,000 shares and corresponding changes to certain limitations set forth in the Plan (including the annual limit on awards to any employee). See Note 9, Stock Options and Warrants, for detailed discussion.

7. Related Party Transactions

Other than with respect to the purchases of Series D Preferred, Series G Preferred, and Series I Preferred transactions discussed above, the Company related party transactions were for a facility lease and working capital bridge loan.

During the first quarter of 2011, the Company executed an operating lease for its corporate offices with S Real Estate Holdings LLC. S Real Estate Holding LLC is owned by Dr. Russell Kern, the Company's Executive Vice President and Chief Scientific Officer and a director and was previously owned by Dr. Andrey Semechkin, the Company's Chief Executive Officer and Co-Chairman of the Board of Directors. The lease agreement was negotiated at arm's length and was reviewed by the Company's outside legal counsel. The terms of the lease were reviewed by a committee of independent directors, and the Company believes that, in total, those terms are at least as favorable to the Company as could be obtained for comparable facilities from an unaffiliated party. In March 2017, the Company signed an amendment to the lease agreement to extend the term of the lease until 2020 and include annual adjustments to the monthly lease payments. For the three months ended September 30, 2018 and 2017, the Company recorded $40,000 and $39,000, respectively, in rent expense that was related to the facility lease arrangement with related parties. For the nine months ended September 30, 2018 and 2017, the Company recorded $120,000 and $116,000, respectively, in rent expense that was related to the facility lease arrangement with related parties.

Between January 12, 2017 and September 1, 2017, to obtain funding for working capital, the Company borrowed a total of $2,700,000 from Dr. Andrey Semechkin, the Company's Chief Executive Officer and Co-Chairman of the Board of Directors, and issued an unsecured, non-convertible promissory note in the principal amount of $2,700,000 (the "2017 Note") to Dr. Andrey Semechkin. The principal amount under the 2017 Note accrues interest at a rate of three and a half percent (3.50%) per annum was due and payable September 1, 2017.

On December 7, 2017, to obtain funding for working capital purposes and to satisfy the indebtedness incurred on September 1, 2017, the Company entered into a Note Conversion and Stock Purchase Agreement (the "Agreement") with Dr. Andrey Semechkin. Pursuant to the Agreement, the Company agreed to issue Dr. Semechkin a total of 1,860,810 shares of Common Stock at a conversion price and a purchase price of $1.75 per share in return for cancellation and surrender of the note issued to him by the Company on September 1, 2017 with a principal amount of $2,700,000 and all accrued and unpaid interest on the note of $56,000 and payment of an additional $500,000 by Dr. Semechkin to the Company.

Between March 6, 2018 and August 8, 2018, to obtain funding for working capital purposes the Company borrowed a total of $2,000,000 from Dr. Andrey Semechkin, the Company's Chief Executive Officer, and Co-Chairman of the Board of Directors and issued an unsecured, non-convertible promissory note in the principal amount of $2,000,000 (the "Note") to Dr. Andrey Semechkin (the "Noteholder"). The outstanding principal amount under the Note accrues interest at a rate of four percent (4%) per annum. The Note is due and payable November 1, 2018, but may be pre-paid by the Company without penalty at any time. See Note 12 – Subsequent Events.

8. Income Taxes

The Company estimated Federal and state tax losses for the current year and recorded a full valuation allowance against all net deferred tax assets. As such no income tax provision has been recorded for the current period. The Company may be subject to IRC Code Sections 382 and 383, which could limit the amount of the net operating loss and tax credit carryovers that can be used in future years. The Company has not completed a study to assess whether an ownership change has occurred, as defined by IRC Code Sections 382 and 383, or whether there have been ownership changes since the Company's formation due to the complexity and cost associated with such a study, and the fact that there may be additional such ownership changes in the future. The Company estimates that if such a change did occur, the federal and state net operating loss carryforwards and research and development credit carryforwards that can be utilized in the future will be significantly limited. There can be no assurances that the Company will ever be able to realize the benefit of some or all of the federal and state loss carryforwards or the credit carryforwards, either due to ongoing operating losses or due to ownership changes, which limit the usefulness of the carryforwards.

During the year ended December 31, 2017, the Company had a net decrease in deferred tax asset of $8,819,000. This change is a result of current year activity as well as a change in the federal tax rates. The change as a result of current year activity is an increase in deferred tax assets of $724,000. This increase was offset by a $9,543,000 decrease due to a remeasurement of the deferred tax asset based on new tax rates established through the Tax Cuts and Jobs Act passed December 22, 2017. The remeasurement is a provisional estimate under Staff Accounting Bulletin ("SAB") 118 that could be revised based on any additional guidance issued by the U.S. Treasury Department, the U.S. Internal Revenue Service, and other standard-setting bodies.This new law did not have a significant impact on the Company's consolidated financial statements for the three and nine months ended September 30, 2018, because the Company maintains a valuation allowance on the entirety of its deferred tax assets. However, the reduction of the U.S. federal corporate tax rate from 35% to 21% resulted in a remeasurement of the Company's deferred tax assets.

Given the significant impact of the Tax Cuts and Jobs Act, the SEC staff issued SAB 118 which provides guidance on accounting for uncertainties of the effects of the Tax Act. Specifically, SAB 118 allows companies to record a provisional estimate of the impact of the Tax Act during a one year "measurement period". The Company has recognized the tax impact related to the revaluation of deferred tax assets and liabilities and included these amounts in its consolidated financial statements for the year ended December 31,

2017. The ultimate impact may differ from these amounts, due to, among other things, additional analysis, changes in interpretations and assumptions the Company has made, and additional regulatory guidance that may be issued.

9. Stock Options and Warrants

Stock Options

The Company adopted the 2006 Equity Participation Plan (the "2006 Plan"), which provides for the grant of stock options, restricted stock and other equity based awards. Awards for up to 100,000 shares may be granted to employees, directors and consultants under this Plan. The options granted under the 2006 Plan may be either qualified or non-qualified options. Options may be granted with different vesting terms and expire no later than 10 years from the date of grant. The 2006 Plan expired on November 16, 2016. Options and other equity based awards granted prior to the expiration of the 2006 Plan will continue in effect until the option or award is exercised or terminates pursuant to its terms. No new awards may be granted under the 2006 Plan following its expiration.

In April 2010, the Company adopted the 2010 Equity Participation Plan (the "2010 Plan"), which provides for the grant of stock options, restricted stock and other equity based awards. Awards for up to 9,700,000 shares may be granted to employees, directors and consultants under the 2010 Plan, as amended. The options granted under the 2010 Plan may be either qualified or non-qualified options. Options may be granted with different vesting terms and expire no later than 10 years from the date of grant.

In November and December of 2009, the Company issued non-qualified stock options to purchase 68,384 shares of common stock outside the 2006 and 2010 option plans to certain employees and consultants. These options vest over 50 months and expire no later than 10 years from the date of grant.

Total stock-based compensation expense for the three and nine months ended September 30, 2018 and 2017 was comprised of the following (in thousands):

	Three Months Ended September 30, 2018	Three Months Ended September 30, 2017	Nine Months Ended September 30, 2018	Nine Months Ended September 30, 2017
Cost of sales	$ 22	$ 6	$ 37	$ 17
Research and development	176	168	451	476
Selling and marketing	20	13	36	34
General and administrative	283	190	641	483
	$ 501	$ 377	$ 1,165	$ 1,010

Unrecognized compensation expense related to stock options as of September 30, 2018 was $3.3 million, which is expected to be recognized over a weighted average period of approximately 2.0 years.

In accordance with applicable authoritative guidance, the Company is required to establish assumptions and estimates of the weighted-average fair value of stock options granted, as well as use a valuation model to calculate the fair value of stock-based awards. The Company uses the Black-Scholes option-pricing model to determine the fair-value of stock-based awards. All options are amortized over the requisite service periods. Stock-based compensation for stock options granted to non-employees has been determined using the Black-Scholes option pricing model. These options are revalued at each reporting period until fully vested, with any change in fair value recognized in the condensed consolidated statements of operations.

The fair value of options granted is estimated at the date of grant using the Black-Scholes option-pricing model with the following weighted average assumptions for the three and nine months ended September 30, 2018 and 2017:

	Three Months Ended September 30, 2018	Three Months Ended September 30, 2017	Nine Months Ended September 30, 2018	Nine Months Ended September 30, 2017
Significant assumptions (weighted average):				
Risk-free interest rate at grant date	2.74%	1.87%	2.72%	1.93%
Expected stock price volatility	90.00%	96.75%	92.68%	96.60%
Expected dividend payout	0%	0%	0%	0%
Expected option life based on management's estimate	5.70 years	5.69 years	5.70 years	5.72 years

Transactions involving stock options issued to employees, directors and consultants under the 2006 Plan, the 2010 Plan and outside the plans are summarized below. Options issued have a maximum life of 10 years. The following tables summarize the changes in options outstanding and the related exercise prices for the Company's common stock options issued:

	Number of Options Issued Under 2006 Plan and 2010 Plan	Weighted Average Exercise Price Per Share	Weighted Average Remaining Contractual Term	Aggregate Intrinsic Value
Outstanding at December 31, 2016	1,460,076	$ 13.21		
Granted	1,145,568	$ 1.14		
Exercised	—	$ —		
Canceled or expired	(360,295)	$ 5.80		
Outstanding at December 31, 2017	2,245,349	$ 8.25		
Granted	2,568,842	$ 1.56		
Exercised	(127,038)	$ 1.13		
Canceled or expired	(245,194)	$ 5.13		
Outstanding at September 30, 2018	4,441,959	$ 4.75	8.85 years	$ 272,530
Vested and expected to vest at September 30, 2018	4,065,655	$ 5.04	8.79 years	$ 262,084
Exercisable at September 30, 2018	1,519,497	$ 10.55	8.00 years	$ 131,635

	Number of Options Issued Outside the Plan	Weighted Average Exercise Price Per Share	Weighted Average Remaining Contractual Term	Aggregate Intrinsic Value
Outstanding at December 31, 2016	50,730	$ 92.31		
Granted	—	$ —		
Exercised	—	$ —		
Canceled or expired	—	$ —		
Outstanding at December 31, 2017	50,730	$ 92.31		
Granted	—	$ —		
Exercised	—	$ —		
Canceled or expired	—	$ —		
Outstanding, vested and exercisable at September 30, 2018	50,730	$ 92.31	1.11 years	$ —

In the three months ended September 30, 2018, one optionee exercised 18,137 options at a weighted average exercise price of $1.10 for a total exercise price of $19,876. On the date of exercise the intrinsic value of the options was $8,781, or $0.48 per share.

In the nine months ended September 30, 2018, four optionees exercised 127,038 options at a weighted average exercise price of $1.13 for a total exercise price of $144,156. On the date of exercise the intrinsic value of the options was $53,138, or $0.42 per share.

Restricted Stock Awards

Restricted stock awards are grants that entitle the holder to acquire shares of common stock at zero or a fixed price, which is typically nominal. The Company accounts for the restricted stock awards as issued and outstanding common stock, even though the shares covered by a restricted stock award cannot be sold, pledged, or otherwise disposed of until the award vests and any unvested shares may be reacquired by the Company for the original purchase price following the awardee's termination of service.

The following table summarizes the changes in restricted stock award activity and the related weighted average exercise prices for the Company's awards issued:

	Restricted Stock Issued from the 2006 Plan and 2010 Plan	Weighted Average Grant Date Fair Value
Unvested at December 31, 2016	—	$ —
Granted	30,643	$ 1.60
Vested	(30,643)	$ 1.60
Forfeited	—	$ —
Unvested at December 31, 2017	—	$ —
Granted	9,855	$ 1.55
Vested	(9,855)	$ 1.55
Forfeited	—	$ —
Unvested at September 30, 2018	—	$ —

The fair value of the restricted stock awards is based on the market value of the common stock on the date of grant. The total grant-date fair value of restricted stock awards vested during the nine months ended September 30, 2018 and 2017, was approximately $15,000 and $40,000, respectively. The Company recognized approximately $0 and $8,000 of stock-based compensation expense related to the restricted stock awards for the three months ended September 30, 2018 and 2017, respectively. Additionally, during the nine months ended September 30, 2018 and 2017, the Company recognized approximately $15,000 and $40,000 of stock-based compensation expense related to the restricted stock awards, respectively. As of September 30, 2018, there was no unrecognized compensation costs related to unvested awards.

Warrants

Warrants Issued with Preferred Stock

Warrants issued in connection with the October 2014 Financing

The Company has accounted for the warrants in accordance with current accounting guidance, which defines how freestanding contracts that are indexed to and potentially settled in a Company's own stock should be measured and classified. The authoritative accounting guidance prescribes that only warrants issued under contracts that cannot be net-cash settled and are both indexed to and settled in the Company's common stock can be classified as equity. As the Series A, Series B and Series C Warrants and Placement Agent Warrant agreements did not meet the specific conditions for equity classification, the Company was required to classify the fair value of the warrants issued as a liability, with subsequent changes in fair value to be recorded as income (loss) in the statement of operations upon revaluation of the fair value of warrant liability at each reporting period. Unexercised portions of the Series A, Series B, and Series C Warrants have expired unexercised as of September 30, 2018. Valuation of the Warrants was estimated at December 31, 2017, September 30, 2018 and 2017 using the Monte-Carlo simulation model.

The following assumptions were used as inputs to the model at September 30, 2018: for the Placement Agent Warrants, stock price of $1.51 and warrant exercise price of $1.75 as of the valuation date; the Company's historical stock price volatility of 88.5%; risk free interest rate on U.S. treasury notes of 2.70%; warrant expiration of 1.54 years; and a zero dividend rate; simulated as a daily interval and anti-dilution impact if the Company had to raise capital below $1.75 per share.

During the three and nine months ended September 30, 2018, the Company recorded no material expense or income related to the change in the fair value of warrant liability in the condensed consolidated statements of operations related to the warrants from the October 2014 financing. During the same periods in the prior year, the Company recorded change in warrant liability income of $1,000.

Placement Agent Warrants Price Adjustment - The Warrants are immediately exercisable and the exercise price of the Warrants is subject to certain reset adjustments as set forth in the forms of Warrant, including the date of the amendment to the Company's certificate of incorporation with respect to the reverse stock split, the effectiveness dates of the registration statements and the six and twelve month anniversaries of the date of issuance of the Warrants. The Company's registration statement on Form S-1 filed on November 3, 2014 with the SEC became effective after amendment on November 25, 2014. Pursuant to the terms of the respective warrant agreements, the exercise price of the Placement Agent Warrants were reset at $1.75 per share. At September 30, 2018, 2,483 of the Placement Agent Warrants remained outstanding.

Warrants issued in connection with the March 2016 Financing

The Company has accounted for the warrants in accordance with current accounting guidance, which defines how freestanding contracts that are indexed to and potentially settled in a Company's own stock should be measured and classified. The authoritative accounting guidance prescribes that only warrants issued under contracts that cannot be net-cash settled and are both indexed to and settled in the Company's common stock can be classified as equity. As the Series A, Series B and Series C Warrants and Placement Agent Warrant agreements did not meet the specific conditions for equity classification, the Company was required to classify the fair value of the warrants issued as a liability, with subsequent changes in fair value to be recorded as income (loss) in the statement of operations upon revaluation of the fair value of warrant liability at each reporting period. Unexercised portions of the Series B and Series C Warrants have expired unexercised as of September 30, 2018. Valuation of the Warrants was estimated at issuance, at December 31, 2017, September 30, 2017 and 2018 using the Monte-Carlo simulation model.

The following assumptions were used as inputs to the model at September 30, 2018 for Series A Warrants and the Placement Agent Warrants, stock price of $1.51 and warrant exercise price of $1.75 as of the valuation date; the Company's historical stock price volatility of 88.5%; risk free interest rate on U.S. treasury notes of 2.84%; warrant expiration of 2.46 years; and a zero dividend rate, simulated as a daily interval and anti-dilution impact if the Company had to raise capital below $1.75 per share.

During the three months ended September 30, 2018 and 2017, the Company recorded a net change in fair value of warrant liability income of $758,000 and warrant liability loss of $1.2 million, respectively, in the condensed consolidated statements of operations related to the warrants from the March 2016 financing.

During the nine months ended September 30, 2018 and 2017, the Company recorded a net change in fair value of warrant liability income of $1.1 million and warrant liability loss of $1.6 million, respectively, in the condensed consolidated statements of operations related to the warrants from the March 2016 financing.

Series A, and Placement Agent Warrants Price Adjustment -The Warrants are immediately exercisable and the exercise price of the Warrants is subject to certain reset adjustments as set forth in the forms of Warrant, including the date of the amendment to the Company's certificate of incorporation with respect to any reverse stock split, the effectiveness dates of the registration statements and (in certain events) upon the six and twelve month anniversaries of the date of issuance of the Warrants. Pursuant to the terms a note conversion and stock purchase agreement in December 2017 with Dr. Andrey Semechkin, the exercise price of the Series A Warrants and the Placement Agent Warrants were reset at $1.75 per share.

Warrants Issued with Common Stock

2013 Securities Purchase Agreements for Common Stock

In conjunction with the Company's sale of 67,500 shares of common stock on January 22, 2013, the Company issued warrants convertible into 33,750 shares of common stock at an exercise price of $30.00 per share. The warrants have a five-year term. These warrants are held by Dr. Andrey Semechkin and Dr. Simon Craw, the Company's Co-Chairman and Chief Executive Officer and the Company's former Executive Vice President Business Development respectively. These warrants expired unexercised in January 2018.

On March 12, 2013 the Company issued warrants convertible into 16,667 shares of common stock in conjunction with the sale of 33,334 shares of common stock. These warrants have a five-year term and an exercise price of $30.00 per share. Dr. Andrey Semechkin, the Company's Co-Chairman and Chief Executive Officer is the holder of 1,667 of these warrants. These warrants expired unexercised in March 2018.

Share data related to warrant transactions through September 30, 2018 were as follows:

	Common Stock			Common Stock	Common Stock			Price per Warrant	
	March 2016 Financing			October 2014 Financing					
	Series A	Series C	Placement Agent	Placement Agent	Jan 2013 Financing	Mar 2013 Financing	Total Warrants	Range	Weighted Average Exercise Price
Outstanding, December 31, 2016	3,605,713	3,319,999	342,856	2,483	33,750	16,667	7,321,468	$ 1.75-30.00	$ 2.40
Forfeited/Cancelled		(3,319,999)					(3,319,999)	$ 1.75	$ 1.75
Outstanding, December 31, 2017	3,605,713	—	342,856	2,483	33,750	16,667	4,001,469	$ 1.75-30.00	$ 2.94
Forfeited/Cancelled					(33,750)	(16,667)	(50,417)	$ 30.00	$ 30.00
Outstanding, September 30, 2018	3,605,713	—	342,856	2,483	-	-	3,951,052	$ 1.75	$ 1.75

10. Commitments and Contingencies

Leases

The Company has established its primary research facility in 8,215 square feet of leased office and laboratory space in Oceanside, California. The current lease for this facility expires in December 2021, with the Company's option to terminate the lease on January 1, 2020 upon a six month advanced notice. The current base rent is approximately $10,000 per month. The facility has leasehold improvements which include cGMP (current Good Manufacturing Practices) level clean rooms designed for the derivation of clinical-grade stem cells and their differentiated derivatives, research laboratories for the Company's stem cell differentiation studies and segregated rooms for biohazard control and containment of human donor tissue. The monthly base rent will increase by 3% annually on the anniversary date of the agreement.

The Company leases a 8,280 square foot manufacturing facility in Frederick, Maryland, which is used for laboratory and administrative purposes. As of September 30, 2018, the base rent was approximately $11,000 per month. The initial term of the lease expired in December 2015 and the Company renewed the lease for an additional seven years. The administration space is used to support sales, marketing and accounting. The laboratory is being used to develop and manufacture the Company's research products. The manufacturing laboratory space has clean rooms and is fitted with necessary water purification systems, temperature controlled storage, labeling equipment and other standard manufacturing equipment to manufacture, package, test, store, and distribute cell culture products.

On February 25, 2011, the Company entered into a lease agreement (the "Lease Agreement") with S Real Estate Holdings LLC to allow the Company to expand into new corporate offices located at 5950 Priestly Drive, Carlsbad, California. The building is used for administrative purposes, but could also be used for research and development purposes if such space is needed in the future. The lease initially covered approximately 4,653 square feet, starting on March 1, 2011, and was amended to cover approximately 8,199 square feet effective July 1, 2011, and to cover approximately 9,848 square feet effective January 1, 2013. The lease expired on February 29, 2016, and the Company extended the term of the lease for one year. On February 22, 2017, the Company extended the term of the lease for an additional three years. The Company began paying rent at an initial rate of approximately $5,000 per month and the rate was amended effective July 1, 2011 and January 1, 2013 to account for additional square footage occupied by the Company. As of September 30, 2018, the base rent is approximately $13,000 per month. The monthly base rent will increase by 3% annually on the anniversary date of the agreement. The Company is also obligated to pay a portion of the utilities for the building and increases in property tax and insurance.

S Real Estate Holdings LLC is owned by Dr. Russell Kern, the Company's Executive Vice President and Chief Scientific Officer and a director, and was previously owned by Dr. Andrey Semechkin, the Company's Chief Executive Officer and Co-Chairman of the Board of Directors. The Lease Agreement was negotiated at arm's length and was reviewed by the Company's outside legal counsel. The terms of the lease were reviewed by a committee of independent directors, and the Company believes that, in total, those terms are consistent with the terms that could be obtained for comparable facilities from an unaffiliated party.

On February 10, 2018 the Company entered into a temporary lease for an additional storage and assembly facility that is directly adjacent to the main manufacturing facility in Frederick, Maryland. The initial term of this lease was three (3) months with base rent of approximately $4,200 per month until Company signs a permanent lease for this facility. On October 8, 2018 the Company signed a lease amendment to occupy a 5,040 square foot manufacturing facility expansion space in Maryland adjacent to the main manufacturing facility for a monthly additional rent amount of $7,694 for the term of the lease. The lease is set to expire on November 30, 2025.

For the three and nine months ended September 30, 2018, the Company incurred rent expense of $88,000 and $264,000, respectively. For the three and nine months ended September 30, 2017, the Company incurred rent expense of $87,000 and $258,000, respectively.

Future minimum lease payments required under operating leases that have initial or remaining non-cancelable lease terms in excess of one year as of September 30, 2018, are as follows (in thousands):

	Amount
2018 (remaining three months)	$ 95
2019	491
2020	368
2021	347
2022	220
Thereafter	461
Total	$ 1,982

Customer Concentration

During the three and nine months ended September 30, 2018, for the Biomedical market segment, one customer accounted for 41% and 27% of consolidated revenues, respectively, and another customer during the three and nine months ended September 30, 2018 accounted for 25% and 33% of revenues, respectively. During the three and nine months ended September 30, 2017, for the Biomedical market segment, one customer accounted for 42% and 38% of consolidated revenues, respectively. No other single customer accounted for more than 10% of revenues for any period presented.

Vendor Concentration

During the three and nine months ended September 30, 2018, one vendor accounted for approximately 37% and 25% of consolidated purchases, while during the same periods in 2017, no single vendor accounted for more than 10% of consolidated purchases.

11. Segments and Geographic Information

The Company's chief operating decision-maker reviews financial information presented on a consolidated basis, accompanied by disaggregated information by each reportable company's statement of operations. The Company operates the business on the basis of three reporting segments, the parent company and two business units:

International Stem Cell Corporation, incorporated in Delaware, is a research and development company, for the Therapeutic Market, which advances clinical applications of hpSCs for the treatment of various diseases of the central nervous system and liver diseases and is currently conducting clinical trials in Australia for the use of hpSC based neural stem cells in the treatment of Parkinson's disease through its wholly-owned subsidiary, Cyto Therapeutics;

Lifeline Skin Care, Inc. for the Cosmetic Market, which develops, manufactures and markets a category of cosmetic skin care products based on the Company's proprietary parthenogenetic stem cell technology and targeted molecule technology;

Lifeline Cell Technology, LLC for the Biomedical Market, which develops, manufactures and commercializes primary human cell research products including over 203 human cell culture products, including frozen human "primary" cells and the reagents (called "media") needed to grow, maintain and differentiate the cells.

Revenues, Expenses and Operating Income (loss)

The Company does not measure the performance of its segments on any asset-based metrics. Therefore, segment information is presented only for operating income (loss). Revenues, expenses and operating income (loss) by market segment were as follows (in thousands):

	For the Three Months Ended September 30,		For the Nine Months Ended Ended September 30,	
	2018	2017	2018	2017
Revenues:				
Cosmetic market	$ 360	$ 515	$ 1,245	$ 1,569
Biomedical market	2,835	1,332	7,621	4,045
Total revenues	3,195	1,847	8,866	5,614
Operating expenses:				
Therapeutic market	1,431	1,299	4,476	4,321
Cosmetic market	589	753	1,931	1,795
Biomedical market	1,838	765	4,673	2,516
Total operating expenses	3,858	2,817	11,080	8,632
Operating income (loss):				
Therapeutic market	(1,431)	(1,299)	(4,476)	(4,321)
Cosmetic market	(229)	(238)	(686)	(226)
Biomedical market	997	567	2,948	1,529
Total operating loss	$ (663)	$ (970)	$ (2,214)	$ (3,018)

Geographic Information

The Company's wholly-owned subsidiaries are located in Maryland, California, and Melbourne, Australia and have customer and vendor relationships worldwide. Significant revenues in the following regions are those that are attributable to the individual countries within the region to which the product was shipped (in thousands):

	For the Three Months Ended September 30,		For the Nine Months Ended September 30,	
	2018	2017	2018	2017
North America	$ 3,028	$ 1,620	$ 8,189	$ 4,787
Asia	111	160	436	576
Europe	52	58	225	230
All other regions	4	9	16	21
Total	$ 3,195	$ 1,847	$ 8,866	$ 5,614

12. Subsequent Events

Between March 6, 2018 and August 8, 2018, to obtain funding for working capital purposes the Company borrowed a total of $2,000,000 from Dr. Andrey Semechkin, the Company's Chief Executive Officer, and Co-Chairman of the Board of Directors and issued an unsecured, non-convertible promissory note in the principal amount of $2,000,000 (the "Note") to Dr. Andrey Semechkin (the "Noteholder"). The outstanding principal amount under the Note accrues interest at a rate of four percent (4%) per annum. The Note was due and payable November 1, 2018, however, on November 8, 2018 an amendment was executed to extend the due date to January 15, 2019.

On October 2, 2018, the Company issued 160,192 shares of commons stock to a trade creditor at $1.75 per share in satisfaction of $280,337 owed to the creditor. The shares issued in the transaction were issued in a private transaction in reliance upon the exemption from registration in Section 4(a)(2) of the Securities Act of 1933.

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

The following discussion of our financial condition and results of operations should be read in conjunction with our unaudited condensed consolidated financial statements and related notes and other financial information included elsewhere herein. This information should also be read in conjunction with our audited historical consolidated financial statements which are included in our Form 10-K for the fiscal year ended December 31, 2017. The discussion contains forward-looking statements, such as our plans, expectations and intentions (including those related to clinical trials and business and expense trends), that are based upon current expectations and that involve risks and uncertainties. Our actual results may differ significantly from management's expectations. The factors that could affect these forward looking statements are discussed in Item 1A of Part II of this report. This discussion should not be construed to imply that the results discussed herein will necessarily continue into the future, or that any expectations expressed herein will necessarily be indicative of actual operating results in the future. Such discussion represents only the best assessment by our management.

Business Overview

We have generated product revenues from our two commercial businesses of $8.9 million and $5.6 million for the nine months ended September 30, 2018 and 2017, respectively. We currently have no revenue generated from our principal operations in therapeutic and clinical product development.

Our products are based on multi-decade experience with human cell culture and a proprietary type of pluripotent stem cells, human parthenogenetic stem cells ("hpSCs"). Our hpSCs are comparable to human embryonic stem cells ("hESCs") in that they have the potential to be differentiated into many different cells i the human body. However, the derivation of hpSCs does not require the use of fertilized eggs or the destruction of viable human embryos and also offers the potential for the creation of immune-matched cells and tissues that are less likely to be rejected following transplantation. Our collection of hpSCs, known as UniStemCell™, currently consists of fifteen stem cell lines. We have facilities and manufacturing protocols that comply with the requirements of Good Manufacturing Practice (GMP) standards as promulgated in the U.S. Code of Federal Regulations and enforced by the U.S. Food and Drug Administrati ("FDA").

Market Opportunity and Growth Strategy

*Therapeutic Market – Clinical Applications of hpSCs for Disease Treatments.*With respect to therapeutic research and product candidates, we focus on applications where cell and tissue therapy is already proven but where there is an insufficient supply of safe and functional cells or tissue. We believe that the most promising potential clinical applications of our technology are: 1) Parkinson's disease ("PD"); 2) traumatic brain injury ("TBI"); and 3) metabolic/live diseases. Using our proprietary technologies and know-how, we are creating neural stem cells from hpSCs as a potential treatment of PD and TBI, and stroke and liver cells from hpSCs that may be able to treat a variety of hepatic and metabolic liver diseases.

Our most advanced project is the neural stem cell program for the treatment of Parkinson's disease. In 2013 we published in Nature Scientific Reports the basis for our patent on a new method of manufacturing neural stem cells which is used to produce the clinical-grade cells necessary for future clinical studies and commercialization. In 2014 we completed the majority of the preclinical research establishing the safety profile of neural stem cells ("NSC") in various animal species including non-human primates. In June 2016 we published the results of a 12-month pre-clinical non-human primate study that demonstrated the safety, efficacy and mechanism of action of the ISC-hpNSC®. As of September 2018, we have dosed a total of nine PD patients in our Phase I trial testing ISC-hpNSC for the treatment of PD. We reported preliminary clinical data at the Society for Neuroscience annual meeting (Neuroscience 2017) in Novembe 2017. We anticipate providing full results of the Phase I clinical study by the fourth quarter of 2019.

In November 2014 in an important ruling the FDA cleared ISCO's human parthenogenetic stem cells line for investigational clinical use. This was a necessar step in the process of advancing stem cell therapies based on ISCO's core technology into clinical development and on to commercialization. Although the Phase I study is conducted in Australia, and therefore not subject to FDA oversight, we anticipate that a significant portion of future studies will be carried ou in the United States where this approval is necessary.

In August 2014 International Stem Cell Corporation announced the launch of a stroke program, evaluating the use of ISC-hpNS® transplantation for the treatment of ischemic stroke using a rodent model of the disease. The Company has a considerable amount of safety data on ISC-hpNSC from the Parkinson' disease program and, as there is evidence that transplantation of ISC-hpNSC may improve patient outcomes as an adjunctive therapeutic strategy in stroke having a second program that can use this safety dataset is therefore a logical extension. In 2015 the Company together with Tulane University demonstrated that NSC can significantly reduce neurological dysfunction after a stroke in animal models.

In October 2016 the Company announced the results of the pre-clinical rodent study, evaluating the use of ISC-hpNS® transplantation for the treatment of TBI. The study was conducted at the University of South Florida Morsani College of Medicine. We demonstrated that animals receiving injections of ISC hpNSC® displayed the highest levels of improvements in cognitive

performance and motor coordination compared to vehicle control treated animals. Animals transplanted with ISC-hpNSC showed improved test performance i just a few days after implantation.

Cosmetic Market – Skin Care Products. Products that provide anti-aging benefits represent a significant portion of the global facial skincare market. In key regions, such as the U.S. and Asia, the growth of the facial skincare market is driven by an increase in consumer disposable income and growing popularity of skincare products based on biotechnology, such as human stem cells. Currently this market segment is in its early stages of development and we believe it has a significant growth potential. Our goal is to leverage our leadership in human stem cell technology in order to develop and commercialize advanced anti-aging skincare products for our retail and professional sales channels.

Our wholly-owned subsidiary, Lifeline Skin Care, Inc. ("LSC"), develops, manufactures and markets a line of luxury skincare products with anti-aging benefit that is based on our proprietary human non-embryonic stem cell extract and targeted molecule technologies.

LSC's products are sold in the United States and internationally through a branded website, Amazon, various e-commerce partners and the professional channel (including dermatologists, plastic surgeons, medical, day and resort spas).

Biomedical Market – Primary Human Cell Research Products. Our wholly-owned subsidiary Lifeline Cell Technology, LLC ("LCT") develops, manufactures and commercializes over 203 human cell culture products, including frozen human "primary" cells and the reagents (called "media") needed to grow, maintain and differentiate the cells. LCT's scientists have used a technology called basal medium optimization to systematically produce optimized products designed to culture specific human cell types and to elicit specific cellular behaviors. These techniques also produce products that do not contain non-human animal proteins, a feature desirable to the research and therapeutic markets. Each LCT cell product is quality tested for the expression of specific markers (to assure the cells are the correct type), proliferation rate, viability, morphology and absence of pathogens. Each cell system also contains associated donor information and all informed consent requirements are strictly followed. LCT's research products are marketed and sold by its internal sales force, OEM partners and LCT brand distributors in Europe and Asia.

Results of Operations

Revenues

Revenue for the three months ended September 30, 2018, totaled $3.20 million, compared to $1.85 million for the three months ended September 30, 2017. LCT contributed $2.84 million or 89% of total revenue for the three months ended September 30, 2018, compared to $1.33 million or 72% for the three months ended September 30, 2017. The increase of $1.50 million or 113% in LCT's revenue for 2018 was driven primarily by an increase in sales of media for the period. LSC's revenue of $360,000 for the three months ended September 30, 2018 accounted for 11% of total revenue, compared to $515,000 or 28% of total revenue for the three months ended September 30, 2017. The decrease of $155,000 or 30% in LSC's revenue consists primarily of a decrease of $90,000 in e-commerce sales with the remainder of the decrease in professional and international sales.

Revenue for the nine months ended September 30, 2018, totaled $8.87 million, compared to $5.61 million for the nine months ended September 30, 2017. LCT contributed $7.62 million or 86% of total revenue for the nine months ended September 30, 2018, compared to $4.05 million or 72% for the nine months ended September 30, 2017. The increase of $3.58 million or 88% in LCT's revenue for 2018 was driven primarily by an increase in sales of media for the period. LSC's revenue of $1.25 million for the nine months ended September 30, 2018 accounted for 14% of total revenue, compared to $1.57 million or 28% of total revenue for the nine months ended September 30, 2017. The decrease of $324,000 or 21% in LSC's revenue consists primarily of a $215,000 decrease in professional sales and the remainder of the decrease in e-commerce sales.

Cost of sales

Cost of sales for the three months ended September 30, 2018 was $1.32 million or 41% of revenue, compared to $474,000 or 26% of revenue for the three months ended September 30, 2017. LCT's cost of sales as a percentage of LCT's revenue increased approximately 18% and LSC's cost of sales as a percentage of LSC's revenue decreased approximately 3%. LCT's cost of sales for the three months ended September 30, 2018 was $1.23 million or 43% of LCT's revenue, compared to $338,000 or 25% of LCT's revenue for the three months ended September 30, 2017.The increase in cost of sales percentage for LCT is primarily due to change in product sales mix for the three months ended September 30, 2018, compared to the corresponding period in 2017. LSC's cost of sales was $84,000 or 23% of LSC's revenue for the three months ended September 30, 2018, compared to $136,000 or 26% of LSC's revenue for the three months ended September 30, 2017. The decrease in cost of sales for LSC is a result of lower sales during the period compared to the same period in the prior year.

Cost of sales for the nine months ended September 30, 2018 was $3.24 million or 36% of revenue, compared to $1.50 million or 27% of revenue for the nine months ended September 30, 2017. LCT's cost of sales as a percentage of LCT's revenueincreased approximately 10% and LSC's cost of sales as a percentage of LSC's revenue increased approximately3%. LCT's cost of sales for the nine months ended September 30, 2018 was $2.95 million or 39% of LCT's revenue, compared to $1.19 million or 29% of LCT's revenue for the nine months ended September 30, 2017. The increase in cost of sales percentage for LCT is primarily due tochange in product sales mix for the nine months ended September 30, 2018, compared to the corresponding period in 2017. LSC's cost of sales was $282,000 or 23% of LSC's revenue for the nine months ended September 30, 2018, compared to $311,000 or 20% of LSC's revenue for the nine months ended September 30, 2017. The decrease in cost of sales for LSC isa result of lower sales during the period compared to the same period in the prior year.

Cost of sales reflects direct costs including salaries and benefits related to manufacturing, third party manufacturing costs, materials, general laboratory supplies and an allocation of overhead. We aim to continue refining our manufacturing processes and supply chain management to improve the cost of sales as a percentage of revenue for both LCT and LSC.

Research and Development ("R&D")

Research and development expenses were $616,000 for the three months ended September 30, 2018, compared to $670,000 for the same period in 2017. The decrease of $54,000 in R&D expenditures is primarily the result of decreased clinical trial costs of $77,000, partially offset by an increase in consulting costs of $21,000 and stock based compensation costs of $9,000.

Research and development expenses were $1.88 million for the nine months ended September 30, 2018, compared to $2.05 million for the same period in 2017. The decrease of $175,000 in R&D expenditures is primarily the result of lower payroll costs of $76,000, lower stock based compensation costs of $24,000 lower material costs of $38,000, and lower clinical trial costs of $95,000, partially offset by higher consulting costs of $84,000.

Our R&D efforts are primarily focused on the development of treatments for Parkinson's disease (PD), traumatic brain injury (TBI) and liver failure. These projects are long-term investments that involve developing both new stem cell lines and new differentiation techniques that can provide higher purity populations of functional cells.

Research and development expenses are expensed as they are incurred, and are accounted for on a project by project basis. However, much of our research has potential applicability to each of our projects.

Selling and Marketing Expense

Selling and marketing expenses for the three months ended September 30, 2018 were $608,000, compared to $657,000 in the three months ended September 30 2017. The decrease of $49,000 or 7% is primarily due to decreased tradeshow costs of $77,000 partially offset by increased payroll costs of $16,000, and increased marketing materials, samples and printing costs of $14,000.

Selling and marketing expenses for the nine months ended September 30, 2018 were $1.94 million, compared to $1.79 million in the nine months ended September 30, 2017. The increase of $150,000 or 8% is primarily due to increased payroll costs of $129,000, increased marketing materials, samples and printing costs of $65,000, increased web site advertising of $10,000, and increased temp service costs of $31,000, partially offset by lower advertising expense of $50,000, lower commission costs of $23,000, and lower consulting costs of $24,000.

General and Administrative Expenses

General and administrative expenses for the three months ended September 30, 2018 were $1.32 million compared to $1.02 million for the same period in 2017. The increase of $303,000 or 30% is primarily due to increased stock based compensation expenses of $85,000, legal fees of $98,000, investor relations costs of $41,000, and audit fees of $35,000.

General and administrative expenses for the nine months ended September 30, 2018 were $4.03 million compared to $3.29 million for the same period in 2017. The increase of $736,000 or 22% is primarily due to increased audit fees of $212,000, increased stock based compensation costs of $158,000, increased patent impairment costs of $122,000, increased legal fees of $105,000, and increased investor relations costs of $97,000.

Other Income/Expense

Other income was $784,000 for the three months ended September 30, 2018, compared to other expense of $1.19 million for the three months ended September 30, 2017. The increase of $1.98 million in other income is mainly due to a change in fair value of warrant liability.

Other income was $1.11 million for the nine months ended September 30, 2018, compared to other expense of $1.66 million for the nine months ended September 30, 2017. The increase of $2.77 million in other income is mainly due to a change in fair value of warrant liability.

We expect to experience fluctuations in Other Income/Expense for future quarters driven by changes in the fair value of the warrant liability. These fair value changes will be affected by changes in our stock price, any warrant exercises or expirations, reductions in the remaining life of the warrants (as the expiration dates get closer each quarter) and other factors until the warrants are fully exercised or expire.

Liquidity and Capital Resources

As of September 30, 2018, our cash balance totaled $1.16 million, compared to $304,000 as of December 31, 2017. At September 30, 2018, we had a working capital deficit of $1.25 million, compared to a $1.95 million deficit as of December 31, 2017. The $698,000 decrease in working capital deficit is primarily due to an increase in accounts receivable of $1.1 million, a net decrease in the fair value of the warrant liability of $1.09 million, and increase in inventories of $167,000, partially offset by an increase in related party payable of $2.00 million.

Operating Cash Flows

Net cash used in operating activities was $1.12 million for the nine months ended September 30, 2018, compared to $1.65 million for the corresponding period in 2017. The primary factor contributing to the changes in the reported cash flow amounts relates to the net loss after non-cash adjustments totaling $383,000, increase in accounts receivable of $1.08 million, increase in inventory of $311,000, decrease in prepaid and other assets of $267,000, increase in accounts payable of $249,000, and increase in accrued liabilities of $132,000 in the nine months ended September 30, 2018, compared to $1.49 million of net loss after non-cash adjustments, increase in accounts receivable of $110,000, increase in inventory of $84,000, increase in deposits of $16,000, increase in prepaid and other assets of $169,000, increase in related party payables of $50,000, and increase in accounts payables and accrued liabilities of $166,000 in the nine months ended September 30, 2017.

Investing Cash Flows

Net cash used in investing activities was $529,000 for the nine months ended September 30, 2018, compared to $651,000 in the same period in 2017. The decrease was primarily the result of lower payments in 2018 for patent licenses and trademarks of $190,000, partially offset by higher payments for capital expenditure of $68,000.

Financing Cash Flows

Net cash provided by financing activities was $2.5 million for the nine months ended September 30, 2018, compared to $2.7 million in the same period in 2017. During the nine months ended September 30, 2018, $2.00 million was received from a bridge loan from a related party having a recently revised maturity date of January 15, 2019, $500,000 from sale of common stock and $145,000 from option exercises. These inflows were partially offset by payments made on financed insurance premiums of $143,000. During the nine months ended September 30, 2017, $2.7 million was received from a bridge loan from a related party which was converted to equity in December 2017.

Management continues to evaluate various financing sources and options to raise working capital to help fund our current research and development programs and operations. We will need to obtain significant additional capital from sources including exercise of outstanding warrants, equity and/or debt financings, license arrangements, grants and/or collaborative research arrangements to sustain our operations and develop products. Unless we obtain additional financing, we do not have sufficient cash on hand to sustain our operations at least through one year after the issuance date. The timing and degree of any future capital requirements will depend on many factors, including:

- the accuracy of the assumptions underlying our estimates for capital needs in 2018 and beyond;
- the extent that revenues from sales of LSC and LCT products cover the related costs and provide capital;
- scientific progress in our research and development programs;
- the magnitude and scope of our research and development programs and our ability to establish, enforce and maintain strategic arrangements for research, development, clinical testing, manufacturing and marketing;
- our progress with preclinical development and clinical trials;
- the time and costs involved in obtaining regulatory approvals;

- the costs involved in preparing, filing, prosecuting, maintaining, defending and enforcing patent claims; and
- the number and type of product candidates that we pursue.

Additional financing through strategic collaborations, public or private equity financings or other financing sources may not be available on acceptable terms, or at all. Additional equity financing could result in significant dilution to our stockholders. Additional debt financing may be expensive and require us to pledge all or a substantial portion of our assets. Further, if additional funds are obtained through arrangements with collaborative partners, these arrangements may require us to relinquish rights to some of our technologies, product candidates or products that we would otherwise seek to develop and commercialize on our own. If sufficient capital is not available, we may be required to delay, reduce the scope of or eliminate one or more of our product initiatives.

We currently have no revenue generated from our principal operations in therapeutic and clinical product development through research and development efforts. For the nine months ended September 30, 2018, our average burn rate was approximately $124,000 per month, excluding capital expenditures and patent costs averaging $59,000 per month. There can be no assurance that we will be successful in maintaining our normal operating cash flow and obtaining additional funds and that the timing of our capital raising or future financing will result in cash flow sufficient to sustain our operations at least through one year after the issuance date.

Based on the factors above, there is substantial doubt about our ability to continue as a going concern. The condensed consolidated financial statements were prepared assuming that we will continue to operate as a going concern. The condensed consolidated financial statements do not include any adjustments 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. Management's plans in regard to these matters are focused on managing our cash flow, the proper timing of our capital expenditures, and raising additional capital or financing in the future.

We do not currently have any obligations for milestone payments under any of our licensed patents other than the minimum license fee of $75,000 annually, payable in two installments per year to Astellas pursuant to the amended UMass IP license agreement. No licenses are terminable at will by the licensor. For further discussion of our patents, see Note 4 to our condensed consolidated financial statements.

Off-Balance Sheet Arrangements

As of September 30, 2018, we did not have any off-balance sheet arrangements.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

Not required.

Item 4. Controls and Procedures

Evaluation of disclosure controls and procedures

Under the supervision and with the participation of our management, including our Chief Executive Officer and our Principal Financial Officer, we carried out an evaluation of the effectiveness of the design and operation of our disclosure controls and procedures as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended, or the Exchange Act. Based on that evaluation, our Chief Executive Officer and our Principal Financial Officer or persons performing similar functions, have concluded that, at September 30, 2018, our disclosure controls and procedures were not effective due to a material weakness in internal control over financial reporting related to our accounting for and disclosure of equity transactions, and related to the implementation controls and process level controls required to be established to identify, track and monitor revenue transactions in compliance with Accounting Standards Update ("ASU") *No. 2014 - 09, Revenue from Contracts with Customers (Topic 606)*.

Disclosure controls and procedures are controls and other procedures that are designed to ensure that information required to be disclosed in our reports filed or submitted under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed in our reports filed under the Exchange Act is accumulated and communicated to our management, including our Chief Executive Officer and Principal Financial Officer, or persons performing similar functions, as appropriate, to allow timely decisions regarding required disclosure.

Additionally, controls can be circumvented by the individual acts of some persons, by collusion of two or more people, or by management override of the control. The design of any system of controls also is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions; over time, controls may become inadequate because of changes in conditions, or the degree of compliance with the policies or procedures may deteriorate. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and not be detected.

Changes in internal control over financial reporting

Except for the remediation activities relating to revenue transactions under ASC606 described below, there have been no changes in our internal control over financial reporting during the most recent quarter ended September 30, 2018 that our certifying officers concluded materially affected, or are reasonably likely to materially affect our internal control over financial reporting.

Material Weakness Remediation Activities

The Company, the Audit Committee and the Company's Board of Directors are committed to maintaining a strong internal control environment, and are currently evaluating and implementing remediation efforts which are designed to enhance our control environment. We expect that the remediation efforts for the weakness relating to the accounting for and disclosure of equity transactions will include implementation of process and review controls over accounting for equity and other significant transactions and performing such review as promptly as possible after such transactions. To address the material weakness relating to revenue transactions under ASC 606, we have implemented changes to our controls related to revenue recognition, including changes to our policies and practices based on the five-step model in ASC 606, ongoing review requirements for new and amended contracts, and new processes and controls related to gathering the information for the additional disclosure requirements. To support the development and execution of this remediation plan, we engaged additional external resources to aid and supplement our internal personnel. While most of the new and enhanced processes and controls have been implemented, some additional improvements or updates may be required. Management considers it prudent to allow the newly implemented or updated internal controls to operate for a sufficient period of time to demonstrate consistent effectiveness. Once the remediation plan for each material weakness is fully implemented, the identified material weakness in internal control over financial reporting will be considered fully addressed when the relevant internal controls have been in operation for a sufficient period of time for our management to conclude that the material weakness has been fully remediated and our internal control over financial reporting is effective. The Company will work to design, implement and rigorously test these new controls in order to make these final determinations.

PART II—OTHER INFORMATION

Item 1. Legal Proceedings

None.

Item 1A. Risk Factors

We have provided updated risk factors below. We do not believe that the updated risk factors materially change the type or magnitude of risks we face in comparison to the disclosure provided in our most recent Annual Report on Form 10-K. If any of the following risks actually occur, our business, financial condition or results of operations could be materially adversely affected, and the value of our common stock could decline.

Risks Related to Our Business

Our business is at an early stage of development and we may not develop therapeutic products that can be commercialized.

Our business is at an early stage of development. We do not have any products in late stage clinical trials. We are still in the early stages of identifying and conducting research on potential therapeutic products. Our potential therapeutic products will require significant research and development and pre-clinical and clinical testing prior to regulatory approval in the United States and other countries. We may not be able to obtain regulatory approvals, enter new and later stage clinical trials for any of our product candidates, or commercialize any products. Our product candidates may prove to have undesirable and unintended side effects or other characteristics adversely affecting their safety, efficacy or cost effectiveness that could prevent or limit their use. Any product using any of our technology may fail to provide the intended therapeutic benefits, or achieve therapeutic benefits equal to or better than the standard of treatment at the time of testing or production.

We have a history of operating losses, do not expect to be profitable in the near future and our independent registered public accounting firm has expressed doubt as to our ability to continue as a going concern.

We have not generated any profits since our entry into the biotechnolog
y business and have incurred significant operating losses. We expect to incur additional operating losses for the foreseeable future and, as we increase our research and development activities, we expect our operating losses to increase significantly. Our commercial businesses have not generated revenues in amounts to support our research and development efforts, and we may not achieve that level of revenues in the foreseeable future.

We have expended substantial funds to develop our technologies, products and product candidates. Based on our financial condition, recurring losses and projected spending, which raise substantial doubts about our ability to continue as a going concern, our independent registered public accounting firm included an explanatory paragraph in its report on our consolidated financial statements as of and for the year ended December 31, 2017 regarding this uncertainty. The inclusion of the going concern statement by our auditors may adversely affect our stock price and our ability to raise needed capital or enter into advantageous contractual relationships with third parties. If we were unable to continue as a going concern, the values we receive for our assets on liquidation or dissolution could be significantly lower than the values reflected in our financial statements.

We will need additional capital to conduct our operations and develop our products and our ability to obtain the necessary funding is uncertain.

Since January 1, 2016, we used a significant amount of cash to finance the continued development and testing of our product candidates, and we need to obtain significant additional capital resources in order to develop products going forward. Our average burn rate for the nine months ended September 30, 2018, was approximately $124,000 per month excluding capital expenditures and patent costs averaging $59,000 per month. We may not be successful in maintaining our normal operating cash flow and the timing of our capital expenditures may not result in cash flows sufficient to sustain our operations through the next twelve months. If financing is not sufficient and additional financing is not available or available only on terms that are detrimental to our long-term survival, it could have a major adverse effect on our ability to pursue our clinical research and product development programs and could ultimately affect our ability to continue to function. The timing and degree of any future capital requirements will depend on many factors, including:

- the accuracy of the assumptions underlying our estimates for capital needs in 2018 and beyond;
- scientific progress in our research and development programs;
- the magnitude and scope of our research and development programs and our ability to establish, enforce and maintain strategic arrangements for research, development, clinical testing, manufacturing and marketing;
- our progress with preclinical development and clinical trials;

- the time and costs involved in obtaining regulatory approvals;
- the costs involved in preparing, filing, prosecuting, maintaining, defending and enforcing patent claims; and
- the number and type of product candidates that we pursue.

Additional financing through strategic collaborations, public or private equity or debt financings or other financing sources may not be available on acceptable terms, or at all. Additional equity financing could result in significant dilution to our stockholders, and any debt financings will likely involve covenants restricting our business activities. Additional financing may not be available on acceptable terms, or at all. Further, if we obtain additional funds through arrangements with collaborative partners, these arrangements may require us to relinquish rights to some of our technologies, product candidates or products that we would otherwise seek to develop and commercialize on our own. If sufficient capital is not available, we may be required to delay, reduce the scope of or eliminate one or more of our research or product development initiatives, any of which could have a material adverse effect on our financial condition or business prospects.

Additionally, currently the U.S. government, through National Institute of Health ("NIH") appropriations restrictions, prevents federal funding to be used t create new embryonic and parthenogenetic stem cells, so access to grants from the NIH are limited.

We have limited clinical testing and regulatory capabilities, and human clinical trials are subject to extensive regulatory requirements, very expensive, time-consuming and difficult to design and implement. Our products may fail to achieve necessary safety and efficacy endpoints during clinical trials, which may limit our ability to generate revenues from therapeutic products.

Due to the relatively early stage of our therapeutic products and stem cell therapy-based systems, we have not yet invested significantly in internal clinical testing and regulatory capabilities, including for human clinical trials. We cannot assure you that we will be able to invest or develop resources for these capabilities successfully or as expediently as necessary. In particular, human clinical trials can be very expensive and difficult to design and implement, in part because they are subject to rigorous regulatory requirements. The clinical trial process is time consuming. We estimate that clinical trials of our product candidates will take at least several years to complete. Furthermore, failure can occur at any stage of the trials, and we could encounter problems that cause us to abandon or repeat clinical trials. The commencement and completion of clinical trials may be affected by several factors, including:

- unforeseen safety issues;
- determination of dosing issues;
- inability to demonstrate effectiveness during clinical trials;
- slower than expected rates of patient recruitment;
- inability to monitor patients adequately during or after treatment; and
- inability or unwillingness of medical investigators to follow our clinical protocols.

In addition, we or the FDA (or other applicable regulatory agency) may suspend our clinical trials at any time if it appears that we are exposing participants to unacceptable health risks or if the FDA (or other regulatory agency) finds deficiencies in our submissions or the conduct of these trials.

Patents held by other persons may result in infringement claims against us that are costly to defend and which may limit our ability to use the disputed technologies and prevent us from pursuing research and development or commercialization of potential products.

A number of pharmaceutical, biotechnology and other companies, universities and research institutions have filed patent applications or have been issued patents relating to cell therapy, stem cells, and other technologies potentially relevant to or required by our expected products. We cannot predict which, if any, of such applications will issue as patents or the claims that might be allowed. We are aware that a number of companies have filed applications relating to stem cells. We are also aware of a number of patent applications and patents claiming use of stem cells and other modified cells to treat disease, disorder or injury.

If third party patents or patent applications contain claims infringed by either our licensed technology or other technology required to make and use our potential products and such claims are ultimately determined to be valid, we might not be able to obtain licenses to these patents at a reasonable cost, if at all, or be able to develop or obtain alternative technology. If we are unable to obtain such licenses at a reasonable cost, we may not be able to develop some products commercially. We may be required to defend ourselves in court against allegations of infringement of third party patents. Patent litigation is very expensive and could consume substantial resources and create significant uncertainties. An adverse outcome in such a suit could subject us to significant liabilities to third parties, require disputed rights to be licensed from third parties, or require us to cease using such technology.

Our competition includes fully integrated biotechnology, pharmaceutical and cosmetic companies that have significant advantages over us.

The market for therapeutic stem cell products is highly competitive. We expect that our most significant competitors will be fully integrated and more established pharmaceutical, biotechnology and cosmetic companies. These companies are developing stem cell-based products and they have significantly greater capital resources and research and development, manufacturing, testing, regulatory compliance, and marketing capabilities. Many of these potential competitors are further along in the process of product development and also operate large, company-funded research and development programs. As a result, our competitors may develop more competitive or affordable products, or achieve earlier patent protection or product commercialization than we are able to achieve. Competitive products may render any products or product candidates that we develop uneconomic or obsolete.

If competitors develop and market products that are more effective, safer, or less expensive than our product candidates or offer other advantages, our commercial prospects will be limited.

Our cell therapy development programs face, and will continue to face, intense competition from pharmaceutical, biopharmaceutical and biotechnology companies, as well as numerous academic and research institutions and governmental agencies engaged in drug discovery activities or funding, both in the United States and abroad. Some of these competitors are pursuing the development of drugs and other therapies that target the same diseases and conditions that we are targeting with our product candidates.

As a general matter, we also face competition from many companies that are researching and developing cell therapies. Many of these companies have financial and other resources substantially greater than ours. In addition, many of these competitors have significantly greater experience in testing pharmaceutical and other therapeutic products, obtaining FDA and other regulatory approvals, and marketing and selling. If we ultimately obtain regulatory approval for any of our product candidates, we also will be competing with respect to manufacturing efficiency and marketing capabilities, areas in which we have limited or no commercial-scale experience. Mergers and acquisitions in the pharmaceutical and biotechnology industries may result in even more resources being concentrated by our competitors. Competition may increase further as a result of advances made in the commercial applicability of our technologies and greater availability of capital for investment in these fields.

If we fail to meet our obligations under our license agreements, we may lose our rights to key technologies on which our business depends.

Our business depends in part on licenses from third parties. These third party license agreements impose obligations on us, such as payment obligations and obligations to diligently pursue development of commercial products under the licensed patents. If a licensor believes that we have failed to meet our obligations under a license agreement, the licensor could seek to limit or terminate our license rights, which could lead to costly and time consuming litigation and, potentially, a loss of the licensed rights. During the period of any such litigation, our ability to carry out the development and commercialization of potential products could be significantly and negatively affected. If our license rights were restricted or ultimately lost, our ability to continue our business based on the affected technology platform could be severely affected adversely.

Significant delays or reductions in U.S. Government funding may negatively affect our results of operations.

We estimate that governmental funding, either directly or indirectly (through sponsorship of academic research), comprises approximately 40% of the market for basic and applied research in biological sciences, which is the target market for our LCT research products. The U.S. Government is considering (and ha implemented in the recent past) significant changes in government spending and other governmental programs, which in the recent past involved several automatic spending cuts being implemented. There are many variables in how these laws could be implemented in the future that make it difficult to determine specific impacts on our customers, and we are unable to predict the impact that future automatic spending cuts would have on funding our customers receive and resulting sales of our LCT products. Additionally, U.S. Governmental programs are subject to annual congressional budget authorization and appropriation processes. However, whether through the automatic cuts or other decisions, long-term funding for certain programs in which our research product customers participate may be reduced, delayed or cancelled. In the event that governmental funding for any of our research product customers is reduced or delayed, our sales to those customers would likely suffer, which could have a material adverse effect on our results of operations. Further, currently the U.S. government, through National Institute of Health appropriations restrictions, prevents federal funding to be used to create new embryonic and parthenogenetic stem cells, so access to grants from the NIH are limited, which may adversely affect our partnering opportunities and internal therapeutic product development initiatives.

The recently passed comprehensive tax reform bill could adversely affect our business and financial condition.

On December 22, 2017, President Trump signed into law new legislation that significantly revises the Internal Revenue Code of 1986, as amended. The newl enacted federal income tax law, among other things, contains significant changes to corporate taxation,

including reduction of the corporate tax rate from a top marginal rate of 35% to a flat rate of 21%, limitation of the tax deduction for interest expense to 30% of adjusted earnings (except for certain small businesses), effective for net operating losses incurred in taxable years beginning after December 31, 2017, limitation of the deduction for net operating losses to 80% of current year taxable income and elimination of net operating loss carrybacks, one time taxation of offshore earnings at reduced rates regardless of whether they are repatriated, elimination of U.S. tax on foreign earnings (subject to certain important exceptions), immediate deductions for certain new investments instead of deductions for depreciation expense over time, and modifying or repealing many business deductions and credits. Notwithstanding the reduction in the corporate income tax rate, the overall impact of the new federal tax law is uncertain and our business and financial condition could be adversely affected. In addition, it is uncertain how various states will respond to the newly enacted federal tax law. The impact of this tax reform on holders of our securities is also uncertain and could be adverse. Investors should consult with their legal and tax advisors with respect to this legislation and the potential tax consequences of investing in or holding our securities.

Restrictive and extensive government regulation could slow or hinder our production of a cellular product.

The research and development of stem cell therapies is subject to and restricted by extensive regulation by governmental authorities in the United States and other countries. The process of obtaining FDA and other necessary regulatory approvals is lengthy, expensive and uncertain. We may fail to obtain the necessary approvals to continue our research and development, which would hinder our ability to manufacture or market any future product.

The development and commercialization of our product candidates is subject to extensive regulation by the FDA and other regulatory agencies in the United States and abroad, and the failure to receive regulatory approvals for our other product candidates would likely have a material and adverse effect on our business and prospects.

The process of obtaining FDA and other regulatory approvals is expensive, generally takes many years and is subject to numerous risks and uncertainties particularly with complex and/or novel product candidates such as our product candidates. Changes in regulatory approval policies during the development period, changes in or the enactment of additional statutes or regulations, or changes in regulatory review for each submitted product application, may cause delays in the approval or rejection of an application or may make it easier for our competitors to gain regulatory approval to enter the marketplace. Ultimately, the FDA and other regulatory agencies have substantial discretion in the approval process and may refuse to accept any application or may decide that our product candidate data are insufficient for approval without the submission of additional preclinical, clinical or other studies. In addition, varying agency interpretations of the data obtained from preclinical and clinical testing could delay, limit or prevent regulatory approval of a product candidate. Any regulatory approval we ultimately obtain may be limited or subject to restrictions or post-approval commitments that render the approved product not commercially viable.

Any of the following factors, among others, could cause regulatory approval for our product candidates to be delayed, limited or denied:

- the product candidates require significant clinical testing to demonstrate safety and effectiveness before applications for marketing approval can be filed with the FDA and other regulatory authorities;
- data obtained from preclinical and nonclinical animal testing and clinical trials can be interpreted in different ways, and regulatory authorities may not agree with our respective interpretations or may require us to conduct additional testing;
- negative or inconclusive results or the occurrence of serious or unexpected adverse events during a clinical trial could cause us to delay or terminate development efforts for a product candidate; and/or
- FDA and other regulatory authorities may require expansion of the size and scope of the clinical trials.

Any difficulties or failures that we encounter in securing regulatory approval for our product candidates would likely have a substantial adverse impact on our ability to generate product sales, and could make any search for a collaborative partner more difficult.

Research in the field of embryonic stem cells is currently subject to strict government regulations, and our operations could be restricted or outlawed by any legislative or administrative efforts impacting the use of nuclear transfer technology or human embryonic material.

Significant portions of our business are focused on human cell therapy, which includes the production of human differentiated cells from stem cells and involves human oocytes. Although our focus is on parthenogenetic stem cells derived from unfertilized oocytes, certain aspects of that work may involve the use of embryonic stem cells. Research utilizing embryonic stem cells is controversial, and currently subject to intense scrutiny, particularly in the area of the use of human embryonic material.

Federal law is not as restrictive regarding the use of federal funds for human embryonic cell research, commonly referred to as hES cell research as it once was. However, federal law does prohibit federal funding for creation of parthenogenetic stem cells. Our operations may also be restricted by future legislative or administrative efforts by politicians or groups opposed to the development of hES cell technology, parthenogenetic cell technology or nuclear transfer technology. Further, future legislative or administrative restrictions could, directly or indirectly, delay, limit or prevent the use of hES technology, parthenogenetic technology, or nuclear transfer technology, the use of human embryonic material, or the sale, manufacture or use of products or services derived from nuclear transfer technology or hES or parthenogenetic technology.

We may be unsuccessful in our efforts to comply with applicable federal, state and international laws and regulations, which could result in loss of licensure, certification or accreditation or other government enforcement actions or impact our ability to secure regulatory approval of our product candidates.

Although we seek to conduct our business in compliance with applicable governmental healthcare laws and regulations, these laws and regulations are exceedingly complex and often subject to varying interpretations. The cell therapy industry is the topic of significant government interest, and thus the laws and regulations applicable to our business are subject to frequent change and/or reinterpretation. As such, there can be no assurance that we will be able, or will have the resources, to maintain compliance with all such healthcare laws and regulations. Failure to comply with such healthcare laws and regulations, as well as the costs associated with such compliance or with enforcement of such healthcare laws and regulations, may have a material adverse effect on our operations or may require restructuring of our operations or impair our ability to operate profitably.

Our manufacture of certain cellular therapy products triggers additional FDA requirements applicable to hESCs which are regulated as a drug, biological product, or medical device. FDA's GMP regulations govern the manufacture, processing, packaging and holding of cell therapy products regulated as drugs. FDA's Quality System Regulation, or QSR, similarly governs the manufacture, processing, packaging and holding of cell therapy products regulated as medical devices. We must comply with GMP or QSR requirements including quality control, quality assurance and the maintenance of records and documentation for certain products. We may be unable to comply with these GMP or QSR requirements and with other FDA, state and foreign regulatory requirements. These requirements may change over time and we or third-party manufacturers may be unable to comply with the revised requirements.

We will continue to be subject to extensive FDA regulation following any product approvals, and if we fail to comply with these regulations, we may suffer a significant setback in our business.

Even if we are successful in obtaining regulatory approval of our product candidates, we will continue to be subject to the requirements of and review by, the FDA and comparable regulatory authorities in the areas of manufacturing processes, post-approval clinical data, adverse event reporting, labeling, advertising and promotional activities, among other things. In addition, any marketing approval we receive may be limited in terms of the approved product indication or require costly post-marketing testing and surveillance. Discovery after approval of previously unknown problems with a product, manufacturer or manufacturing process, or a failure to comply with regulatory requirements, may result in actions such as:

- warning letters or other actions requiring changes in product manufacturing processes or restrictions on product marketing or distribution;
- product recalls or seizures or the temporary or permanent withdrawal of a product from the market; and
- fines, restitution or disgorgement of profits or revenue, the imposition of civil penalties or criminal prosecution.

The occurrence of any of these actions would likely cause a material adverse effect on our business, financial condition and results of operations.

Health care companies have been the subjects of federal and state investigations, and we could become subject to investigations in the future.

Both federal and state government agencies have heightened civil and criminal enforcement efforts. There are numerous ongoing investigations of health care companies, as well as their executives and managers. In addition, amendments to the Federal False Claims Act, have made it easier for private parties to bring "*qui tam*" (whistleblower) lawsuits against companies under which the whistleblower may be entitled to receive a percentage of any money paid to the government. The Federal False Claims Act provides, in part, that an action can be brought against any person or entity that has knowingly presented, or caused to be presented, a false or fraudulent request for payment from the federal government, or who has made a false statement or used a false record to get a claim approved. The government has taken the position that claims presented in violation of the federal anti-kickback law, Stark Law or other healthcare-related laws, including laws enforced by the FDA, may be considered a violation of the Federal False Claims Act. Penalties include substantial fines for each false claim, plus three times the amount of damages that the federal government sustained because of the act of that person or entity and/or exclusion from the Medicare program. In addition, a majority of states have adopted similar state whistleblower and false claims provision. Any future investigations of our business or executives could cause us to incur substantial costs, and result in significant liabilities or penalties, as well as damage to our reputation.

Restrictions on the use of human stem cells, and the ethical, legal and social implications of that research, could prevent us from developing or gaining acceptance for commercially viable products in these areas.

Although our stem cells are derived from unfertilized human eggs through a process called "parthenogenesis" that can produce cells suitable for therapy, but are believed to be incapable of producing a human being, such cells are nevertheless often incorrectly referred to as "embryonic" stem cells. Because the use of human embryonic stem cells gives rise to ethical, legal and social issues regarding the appropriate use of these cells, our research related to human parthenogenetic stem cells could become the subject of adverse commentary or publicity and some political and religious groups may still raise opposition to our technology and practices. In addition, many research institutions, including some of our scientific collaborators, have adopted policies regarding the ethical use of human embryonic tissue, which, if applied to our procedures, may have the effect of limiting the scope of research conducted using our stem cells, thereby impairing our ability to conduct research in this field. In some states, use of embryos as a source of stem cells is prohibited.

To the extent we utilize governmental grants in the future, the governmental entities involved may retain certain rights in technology that we develop using such grant money and we may lose the revenues from such technology if we do not commercialize and utilize the technology pursuant to established government guidelines.

Certain of our licensors' research have been or are being funded in part by government grants. Our research may also be government-funded in the future. In connection with certain grants, the governmental entity involved retains various rights in the technology developed with the grant. These rights could restrict our ability to fully capitalize upon the value of this research by reducing total revenues that might otherwise be available since such governmental rights may give the government the right to practice the invention without payment of royalties if we do not comply with applicable requirements.

We rely on parthenogenesis, cell differentiation and other stem cell technologies that we may not be able to successfully develop, which may prevent us from generating revenues, operating profitably or providing investors any return on their investment.

We have concentrated our research on our parthenogenesis, cell differentiation and stem cell technologies, and our ability to operate profitably will depend on being able to successfully implement or develop these technologies for human applications. These are emerging technologies with, as yet, limited human applications. We cannot guarantee that we will be able to successfully implement or develop our nuclear transfer, parthenogenesis, cell differentiation and other stem cell technologies or that these technologies will result in products or services with any significant commercial utility. We anticipate that the commercial sale of such products or services, and royalty/licensing fees related to our technology, would be an additional source of revenues.

The outcome of preclinical, clinical and product testing of our products is uncertain, and if we are unable to satisfactorily complete such testing, or if such testing yields unsatisfactory results, we may be unable to commercially produce our proposed products.

Before obtaining regulatory approvals for the commercial sale of any potential human products, our products will be subjected to extensive preclinical and clinical testing to demonstrate their safety and efficacy in humans. The clinical trials of our prospective products, or those of our licensees or collaborators, may not demonstrate the safety and efficacy of such products at all, or to the extent necessary to obtain appropriate regulatory approvals. Similarly, the testing of such prospective products may not be completed in a timely manner, if at all, or only after significant increases in costs, program delays or both, all of which could harm our ability to generate revenues. In addition, our prospective products may not prove to be more effective for treating disease or injury than current therapies. Accordingly, we may have to delay or abandon efforts to research, develop or obtain regulatory approval to market our prospective products. The failure to adequately demonstrate the safety and efficacy of a therapeutic product under development could delay or prevent regulatory approval of the product and could harm our ability to generate revenues, operate profitably or produce any return on an investment in us.

Even if we are successful in developing a therapeutic application using our cell technologies, it is unclear whether cell therapy can serve as the foundation for a commercially viable and profitable business.

Stem cell technology is rapidly developing and could undergo significant change in the future. Such rapid technological development could result in our technologies becoming obsolete. While our product candidates appear promising, they may fail to be successfully commercialized for numerous reasons, including, but not limited to, competing technologies for the same indications. There can be no assurance that we will be able to develop a commercially successful therapeutic application for our stem cell technologies.

Moreover, advances in other treatment methods or in disease prevention techniques could significantly reduce or entirely eliminate the need for our cell therapy services, planned products and therapeutic efforts. There is no assurance that cell therapies will achieve the degree of success envisioned by us in the treatment of disease. Additionally, technological or medical developments may materially alter the commercial viability of our technology or services, and require us to incur significant costs to replace or modify equipment in which we have a substantial investment. We are focused on cell therapy, and if this field is substantially unsuccessful, this could jeopardize our success or future results. The occurrence of any of these factors may have a material adverse effect on our business, operating results and financial condition.

If we are unable to keep up with rapid technological changes in our field or compete effectively, we will be unable to operate profitably.

We are engaged in activities in the biotechnology field, which is characterized by extensive research efforts and rapid technological progress. If we fail to anticipate or respond adequately to technological developments, our ability to operate profitably could suffer. Research and discoveries by other biotechnology, agricultural, pharmaceutical or other companies may render our technologies or potential products or services uneconomical or result in products superior to those we develop. Similarly, any technologies, products or services we develop may not be preferred to any existing or newly developed technologies, products or services.

We may not be able to protect our proprietary technology, which could harm our ability to operate profitably.

The biotechnology, cosmetic, and pharmaceutical industries place considerable importance on obtaining patent and trade secret protection for new technologies, products and processes. Our success will depend, to a substantial degree, on our ability to obtain and enforce patent protection for our products, preserve any trade secrets and operate without infringing the proprietary rights of others. We cannot assure you that:

- we will succeed in obtaining any patents, obtain them in a timely manner, or that the breadth or degree of protection that any such patents will protect our interests;
- the use of our technology will not infringe on the proprietary rights of others;
- patent applications relating to our potential products or technologies will result in the issuance of any patents or that, if issued, such patents will afford adequate protection to us or will not be challenged, invalidated or infringed; or
- patents will not be issued to other parties, which may be infringed by our potential products or technologies.

We are aware of certain patents that have been granted to others and certain patent applications that have been filed by others with respect to nuclear transfer and other stem cell technologies. The fields in which we operate have been characterized by significant efforts by competitors to establish dominant or blocking patent rights to gain a competitive advantage, and by considerable differences of opinion as to the value and legal legitimacy of competitors' purported patent rights and the technologies they actually utilize in their businesses.

Considerable research in the areas of stem cells, cell therapeutics and regenerative medicine is being performed in countries outside of the United States, and a number of our competitors are located in those countries. The laws protecting intellectual property in some of those countries may not provide adequate protection to prevent our competitors from misappropriating our intellectual property.

Our business is highly dependent upon maintaining licenses with respect to key technology.

Although our primary focus relates to intellectual property we have developed internally, some of the patents we utilize are licensed to us by Astellas, which has licensed some of these from other parties, including the University of Massachusetts. These licenses are subject to termination under certain circumstances (including, for example, our failure to make minimum royalty payments). The loss of any of such licenses, or the conversion of such licenses to non-exclusive licenses, could harm our operations and/or enhance the prospects of our competitors.

Although our licenses with Astellas allow us to cure any defaults under the underlying licenses to them and to take over the patents and patents pending in the event of default by Astellas, the cost of such remedies could be significant and we might be unable to adequately maintain these patent positions. If so, such inability could have a material adverse effect on our business. Some of these licenses also contain restrictions (*e.g.*, limitations on our ability to grant sublicenses) that could materially interfere with our ability to generate revenue through the licensing or sale to third parties of important and valuable technologies that we have, for strategic reasons, elected not to pursue directly. In the future we may require further licenses to complete and/or commercialize our proposed products. We may not be able to acquire any such licenses on a commercially-viable basis.

Cybersecurity breaches could expose us to liability, damage our reputation, compromise our confidential information or otherwise adversely affect our business.

We maintain sensitive company data on our computer networks, including our intellectual property and proprietary business information, as well as certain personal information regarding customers who purchase our skin care products online. We face a number of threats to our networks from unauthorized access, security breaches and other system disruptions. These threats are becoming increasingly more sophisticated. Despite our constantly increasing security measures, our infrastructure may be vulnerable to attacks by hackers or other disruptive problems. Any such security breach may compromise information stored on our networks and may result in significant data losses or theft of our intellectual property, proprietary business information or our customers' personally identifiable information. A cybersecurity breach could hurt our reputation by adversely affecting the perception of customers and potential customers of the security of their orders and personal information. In addition, a cybersecurity attack could result in other negative consequences, including disruption of our internal operations, increased cyber security protection costs, lost revenues or litigation.

Certain of our technology may not be subject to protection through patents, which leaves us vulnerable to theft of our technology.

Certain parts of our know-how and technology are not patentable or are trade secrets. To protect our proprietary position in such know-how and technology, we require all employees, consultants, advisors and collaborators to enter into confidentiality and invention assignment agreements with us. These agreements may not provide meaningful protection for our trade secrets, know-how or other proprietary information in the event of any unauthorized use or disclosure. Further, in the absence of patent protection, competitors who independently develop substantially equivalent technology may harm our business.

We depend on our collaborators to help us develop and test our proposed products, and our ability to develop and commercialize products may be impaired or delayed if collaborations are unsuccessful.

Our strategy for the development, clinical testing and commercialization of our proposed products requires that we enter into collaborations with corporate partners, licensors, licensees and others. We are dependent upon the subsequent success of these other parties in performing their respective responsibilities and the continued cooperation of our partners. Our collaborators may not cooperate with us or perform their obligations under our agreements with them. We cannot control the amount and timing of our collaborators' resources that will be devoted to our research and development activities related to our collaborative agreements with them. Our collaborators may choose to pursue existing or alternative technologies in preference to those being developed in collaboration with us.

Under agreements with collaborators, we may rely significantly on such collaborators to, among other things:

- design and conduct clinical trials;
- fund research and development activities with us;

- pay us fees upon the achievement of milestones; and
- market with us any commercial products that result from our collaborations.

The development and commercialization of potential products will be delayed if collaborators fail to conduct these activities in a timely manner, or at all. In addition, our collaborators could terminate their agreements with us and we may not receive any development or milestone payments. If we do not achieve milestones set forth in the agreements, or if our collaborators breach or terminate their collaborative agreements with us, our business may be materially harmed.

Contractual arrangements with licensors or collaborators may require us to pay royalties or make other payments related to the development of a product candidate, which would adversely affect the level of our future revenues and profits.

Even if we obtain all applicable regulatory approvals and successfully commercialize one or more of our cell therapy candidates, contractual arrangements between us and a licensor, collaborator or other third party in connection with the respective product may require that we make royalty or other payments to the respective third party, and as a result we would not receive all of the revenue derived from commercial sales of such product.

Our reliance on the activities of our non-employee consultants, research institutions, and scientific contractors, whose activities are not wholly within our control, may lead to delays in development of our proposed products.

We rely extensively upon and have relationships with scientific consultants at academic and other institutions, some of whom conduct research at our request, and other consultants with expertise in clinical development strategy or other matters. These consultants are not our employees and may have commitments to, or consulting or advisory contracts with, other entities that may limit their availability to us. We have limited control over the activities of these consultants and, except as otherwise required by our collaboration and consulting agreements to the extent they exist, can expect only limited amounts of their time to be dedicated to our activities. These research facilities may have commitments to other commercial and non-commercial entities. We have limited control over the operations of these laboratories and can expect only limited amounts of time to be dedicated to our research goals.

We may be subject to litigation that will be costly to defend or pursue and uncertain in its outcome.

Our business may bring us into conflict with our licensees, licensors, vendors, customers, or other parties with whom we have contractual or other business relationships, or with our competitors or others whose interests differ from ours. If we are unable to resolve those conflicts on terms that are satisfactory to all parties, we may become involved in litigation brought by or against us. That litigation is likely to be expensive and may require a significant amount of management's time and attention, at the expense of other aspects of our business. The outcome of litigation is always uncertain, and in some cases could include judgments against us that require us to pay damages, enjoin us from certain activities, or otherwise affect our legal or contractual rights, which could have a significant adverse effect on our business.

We may not be able to obtain third party patient reimbursement or favorable product pricing, which would reduce our ability to operate profitably.

Our ability to successfully commercialize certain of our proposed products in the human therapeutic field may depend to a significant degree on patient reimbursement of the costs of such products and related treatments at acceptable levels from government authorities, private health insurers and other organizations, such as health maintenance organizations. Reimbursement in the United States or foreign countries may not be available for any products we may develop, and, if available, may be decreased in the future. Also, reimbursement amounts may reduce the demand for, or the price of, our products with a consequent harm to our business. We cannot predict what additional regulation or legislation relating to the health care industry or third party coverage and reimbursement may be enacted in the future or what effect such regulation or legislation may have on our business. If additional regulations are overly onerous or expensive, or if health care related legislation makes our business more expensive or burdensome than originally anticipated, we may be forced to significantly downsize our business plans or completely abandon our business model.

Our products may be expensive to manufacture, and they may not be profitable if we are unable to control the costs to manufacture them.

Our products may be significantly more expensive to manufacture than other therapeutic products currently on the market today. We hope to substantially reduce manufacturing costs through process improvements, development of new methods, increases in manufacturing scale and outsourcing to experienced manufacturers. If we are not able to make these, or other improvements, and depending on the pricing of the product, our profit margins may be significantly less than that of other therapeutic products on the market today. In addition, we may not be able to charge a high enough price for any cell therapy product we develop, even if they are safe and effective, to make a profit. If we are unable to realize significant profits from our potential product candidates, our business would be materially harmed.

We presently lack sufficient manufacturing capabilities to produce our therapeutic product candidates at commercial scale quantities and do not have an alternate manufacturing supply, which could negatively impact our ability to meet any future demand for the product.

We expect that we would need to significantly expand our manufacturing capabilities to meet potential demand for our therapeutic product candidates, if approved. Such expansion would require additional regulatory approvals. Even if we increase our manufacturing capabilities, it is possible that we may still lack sufficient capacity to meet demand.

We do not presently have any alternate supply for our products. If our facilities where our products are currently being manufactured or equipment were significantly damaged or destroyed, or if there were other disruptions, delays or difficulties affecting manufacturing capacity, including if such facilities are deemed not in compliance with current Good Manufacturing Practice ("GMP") requirements, future clinical studies and commercial production for our product would likely be significantly disrupted and delayed. It would be both time consuming and expensive to replace this capacity with third parties, particularly since any new facility would need to comply with the regulatory requirements.

Ultimately, if we are unable to supply our products to meet commercial demand, whether because of processing constraints or other disruptions, delays or difficulties that we experience, our production costs could dramatically increase and sales of the product and its long-term commercial prospects could be significantly damaged.

To be successful, our proposed products must be accepted by the health care community, which can be very slow to adopt or unreceptive to new technologies and products.

Our proposed products and those developed by our collaborative partners, if approved for marketing, may not achieve market acceptance since hospitals, physicians, patients or the medical community in general may decide not to accept and utilize these products. The products that we are attempting to develop represent substantial departures from established treatment methods and will compete with a number of more conventional therapies manufactured and marketed by major pharmaceutical companies. The degree of market acceptance of any of our developed products will depend on a number of factors, including:

- our establishment and demonstration to the medical community of the clinical efficacy and safety of our proposed products;
- our ability to create products that are superior to alternatives currently on the market;
- our ability to establish in the medical community the potential advantage of our treatments over alternative treatment methods; and
- reimbursement policies of government and third party payers.

If the healthcare community does not accept our products for any of the foregoing reasons, or for any other reason, our business would be materially harmed.

Our business is based on novel technologies that are inherently expensive, risky and may not be understood by or accepted in the marketplace, which could adversely affect our future value.

The clinical development, commercialization and marketing of cell and tissue-based therapies are at an early-stage, substantially research-oriented, and financially speculative. To date, very few companies have been successful in their efforts to develop and commercialize a stem cell product. In general, stem cell products may be susceptible to various risks, including undesirable and unintended side effects, unintended immune system responses, inadequate therapeutic efficacy, or other characteristics that may prevent or limit their approval or commercial use. Furthermore, the number of people who may use cell or tissue-based therapies is difficult to forecast with accuracy. Our future success is dependent on the establishment of a significant market for cell- and tissue-based therapies and our ability to capture a share of this market with our product candidates.

Our development efforts with our therapeutic product candidates are susceptible to the same risks of failure inherent in the development and commercialization of therapeutic products based on new technologies. The novel nature of cellular therapeutics creates significant challenges in the areas of product development and optimization, manufacturing, government regulation, third-party reimbursement and market acceptance. For example, the United States FDA has relatively limited experience regulating therapies based on cells, and there are few approved treatments utilizing cell therapy.

During the three and nine months ended September 30, 2018, we derived approximately 41% and 27% of our revenues from one customer, respectively, and approximately 25% and 33% from another customer during the three and nine months ended September 30, 2018. During the three and nine months ended September 30, 2017, we derived approximately 42% and 38% of our revenues from one customer, respectively.

During the three and nine months ended September 30, 2018, one customer accounted for 41% and 27% of our consolidated revenues, and another customer accounted for 25% and 33% during the three and nine months ended September 30, 2018. During the three and nine months ended September 30, 2017, we derived approximately 42% and 38% of our revenues from one customer, respectively. To the extent that a significant customer reduces or delays its purchases from us or terminates its relationship with us, our revenues would decline significantly and our financial condition and results of operations would suffer substantially.

We depend on key personnel for our continued operations and future success, and a loss of certain key personnel could significantly hinder our ability to move forward with our business plan.

Because of the specialized nature of our business, we are highly dependent on our ability to identify, hire, train and retain highly qualified scientific and technical personnel for the research and development activities we conduct or sponsor. The loss of one or more key executive officers, or scientific officers, would be significantly detrimental to us. In addition, recruiting and retaining qualified scientific personnel to perform research and development work is critical to our success. Our anticipated growth and expansion into areas and activities requiring additional expertise, such as clinical testing, regulatory compliance, manufacturing and marketing, will require the addition of new management personnel and the development of additional expertise by existing management personnel. There is intense competition for qualified personnel in the areas of our present and planned activities. Accordingly, we may not be able to continue to attract and retain the qualified personnel, which would adversely affect the development of our business.

We may not have sufficient product liability insurance, which may leave us vulnerable to future claims we will be unable to satisfy.

The testing, manufacturing, marketing and sale of human therapeutic products entail an inherent risk of product liability claims. We currently have a limited amount of product liability insurance, which may not be adequate to meet potential product liability claims. In the event we are forced to expend significant funds on defending product liability actions, and in the event those funds come from operating capital, we will be required to reduce our business activities, which could lead to significant losses. Adequate insurance coverage may not be available in the future on acceptable terms, if at all. If available, we may not be able to maintain any such insurance at sufficient levels of coverage and any such insurance may not provide adequate protection against potential liabilities. Whether or not a product liability insurance policy is obtained or maintained in the future, any product liability claim could harm our business or financial condition.

Risks Related to the Securities Markets and Our Capital Structure

Stock prices for biotechnology companies have historically tended to be very volatile.

Stock prices and trading volumes for many biotechnology companies fluctuate widely for a number of reasons, including but not limited to the following factors, some of which may be unrelated to their businesses or results of operations:

- clinical trial results;
- the amount of cash resources and such company's ability to obtain additional funding;
- announcements of research activities, business developments, technological innovations or new products by competitors;
- entering into or terminating strategic relationships;
- changes in government regulation;
- disputes concerning patents or proprietary rights;
- changes in our revenues or expense levels;
- public concern regarding the safety, efficacy or other aspects of the products or methodologies we are developing;
- reports by securities analysts;

- activities of various interest groups or organizations;
- media coverage; and
- status of the investment markets.

This market volatility, as well as general domestic or international economic, market and political conditions, could materially and adversely affect the market price of our common stock.

Two of our executive officers and directors can significantly influence our direction and policies, and their interests may be adverse to the interests of our other stockholders.

As of September 30, 2018, Dr. Andrey Semechkin, Chief Executive Officer and Co-Chairman of the Board of Directors, and Dr. Russell Kern, Executive Vi President and Chief Scientific Officer and a director, beneficially own approximately 80% of our outstanding shares of common stock, including shares issuable upon conversion of the outstanding shares of our Series D, Series G and Series I-2 Preferred Stock and shares issuable upon exercise of options and warrant that they hold and that are exercisable within 60 days of September 30, 2018. As a result of their holdings and the rights, preferences and privileges of those series of preferred stock, Dr. Andrey Semechkin and Dr. Russell Kern may appoint and remove two of our four directors, and propose candidates for nomination of up to two additional directors, and therefore will be able to significantly influence the election of our Board of Directors. They may also prevent corporate transactions (such as a merger, consolidation, a sale of all or substantially all of our assets or a financing transaction) that may be favorable from the standpoint of our other stockholders or they may cause a transaction that our other stockholders may view as unfavorable.

The application of the "penny stock" rules to our common stock could limit the trading and liquidity of our common stock, adversely affect the market price of our common stock and increase stockholder transaction costs to sell those shares.

While we are currently exempt from the "penny stock" rules, as long as the trading price of our common stock is below $5.00 per share, the open market trading of our common stock would be subject to the "penny stock" rules, if we otherwise do not continue to qualify for an exemption from the "penny stock" definition. The "penny stock" rules impose additional sales practice requirements on certain broker-dealers who sell securities to persons other than established customers and accredited investors (generally those with assets in excess of $1,000,000 or annual income exceeding $200,000 or $300,000 together with their spouse). These regulations, if they apply, require the delivery, prior to any transaction involving a penny stock, of a disclosure schedule explaining the penny stock market and the associated risks. Under these regulations, certain brokers who recommend such securities to persons other than established customers or certain accredited investors must make a special written suitability determination regarding such a purchaser and receive such purchaser's written agreement to a transaction prior to sale. These regulations may have the effect of limiting the trading activity of our common stock, reducing the liquidity of an investment in our common stock and increasing the transaction costs for sales and purchases of our common stock as compared to other securities.

The rights of holders of our common stock are subordinate to significant rights, preferences and privileges of our existing five series of preferred stock, and to any additional series of preferred stock created in the future.

Under the authority granted by our Certificate of Incorporation, our Board of Directors has established five separate series of outstanding preferred stock including Series B, Series D, Series G and Series I-1 and Series I-2 Preferred Stock, which have various rights and preferences senior to the shares of comm stock. Shares of some series of our existing preferred stock are also entitled to enhanced voting rights and liquidation preferences. As a result of the various voting rights, the holders of our existing preferred stock may be able to block the proposed approval of various corporate actions, which could prevent us from achieving strategic or other goals dependent on such actions. As a result of the liquidation preferences, in the event that we voluntarily or involuntary liquidate, dissolve or windup our affairs (including as a result of a merger), the holders of our preferred stock would be entitled to receive stated amounts per share, including any accrued and unpaid dividends, before any distribution of assets or merger consideration is made to holders of our common stock. Additionally, these shares of preferred stock may be converted, at the option of the holders, into common stock at rates that may be adjusted, for the benefit of holders of preferred stock, if we sell equity securities below the then existing conversion prices. Any such adjustments would compound the potential dilution suffered by holders of common stock if we issue additional securities at prices below the current conversion prices (ranging from $1.08 to $9.98 per share as of September 30, 2018). Additionally, subject to the consent of the holders of our existing preferred stock, our Board of Directors has the power to issue additional series of preferred stock and to designate, as it deems appropriate (subject to the rights of the holders of the current series of preferred stock), the special dividend, liquidation or voting rights of the shares of those additional series. The creation and designation of any new series of preferred stock could adversely affect the voting power, dividend, liquidation and other rights of holders of our common stock and, possibly, any other class or series of stock that is then in existence.

The market price for our common stock has been and may continue to be particularly volatile given our status as a relatively unknown company with a limited operating history and lack of profits, which could lead to wide fluctuations in our share price. The price at which stockholders purchase shares of our common stock may not be indicative of the price of our common stock that will prevail in the trading market.

The market for our common stock may be characterized by significant price volatility when compared to seasoned issuers, and we expect that our stock price could continue to be more volatile than a seasoned issuer for the indefinite future. The potential volatility in our share price is attributable to a number of factors. First, there has been limited trading in our common stock. As a consequence of this lack of liquidity, any future trading of shares by our stockholders may disproportionately influence the price of those shares in either direction. Second, we are a speculative or "risky" investment due to our limited operating history and lack of profits to date, and uncertainty of future market acceptance for our potential products. As a consequence of this enhanced risk, more risk averse investors may, under the fear of losing all or most of their investment in the event of negative news or lack of progress, be more inclined to sell their shares on the market more quickly and at greater discounts than would be the case with the stock of a seasoned issuer. Many of these factors will be beyond our control and may decrease the market price of our common stock, regardless of our operating performance. We cannot make any predictions or projections as to what the prevailing market price for our common stock will be at any time or as to what effect that the sale of shares or the availability of shares for sale at any time will have on the prevailing market price.

In addition, the market price of our common stock could be subject to wide fluctuations in response to:

- quarterly variations in our revenues and operating expenses;
- announcements of new products or services by us;
- fluctuations in interest rates;
- significant sales of our common stock;
- the operating and stock price performance of other companies that investors may deem comparable to us; and
- news reports relating to trends in our markets or general economic conditions.

Shares eligible for future sale may adversely affect the market.

From time to time, certain of our stockholders may be eligible to sell all or some of their shares of common stock by means of ordinary brokerage transactions in the open market pursuant to Rule 144 promulgated under the Securities Act of 1933, as amended, subject to certain limitations. In general, pursuant to Rule 144, a stockholder (or stockholders whose shares are aggregated) who is not an affiliate of our company and who has satisfied a six month holding period may, as long as we are current in our required filings with the SEC, sell securities without further limitation. Rule 144 also permits, under certain circumstances, the sale of securities, without any limitations, by a non-affiliate of our company who has satisfied a one year holding period. Affiliates of our company who have satisfied a six month holding period may sell securities subject to limitations. Any substantial sale of our common stock pursuant to Rule 144 or pursuant to any resale prospectus may have an adverse effect on the market price of our securities. Currently, a substantial majority of our securities are either free trading or subject to the release of trading restrictions under the six month or one year holding periods of Rule 144.

Certain provisions of our Certificate of Incorporation and Delaware law may make it more difficult for a third party to affect a change-in-control.

Our Certificate of Incorporation authorizes the Board of Directors to issue up to 20,000,000 shares of preferred stock and our Board of Directors has created and issued shares of five series of preferred stock that remain outstanding, including Series B, Series D, Series G, Series I-1 and Series I-2 Preferred Stock. The terms of the various series of Preferred Stock include, among other things, voting rights on particular matters (for example, with respect to the Series D Preferred Stock, restricting our ability to undergo a change in control or merge with, or sell assets to, a third party), preferences as to dividends and liquidation, and conversion rights. These preferred stock rights diminish the rights of holders of our common stock, and therefore could reduce the value of such common stock. In addition, as long as shares of our Series B, Series D, Series G, Series I-1 and Series I-2 Preferred Stock remain outstanding, or if our Board creates and issues additional shares of preferred stock in the future with rights that restrict our ability to merge with, or sell assets to, a third party, it could make it more difficult, delay, discourage, prevent or make it more costly to acquire the Company or affect a change-in-control.

The sale or issuance of our common stock to holders of Series I Preferred Stock ("holders") may cause dilution and the sale of the shares of common stock acquired by those holders, or the perception that such sales may occur, could cause the price of our common stock to fall.

On March 9, 2016, we entered into the Securities Purchase Agreement with two institutional investors and Andrey Semechkin, the Company's Chief Executiv Officer and Co-Chairman, pursuant to which Purchasers purchased 6,310 shares of Series I Convertible Preferred Stock initially convertible into approximatel 3.6 million shares of our common stock, in addition to Series A, B, and C Warrants for approximately 10.8 million shares of our common stock, the Series A Warrants being exercisable for 5 years from the date of issuance, the Series B Warrants being exercisable for six months from the date of issuance and the Series C Warrants being exercisable for twelve months from the date of issuance. As of September 30, 2018, we had 5,404 shares of Series I Convertible Preferred Stock outstanding and Series A Warrants for approximately 3.6 million shares of our common stock outstanding. The conversion price of the Preferred Stock and Warrants is subject to certain resets as set forth in the Certificates of Designation and Warrants, including the date of the amendment to the certificate of incorporation with respect to any reverse stock split. Depending on market liquidity at the time, sales of such shares may cause the trading price of our common stock to fall.

The holders may ultimately convert all, some or none of the Series I Convertible Preferred Stock into shares of our common stock, exercise all, some or none of the Series A warrants into shares of our common stock. Such shares acquired by such holders may be sold, as such holders may sell all, some or none of those shares. Therefore, the conversion of the preferred stock and exercise of warrants by such holders will result in substantial dilution to the interests of other holders of our common stock. Additionally, the conversion into a substantial number of shares of our common stock such holders, or the anticipation of such conversion, could make it more difficult for us to sell equity or equity-related securities in the future at a time and at a price that we might otherwise wish to effect sales.

The sale or issuance of a substantial number of shares may adversely affect the market price for our common stock.

The future sale of a substantial number of shares of our common stock in the public market, or the perception that such sales could occur, could significantly and negatively affect the market price for our common stock. We expect that we will likely issue a substantial number of shares of our capital stock in financing transactions in order to fund our operations and the growth of our business. Under these arrangements, we may agree to register the shares for resale soon after their issuance. We may also continue to pay for certain goods and services with equity, which would dilute our current stockholders. Also, sales of the shares issued in this manner could negatively affect the market price of our stock.

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

We have incurred substantial tax losses during our history. Subject to various limitations, we may carryforward unused taxable losses, including those generated in the future, and other available credits to offset any future taxable income until the unused losses or credits expire. Federal and state tax laws impose restrictions on the utilization of net operating loss ("NOL") and tax credit carryforwards in the event of an "ownership change" as defined by Section 382 of the Internal Revenue Code of 1986, as amended ("Section 382"). Generally, an ownership change occurs if the percentage of the value of the stock that is owned by one or more direct or indirect "five percent shareholders" increases by more than 50 percentage points over their lowest ownership percentage at any time during the applicable testing period (typically, three years). Under Section 382 and Section 383, if a corporation undergoes an "ownership change," the corporation's ability to use its pre-change NOL carryforwards and other pre-change tax attributes to offset its post change income may be limited. Because of the cost and complexity involved in the analysis of a Section 382 ownership change and the fact that we do not have any taxable income to offset, we have not undertaken a study to assess whether an "ownership change" has occurred or whether there have been multiple ownership changes since we became a "loss corporation" as defined in Section 382. Future changes in our stock ownership, which may be outside of our control, may trigger an "ownership change." In addition, future equity offerings or acquisitions that have equity as a component of the purchase price could result in an "ownership change." If an "ownership change" has occurred or does occur in the future, our ability to utilize our NOL carryforwards or other tax attributes may be limited, which could result in an increased future tax liability to us.

The exercise of outstanding options and warrants to acquire shares of our common stock would cause additional dilution which could cause the price of our common stock to decline.

In the past, we have issued options and warrants to acquire shares of our common stock. At September 30, 2018, there were 3,951,052 warrants outstanding and 1,570,227 vested and 2,922,462 non-vested stock options outstanding. We may issue additional options, warrants and other types of equity in the future as part of stock-based compensation, capital raising transactions, technology licenses, financings, strategic licenses or other strategic transactions. To the extent these options and warrants are ultimately exercised, existing common stockholders would experience additional dilution which may cause the price of our common stock to decline.

Limitations on director and officer liability and indemnification of our officers and directors by us may discourage stockholders from bringing suit against a director.

Our certificate of incorporation and bylaws provide, with certain exceptions as permitted by governing state law, that a director or officer shall not be personally liable to us or our stockholders for breach of fiduciary duty as a director, except for acts or omissions which involve intentional misconduct, fraud or knowing violation of law, or unlawful payments of dividends. These provisions may discourage stockholders from bringing suit against a director for breach of fiduciary duty and may reduce the likelihood of derivative litigation brought by stockholders on our behalf against a director. In addition, our certificate of incorporation and bylaws may provide for mandatory indemnification of directors and officers to the fullest extent permitted by governing state law.

Compliance with the rules established by the SEC pursuant to Section 404 of the Sarbanes-Oxley Act of 2002 is complex. Failure to comply in a timely manner could adversely affect investor confidence and our stock price.

Rules adopted by the SEC pursuant to Section 404 of the Sarbanes-Oxley Act of 2002 require us to perform an annual assessment of our internal controls ove financial reporting and certify the effectiveness of those controls. The standards that must be met for management to assess the internal controls over financial reporting now in effect are complex, costly and require significant documentation, testing and possible remediation to meet the detailed standards. We may encounter problems or delays in completing activities necessary to make an assessment of our internal controls over financial reporting. If we cannot perform the assessment or certify that our internal controls over financial reporting are effective investor confidence and share value may be negatively impacted.

We do not expect to pay cash dividends in the foreseeable future on our common stock.

We have not historically paid cash dividends on our common stock, and we do not plan to pay cash dividends on our common stock in the foreseeable future.

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.

Item 6. Exhibits

Exhibit Index

Exhibit	Description
3.1	Certificate of Incorporation (incorporated by reference to Exhibit 3.4 of the Registrant's Form 10-SB filed on April 4, 2006, File No. 000-51891).
3.2	Certificate of Amendment of Certificate of Incorporation (incorporated by reference to Exhibit 3.1 of the Registrant's Preliminary Information Statement on Form 14C filed on December 29, 2006, File No. 000-51891).
3.3	Certificate of Amendment of Certificate of Incorporation (incorporated by reference to Exhibit 3.1 of the Registrant's Form 8-K filed on June 4, 2012, File No. 000-51891).
3.4	Certificate of Amendment of Certificate of Incorporation (incorporated by reference to Exhibit 3.1 of the Registrant's Form 8-K filed on May 14, 2014, File No. 000-51891).
3.5	Certificate of Amendment of Certificate of Incorporation (incorporated by reference to Exhibit 3.1 of the Registrant's Form 8-K filed on July 28, 2015, File No. 000-51891).
3.6	Certificate of Amendment of Certificate of Incorporation (incorporated by reference to Exhibit 3.1 of the Registrant's Form 8-K filed on May 19, 2016, File No. 000-51891).
3.7	Amended and Restated Bylaws of the Registrant (incorporated by reference to Exhibit 3.1 of the Registrant's Form 8-K filed on May 6, 2011, File No. 000-51891).
4.1	Form of Specimen Common Stock Certificate (incorporated by reference to Exhibit 4.1 of the Registrant's Form 10-KSB filed on April 9, 2007, File No. 000-51891).
4.2	Certification of Designation of Series B Preferred Stock (incorporated by reference to Exhibit 4.1 of the Registrant's Form 8-K filed on May 12, 2008, File No. 000-51891).
4.3	Certification of Designation of Series D Preferred Stock (incorporated by reference to Exhibit 10.2 of the Registrant's Form 8-K filed on January 5, 2009, File No. 000-51891).
4.4	Certificate of Designation of Series G Preferred Stock (incorporated by reference to Exhibit 3.1 of the Registrant's Form 8-K filed on March 14, 2012, File No. 000-51891).
4.5	Certificate of Preferences, Rights and Limitations of Series I-1 Convertible Preferred Stock (incorporated by reference to Exhibit 3.1 of the Registrant's Form 8-K filed on March 10, 2016, File No. 000-51891).
4.6	Certificate of Preferences, Rights and Limitations of Series I-2 Convertible Preferred Stock (incorporated by reference to Exhibit 3.2 of the Registrant's Form 8-K filed on March 10, 2016, File No. 000-51891).
4.7	Form of Series A Common Stock Purchase Warrant (incorporated by reference to Exhibit 4.1 of the Registrant's Form 8-K filed on March 10, 2016, File No. 000-51891).
4.8	Form of Placement Agent Common Stock Purchase Warrant (incorporated by reference to Exhibit 4.4 of the Registrant's Form 8-K filed on March 10, 2016, File No. 000-51891).
10.1	Form of Note issued on August 8, 2018 (incorporated by reference to Exhibit 10.4 of the Registrant's Form 10-Q filed on August 14, 2018).
31.1	Rule 13a-14(a)/15d-14(a) Certification of Chief Executive Officer.*
31.2	Rule 13a-14(a)/15d-14(a) Certification of Chief Financial Officer.*
32.1	Section 1350 Certification of Chief Executive Officer.*
32.2	Section 1350 Certification of Chief Financial Officer.*
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*

Exhibit	Description
101.LAB	XBRL Taxonomy Extension Label Linkbase Document*
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document*

*Filed herewith

SIGNATURES

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

INTERNATIONAL STEM CELL CORPORATION

Dated: November 14, 2018

By: /s/ ANDREY SEMECHKIN
Name: **Andrey Semechkin**
Title: **Chief Executive Officer**
(Principal Executive Officer)

By: /s/ SOPHIA GARNETTE
Name: **Sophia Garnette**
Title: **Vice President, Legal Affairs and Operations**
(Principal Financial Officer)

Exhibit 31.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER

I, Andrey Semechkin, Chief Executive Officer of International Stem Cell Corporation, certify that:

1. I have reviewed this quarterly report on Form 10-Q of International Stem Cell Corporation;

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

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

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

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

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

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

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

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

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

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

Date: November 14, 2018

By: /s/ Andrey Semechkin
Andrey Semechkin
Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER

I, Sophia Garnette, Vice President, Legal Affairs and Operations of International Stem Cell Corporation, certify that:

1. I have reviewed this quarterly report on Form 10-Q of International Stem Cell Corporation;

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

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

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

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

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

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

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

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

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

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

Date: November 14, 2018

By: /s/ Sophia Garnette
Sophia Garnette
Vice President, Legal Affairs and Operations
(Principal Financial Officer)

Exhibit 32.1

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

In connection with the Quarterly Report on Form 10-Q of International Stem Cell Corporation (the "Company") for the quarter ended September 30, 2018, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Andrey Semechkin, Chief Executive Officer of the Company, hereby certify pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

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

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

Date: November 14, 2018

By: /s/ Andrey Semechkin
Andrey Semechkin
Chief Executive Officer
(Principal Executive Officer)

Exhibit 32.2

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

In connection with the Quarterly Report on Form 10-Q of International Stem Cell Corporation (the "Company") for the quarter ended September 30, 2018, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Sophia Garnette, Vice President, Legal Affairs and Operations of the Company, hereby certify pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

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

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

Date: November 14, 2018

By: /s/ Sophia Garnette
Sophia Garnette
Vice President, Legal Affairs and Operations
(Principal Financial Officer)