UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, DC 20549

FORM 10-K

(Mark One)

☑ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the year ended December 31, 2019

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the transition period from to

Commission File Number 001-36362

BioLife Solutions, Inc.

(Exact name of registrant as specified in its charter)

DELAWARE	**94-3076866**
(State or other jurisdiction of incorporation or organization)	*(IRS Employer Identification No.)*

3303 MONTE VILLA PARKWAY, SUITE 310, BOTHELL, WASHINGTON, 98021
(Address of registrant's principal executive offices, Zip Code)

(425) 402-1400
(Telephone number, including area code)

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

Title of each class	**Trading symbol ($)**	**Name of exchange on which registered**
Common Shares, par value $0.01 per share	BLFS	NASDAQ Capital Market

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark whether the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☑

Indicate by check mark whether the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☑

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

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (S232.405 of this chapter) during the preceding 12 months (or for such shorter period that the Registrant was required to submit such said files). Yes ☑ No ☐

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

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

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

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

As of the registrant’s most recently completed second fiscal quarter, the aggregate market value of common equity (based on closing price on June 28, 2019 of $16.95 per share) held by non-affiliates was approximately $230 million.

As of May 14, 2020, 23,999,516 shares of the registrant’s common stock were outstanding.

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FORWARD LOOKING STATEMENTS

This Annual Report on Form 10-K ("Form 10-K") contains forward-looking statements which are made pursuant to the safe harbor provisions of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). The forward-looking statements in this Form 10-K do not constitute guarantees of future performance and actual results could differ materially from those contained in the forward-looking statements. These statements are based on current expectations of future events. Such statements include, but are not limited to, statements about our products, including our newly acquired products, customers, regulatory approvals, the potential utility of and market for our products and services, our ability to implement our business strategy and anticipated business and operations, in particular following the 2019 acquisitions, future financial and operational performance, our anticipated future growth strategy, including the acquisition of synergistic cell and gene therapy manufacturing tools and services or technologies or other companies or technologies, capital requirements, intellectual property, suppliers, joint venture partners, future financial and operating results, the impact of the COVID-19 pandemic, plans, objectives, expectations and intentions, revenues, costs and expenses, interest rates, outcome of contingencies, business strategies, regulatory filings and requirements, the estimated potential size of markets, capital requirements, the terms of any capital financing agreements and other statements that are not historical facts. You can find many of these statements by looking for words like "believes," "expects," "anticipates," "estimates," "may," "should," "will," "could," "plan," "intend," or similar expressions in this Form 10-K. We intend that such forward-looking statements be subject to the safe harbors created thereby.

These forward-looking statements are based on the current beliefs and expectations of our management and are subject to significant risks and uncertainties. If underlying assumptions prove inaccurate or unknown risks or uncertainties materialize, actual results may differ materially from current expectations and projections. Factors that might cause such a difference include those discussed under "Risk Factors," as well as those discussed elsewhere in the Form 10-K.

You are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date of this Form 10-K or, in the case of documents referred to or incorporated by reference, the date of those documents.

All subsequent written or oral forward-looking statements attributable to us or any person acting on our behalf are expressly qualified in their entirety by the cautionary statements contained or referred to in this section. We do not undertake any obligation to release publicly any revisions to these forward-looking statements to reflect events or circumstances after the date of this Form 10-K or to reflect the occurrence of unanticipated events, except as may be required under applicable U.S. securities law. If we do update one or more forward-looking statements, no inference should be drawn that we will make additional updates with respect to those or other forward-looking statements.

References throughout this Form 10-K to "BioLife Solutions, Inc.", "BioLife", "we", "us", "our", or the "Company" refer to BioLife Solutions, Inc. and its subsidiaries, taken as a whole, unless the context otherwise indicates.

EXPLANATORY NOTE

Certain Information Included in this Form 10-K

This Form 10-K includes restated Consolidated Financial Statements for the year ended December 31, 2018 and for the quarters ended March 31, 2018, June 30, 2018, September 30, 2018, March 31, 2019, June 30, 2019 and September 30, 2019 to reflect adjustments made to account for certain Warrants (as defined below) as a liability. The Warrants were previously recorded as equity as described below. In addition, as further described below, adjustments were made to quarterly results for 2019 related to accounting for certain market-based stock awards and the valuation of contingent consideration, in-process research and development technology, and goodwill for our Astero Bio Corporation ("Astero") acquisition. This Annual Report on Form 10-K for the year ended December 31, 2019 provides restated quarterly data for the quarters ended March 31, 2018, June 30, 2018, September 30, 2018, March 31, 2019, June 30, 2019 and September 30, 2019.

We have not filed and do not intend to file amendments to our previously filed Annual Reports on Form 10-K or Quarterly Reports on Form 10-Q for the periods affected by the restatements of our Consolidated Financial Statements. Accordingly, as disclosed in our Current Report on Form 8-K filed April 30, 2020, the Company's previously issued financial statements for the periods from January 1, 2014 through September 30, 2019, including the Company's previously issued audited financial statements for the year ended December 31, 2018, should no longer be relied upon, nor should any related reports of our then independent registered public accounting firm, Peterson Sullivan LLP, nor any previously furnished or filed reports, earnings releases, guidance, investor presentations, or similar communications of the Company regarding these periods be relied upon. Investors should rely only on the financial information and other disclosures, including the adjusted or restated financial information, included in this Form 10-K and subsequent filings, as applicable.

Background of Restatement

The Company in consultation with its Audit Committee, concluded that its previously issued Consolidated Financial Statements for the periods beginning with the first quarter of 2018 through the third quarter of 2019 (collectively, the "Affected Periods") should be restated because of a misapplication in the guidance around accounting for Warrants and should no longer be relied upon as discussed above (the Audit Committee concluded that it was not necessary to restate the financial statements for any period prior to January 1, 2018). In connection with the restatement of the Consolidated Financial Statements for the Affected Periods, the Audit Committee further concluded to make certain other adjustments to our Consolidated Financial Statement for the periods beginning with the first quarter of 2019 through the third quarter of 2019 – see below and see Note 16: *"Quarterly Financial Information (Unaudited)"* to our Consolidated Financial Statements.

The reclassification of the Warrants did not have any impact on our liquidity, cash flows, revenues or costs of operating our business and the other non-cash adjustments to the Consolidated Financial Statements, in all of the Affected Periods, do not impact the amounts previously reported for the Company's cash and cash equivalents, operating expenses or total cash flows from operations.

The warrants at issue are those certain warrants ("Warrants") to purchase common stock of the Company that we issued to certain investors in a March 2014 public offering pursuant to the Company's Registration Statement on Form S-1 (File No. 333-192880) and pursuant to a note conversion agreement with certain note holders. Following issuance of the Warrants, the Company accounted for the Warrants in its financial statements as equity. The Warrants have an exercise price of $4.75 per share and expire in March 2021 unless previously exercised. A total of 6,910,283 Warrants were issued in March 2014 and, as of December 31, 2019, there were 3,409,005 Warrants outstanding.

Historically, the Warrants were reflected as a component of equity as opposed to liabilities on the balance sheets and the statements of operations did not include the subsequent non-cash changes in estimated fair value of the Warrants in accordance with Accounting Standards Codification 480, "Distinguishing Liabilities from Equity" ("ASC 480"). The Warrants generally provide that, in the event of a fundamental transaction under rule 13(e)-3, the holder may receive cash value for the Warrants calculated using a Black Scholes model with a volatility rate equal to the greater of (i) the historical 100-day look-back period or (ii) 100% equity volatility. As a result, the Warrant cannot be classified within equity according to generally accepted accounting principles. Instead, the Warrants issued by the Company should be recorded as a liability at fair value at the date of grant, and marked to market at each reporting period. Changes in fair value are recorded in earnings.

Also, during the preparation and audit of the Company's Consolidated Financial Statements for fiscal 2019, the Company identified material errors impacting the first, second and third quarters of 2019 related to the valuation of contingent consideration, in-process research and development technology and goodwill for our Astero Bio Corporation ("Astero") acquisition and valuation of market-based restricted stock awards.

COVID-19

The Company is filing this Form 10-K on a delayed basis in accordance with the order (the "Order") promulgated by the Securities and Exchange Commission on March 25, 2020 in Release No. 34-88465 relating to the Exchange Act. The Company was unable to file the Form 10-K in a timely manner because the Seattle area, including the location of the Company's corporate headquarters and its media production facility and warehouse was, and is currently, at an epicenter of the coronavirus outbreak in the United States. The Company has been following the recommendations of local health authorities to minimize exposure risk for its team members for the past several months, including the temporary closures of its offices and having team members work remotely, and, as a result, the Form 10-K was not able to be completed by the filing deadline. Reference is made to our disclosures in this Form 10-K regarding the impact of COVID-19 on the Company, including those disclosures discussed under the heading "Risk Factors" herein.

PART I

ITEM 1. BUSINESS

The following discussion of our business contains forward-looking statements that involve risks and uncertainties. When used in this report, the words "intend," "anticipate," "believe," "estimate," "plan" and "expect" and similar expressions as they relate to us are included to identify forward-looking statements. Our actual results could differ materially from those anticipated in these forward-looking statements and are a result of certain factors, including those set forth under "Risk Factors" and elsewhere in this Form 10-K ("Form 10-K").

References throughout this Form 10-K to "BioLife Solutions, Inc.", "BioLife", "we", "us", "our", or the "Company" refer to BioLife Solutions, Inc. and its subsidiaries, taken as a whole, unless the context otherwise indicates.

Overview

We develop, manufacture and market bioproduction tools to the cell and gene therapy ("C&GT") industry, which are designed to improve quality and de-risk biologic manufacturing and delivery. Our products are used in basic and applied research, and commercial manufacturing of biologic-based therapies. Customers use our products to maintain the health and function of biologic material during sourcing, manufacturing, storage, and distribution of cells and tissues.

We currently operate as one bioproduction tools business with product lines that support several steps in the biologic material manufacturing and delivery process. We have a diversified portfolio of tools that focus on biopreservation, frozen storage, and thawing of biologic materials. We have in-house expertise in cryobiology and continue to capitalize on opportunities to maximize the value of our product platform for our extensive customer base through both organic growth innovations and acquisitions.

Our Products

Our bioproduction tools are comprised of four main product lines

- Biopreservation media
- Automated thawing devices
- Cloud connected "smart" shipping containers
- Freezer and storage technology and related components

Biopreservation media

Our proprietary biopreservation media products, HypoThermosol® FRS and CryoStor®, are formulated to mitigate preservation-induced, delayed-onset cell damage and death, which result when cells and tissues are subjected to reduced temperatures. Our technology can provide our C&GT customers with significant shelf life extension of biologic source material and final cell products, and can also greatly improve post-preservation cell and tissue viability and function. Our biopreservation media is serum-free, protein-free, fully defined, and manufactured under current Good Manufacturing Practices (cGMP). We strive to source wherever possible, the highest available grade, multi-compendium raw materials. We estimate our media products have been incorporated in over 400 customer clinical applications, including numerous chimeric antigen receptor (CAR) T cell and other cell types.

Stability (i.e. shelf-life) and functional recovery are crucial aspects of academic research and clinical practice in the biopreservation of biologic-based source material, intermediate derivatives, and isolated/derived/expanded cellular products and therapies. Limited stability is especially critical in the C&GT field, where harvested cells and tissues will lose viability over time, if not maintained appropriately at normothermic body temperature (37ºC) or stored in a hypothermic state in an effective preservation medium. Chilling (hypothermia) is used to reduce metabolism and delay degradation of harvested cells and tissues. However, subjecting biologic material to hypothermic environments induces damaging molecular stress and structural changes. Although cooling successfully reduces metabolism (i.e., lowers demand for energy), various levels of cellular damage and death occur when using suboptimal methods. Traditional biopreservation media range from simple "balanced salt" (electrolyte) formulations to complex mixtures of electrolytes, energy substrates such as sugars, osmotic buffering agents and antibiotics. The limited stability which results from the use of these traditional biopreservation media formulations is a significant shortcoming that our optimized proprietary products address with great success.

Our scientific research activities over the last 20+ years enabled a detailed understanding of the molecular basis for the hypothermic and cryogenic (low-temperature induced) damage/destruction of cells through apoptosis and necrosis. This research led directly to the development of our HypoThermosol® FRS and CryoStor® technologies. Our proprietary biopreservation media products are specifically formulated to:

- Minimize cell and tissue swelling
- Reduce free radical levels upon formation
- Maintain appropriate low temperature ionic balances
- Provide regenerative, high energy substrates to stimulate recovery upon warming
- Avoid the creation of an acidic state (acidosis)
- Inhibit the onset of apoptosis and necrosis

A key feature of our biopreservation media products is their “fully-defined” profile. All of our cGMP products are serum-free, protein-free and are formulated and filled using aseptic processing. We strive to use USP/Multicompendial grade or the highest quality available synthetic components. All of these features benefit prospective customers by facilitating the qualification process required to incorporate our products into their regulatory filings.

The results of independent testing demonstrate that our biopreservation media products significantly extend shelf-life and improve cell and tissue post-thaw viability and function. Our products have demonstrated improved biopreservation outcomes, including greatly extended shelf-life and post-thaw viability, across a broad array of cell and tissue types.

Competing biopreservation media products are often formulated with simple isotonic media cocktails, animal serum, potentially a single sugar or human protein. A key differentiator of our proprietary HypoThermosol FRS formulation is the engineered optimization of the key ionic component concentrations for low temperature environments, as opposed to normothermic body temperature around 37°C, as found in culture media or saline-based isotonic formulas. Competing cryopreservation freeze media is often comprised of a single permeating cryoprotectant such as dimethyl sulfoxide (“DMSO”). Our CryoStor formulations incorporate multiple permeating and non-permeating cryoprotectant agents which allow for multiple mechanisms of protection and reduces the dependence on a single cryoprotectant. We believe that our products offer significant advantages over in-house formulations, or commercial “generic” preservation media, including, time saving, improved quality of components, more rigorous quality control release testing, more cost effective and improved preservation efficacy.

We estimate that annual revenue from each customer commercial application in which our products are used could range from $0.5 million to $2.0 million, if such application is approved and our customer commences large scale commercial manufacturing of the biologic based therapy.

Automated, Water-Free Thawing Products

In April 2019, we acquired Astero Bio Corporation (“Astero”), to expand our bioprocessing tools portfolio and diversify our revenue streams. The Astero ThawSTAR® line includes automated vial and cryobag thawing products that control the heat and timing of the thawing process of biologic material. Our customizable, automated, water-free thawing products uses algorithmic programmed, heating plates to consistently bring biologic material from a frozen state to a liquid state in a controlled and consistent manner. This helps reduce damage during the temperature transition. The ThawSTAR products can reduce risks of contamination versus using a traditional water bath.

evo® Cloud Connected Shipping Containers

In August 2019, we acquired the remaining shares of SAVSU Technologies, Inc. (“SAVSU”) we did not previously own. SAVSU is a leading developer and supplier of next generation cold chain management tools for cell and gene therapies. The evo.is cloud app allows biologic products to be traced and tracked in real time. Our evo platform consists of rentable cloud-connected shippers and include technologies that enable tracking software provides real-time information on geolocation, payload temperature, ambient temperature, tilt of shipper, humidity, altitude, and real-time alerts when a shipper has been opened. Our internally developed evo.is software allows customers to customize alert notifications both in data measurements and user requirements. The evo Dry Vapor Shipper (“DVS”) is specifically marketed to cell and gene therapies. The evo DVS has improved form factor and ergonomics over the traditional dewar, including extended thermal performance, reduced liquid nitrogen recharge time, improved payload extractors and ability to maintain temperature for longer periods on its side.

We utilize couriers who already have established logistic channels and distribution centers. Our strategy greatly reduces the cash need to build out specialized facilities around the world. Our partnerships with several white glove couriers allow us to scale our sales and marketing effort by utilizing their salesforce. Our courier partnerships market our evo platform to their existing cell and gene therapy customers as a cost effective and innovative solution. We also market directly to our existing and prospective customers who can utilize the evo platform through our courier partnerships.

Liquid Nitrogen Freezer and Storage Devices

In November 2019, we acquired Custom Biogenic Systems, Inc. (“CBS”) a global leader in the design and manufacture of state-of-the-art liquid nitrogen laboratory freezers, cryogenic equipment and accessories. The addition of CBS allows for product line growth, diversification of revenue and reduction of supply chain costs for our evo dry vapor shippers.

Included in CBS’s product line of liquid nitrogen freezers are the Isothermal LN2 freezers, constructed with a patented system which stores liquid nitrogen in a jacketed space in the walls of the freezer. This dry storage method eliminates liquid nitrogen contact with stored specimens, reduces the risk of cross-contamination and provides increased user safety in a laboratory setting. To accommodate customer requirements, we offer customizable features including wide bodied and extended height.

Our freezer offerings also include high capacity rate freezers which are fully customizable to customer needs with temperature range of -180°C to +50°C and freezing rates of 0.01 to 99.9 per minute. Password protected software aids in compliance with 21 CFR Part 11 and unlimited programming capability, these high capacity rate freezers provide a searchable database for freeze run history and allow freeze data to be saved.

To accompany the offerings of cryogenic freezer equipment, we supply equipment for storing critically important biological materials. This storage equipment includes upright freezer racks, chest freezer racks, liquid nitrogen freezer racks, canisters/cassettes and frames as well as laboratory boxes and dividers. Due to our onsite design and manufacturing capability, racks and canisters can be customized to address customers' varying requirements,

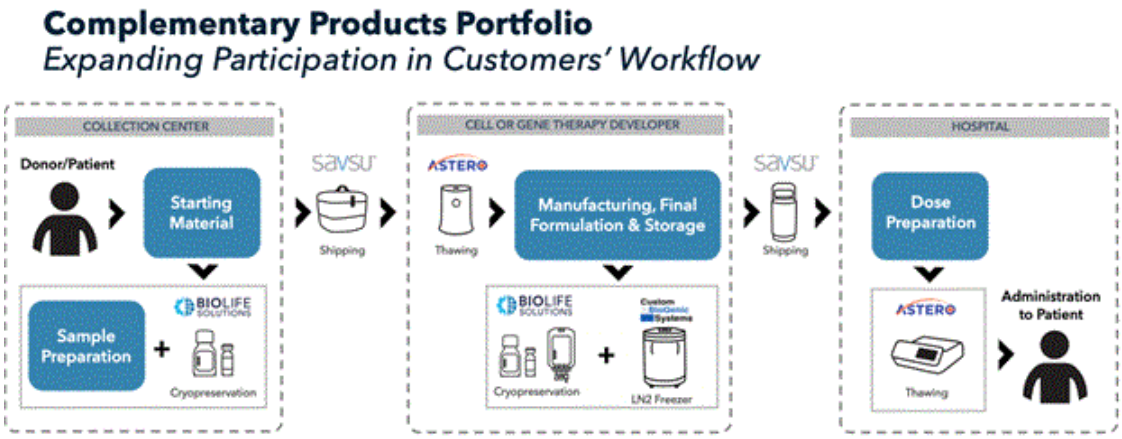
In order to provide customers with a proactive approach to safety and monitoring of equipment containing liquefied gas, CBS offers Versalert, a patented wireless remote asset monitoring system that can monitor and record temperatures from -200°C to +50°C, and monitor and record two additional variables using 0-5v or 4-20mA inputs. With an intelligent mesh network with three times the range of competing products, the system enables customers to view current equipment conditions and receive alarm notification on smartphones, tablets or personal computers and maintain permanent electronic records for regulatory compliance and legal verification.

Our Market Opportunity and Competition

The C&GT market has been rapidly expanding, treating diseases once thought incurable. According to the Alliance for Regenerative Medicine ("ARM") there were currently over 1,000 ongoing clinical trials utilizing regenerative medicine at the end of 2019. ARM also states there were over $9.8 billion in total global financings in the regenerative market in 2019. The FDA predicts five to ten cell and gene therapies per year will be approved. These technologies change the way physicians treat patients. The manufacturing, distribution and the delivery process is significantly different from many other types of medicines and therapies. We believe we are well positioned to address many of the manufacturing difficulties in the process of producing cell and gene therapies.

The Bioproduction Process

Our products currently fulfill several steps in the bioproduction process for cell and gene therapies. See the diagram below from an illustration of this process and our product roles. We now offer products that integrate into the critical steps of preservation, thawing, fixed storage, and transportable storage under controlled conditions.



Our Strategy

We intend to aggressively leverage the numerous relationships with the leading cell and gene therapy companies that use our media products to offer our expanded product portfolio of bioproduction tools. Over the last several years, we have built a strong reputation as a trusted supplier of critical tools used in cell and gene therapy manufacturing. We believe that our relationships and reputation could enable us to drive incremental revenue growth through the sale of additional products to a captive customer base.

Business Operations

Research and Development

Our research and activity is focused on evaluating new potential disruptive technologies which may be applicable throughout the cell and gene therapy manufacturing workflow. We routinely assess and analyze the strengths and weaknesses of competitive products and are typically engaged in business development discussions on an ongoing basis.

Sales and Marketing

We market and sell our products through direct sales and third party distribution. Our products are marketed and distributed by STEMCELL Technologies, MilliporeSigma, VWR, Thermo Fisher and several other regional distributors under non-exclusive agreements. In 2019, sales to third party distributors accounted for 46% of our revenue compared to 33% in 2018. We employ scientific team members in sales and support roles because we believe that is what makes us a trusted and critical supplier to our customers. Our technical application support team consists of individuals with extensive experience in cell processing, biopreservation, freezing and thawing. We have also hired experienced field-based sales and customer care team members to support our growing product portfolio.

In the years 2019 and 2018, we derived approximately 15% of our product revenue from one customer and approximately 29% of our product revenue from two customers, respectively.

The following table represents the Company's total revenue by geographic area (based on the location of the customer):

	Year Ended December 31,	
Revenue by customers' geographic locations	**2019**	**2018**
North America	69%	77%
Canada	16%	13%
Europe, Middle East, Africa (EMEA)	14%	8%
Other	1%	2%
Total revenue	100%	100%

Manufacturing

Biopreservation Media - We maintain and operate two independent cGMP clean room production suites for manufacturing sterile biopreservation media products. Our quality management system ("QMS") was certified to the ISO 13485:2016 standard in 2018. Our QMS is aligned with applicable sections of 21 CFR Part 820 - Quality System Regulation for Good Manufacturing Practice of medical devices, 21 CFR Parts 210 and 211 - cGMP for Finished Pharmaceuticals, FDA Guidance - Sterile Drug Products, Volume 4, EU Guidelines Annex 1 - Manufacture of Sterile Medicinal Products, ISO 13408 - Aseptic Processing of Healthcare Products, and ISO 14644 - Clean Rooms and Associated Controlled Environments. To date, we have not experienced significant difficulties in obtaining raw materials for the manufacture of our biopreservation media products. Pursuant to our supply agreements, we are required to notify customers of any changes to our raw materials.

Automated Thawing – Our ThawSTAR automated, water-free thawing products are produced by a contract manufacturing organization ("CMO") based in the United States. We believe this CMO has the skills, experience and capacity needed to meet our quality standards and demand expectations for the product line.

evo Cold Chain Products – Production of our evo cold chain management hardware products is performed by external CMOs and by personnel in our Albuquerque, New Mexico facility. We are currently engaged in a project to qualify our CBS facility as a secondary supplier of liquid nitrogen dewars for our evo product line.

Freezer and Storage – The majority of our CBS freezers and related accessories are manufactured in our facility in Bruce Township, Michigan. We are reliant on certain critical suppliers for some components.

Support

We provide product support through a combination of channels including phone, web, and email. These support services are delivered by our customer care and scientific teams. These teams are responsible for providing timely, high-quality technical expertise on all our products.

Product Regulatory Status

Our media, thawing and evo products are not subject to any specific United States Food and Drug Administration ("FDA") or other international marketing regulations for drugs, devices, or biologics. We are not required to sponsor formal prospective, controlled clinical-trials in order to establish safety and efficacy. However, to support our current and prospective clinical customers, we manufacture and release our products in compliance with cGMP and other relevant quality standards.

To assist customers with their regulatory applications, we maintain Type II Master Files at the FDA for CryoStor, HypoThermosol FRS, BloodStor 27, and our Cell Thawing Media products, which provide the FDA with information regarding our manufacturing facility and process, our quality system, stability and safety, and any additional testing that has been performed. Customers engaged in clinical and commercial applications may notify the FDA of their intention to use our products in their product development and manufacturing process by requesting a cross-reference to our master files.

One freezer in our Customer Biogenic Systems product line is currently regulated as a Class 2 medical device in the EU.

Intellectual Property

The following table lists our granted and pending patents. We have also obtained certain trademarks and tradenames for our products to distinguish our genuine products from our competitors' products and we maintain certain details about our processes, products, and strategies as trade secrets. While we believe that the protection of patents and trademarks is important to our business, we also rely on a combination of trade secrets, nondisclosure and confidentiality agreements, scientific expertise and continuing technological innovation to maintain our competitive position. Despite these precautions, it may be possible for unauthorized third parties to copy certain aspects of our products and/or to obtain and use information that we regard as proprietary (see "Item 1A. Risk Factors" of this Annual Report for additional details). The laws of some foreign countries in which we may sell our products do not protect our proprietary rights to the same extent as do the laws of the United States.

	Issued Patents	Patents Applied For	Registered Trademarks
Biopreservation media	29	1	10
Automated thawing	6	16	7
evo cold chain	9	7	7
Freezers and accessories	6	7	6
Total	**50**	**31**	**30**

Employees

As of May 1, 2020, we had 151 full time employees and 7 part-time employees. Our employees are not covered by any collective bargaining agreement. We consider relations with our employees to be good.

Corporate History

We were incorporated in Delaware in 1987 under the name Trans Time Medical Products, Inc. In 2002, the Company, then known as Cryomedical Sciences, Inc. was engaged in manufacturing and marketing cryosurgical products. It completed a merger with our wholly-owned subsidiary, BioLife Solutions, Inc., which was engaged as a developer and marketer of biopreservation media products for cells and tissues. Following the merger, we changed our name to BioLife Solutions, Inc.

Principal Offices; Available Information

Our principal executive offices are located at 3303 Monte Villa Parkway, Suite 310, Bothell, Washington 98021 and the telephone number is (425) 402-1400. We maintain a website at www.biolifesolutions.com. The information contained on or accessible through our website is not part of this Annual Report on Form 10-K and is not incorporated in any manner into this Annual Report. Our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and amendments to reports filed or furnished pursuant to Sections 13(a) and 15(d) of the Securities Exchange Act of 1934 (the "Exchange Act"), are available free of charge on our website as soon as reasonably practicable after we electronically file such reports with, or furnish those reports to, the Securities and Exchange Commission (the "SEC"). The SEC also maintains an Internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC at http://www.sec.gov.

ITEM 1A. RISK FACTORS

Investing in our common stock involves a high degree of risk. You should consider carefully the risks and uncertainties described below, together with all of the other information contained in this Annual Report, before deciding to invest in our common stock. If any of the following risks materialize, our business, financial condition, results of operation and prospects will likely be materially and adversely affected. In that event, the market price of our common stock could decline and you could lose all or part of your investment.

The majority of our net product revenue come from a relatively small number of customers and products in a limited number of market sectors; if we lose any of these customers or if there are problems in those market sectors, our net product revenue and operating results could decline significantly.

In the years ended December 31, 2019 and 2018, we derived approximately 15% of our revenue from one distributor and approximately 29% of our revenue from two customers, respectively. No other customer accounted for more than 10% of revenue in the years ended December 31, 2019 or 2018. In the years ended December 31, 2019 and 2018, we derived approximately 73% and 88% of our revenue from CryoStor products, respectively. Due to our acquisitions in 2019, we expect both our revenue concentration related to CryoStor, and our customer concentration to be reduced for the year ended December 31, 2020. Our principal customers may vary from period to period and such customers may not continue to purchase products from us at current levels or at all (particularly as a result of the COVID-19 pandemic). Further, the inability of some of our customers to consummate anticipated purchases of our products due to changes in end-user demand, and other unpredictable factors that may affect customer ordering patterns could lead to significant reductions in net product revenue which could harm our business. Because our revenue and operating results are difficult to predict (particularly as a result of the COVID-19 pandemic), we believe that period-to-period comparisons of our results of operations are not a good indicator of our future performance. Additionally, if revenue declines in a quarter, whether due to a delay in recognizing expected revenue, adverse economic conditions, the COVID-19 pandemic or otherwise, our results of operations will be harmed because many of our expenses are relatively fixed. In particular, a large portion of our manufacturing costs, our research and development, sales and marketing and general and administrative expenses are not significantly affected by variations in revenue. Further, our cost of product revenue is dependent on product mix. If our quarterly operating results fail to meet investor expectations, the price of our common stock may decline.

We expect our operating results to fluctuate significantly from period to period.

Following our acquisitions in 2019, we have increased our fixed costs and now sell products having higher costs of product revenue than our biopreservation media products. We expect that the result of these acquisitions will make it more difficult to predict our revenue and operating results from period-to-period and that, as a result, comparisons of our results of operations are not currently and will not be for the foreseeable future a good indicator of our future performance. For example, if revenue declines in a quarter, whether due to a delay in recognizing expected revenue, adverse economic conditions, the COVID-19 pandemic or otherwise, our results of operations will be harmed because many of our expenses are now relatively fixed. In particular, a large portion of our manufacturing costs, research and development expenses, sales and marketing expenses and general and administrative expenses are not significantly affected by variations in revenue. Further, a shift in product revenue concentration away from our CryoStor products and towards our new products with higher costs of product revenue will adversely affect our operating margin. If our quarterly operating results fail to meet investor expectations, the price of our common stock may decline.

We may engage in future acquisitions or strategic transactions which may require us to seek additional financing or financial commitments, increase our expenses and/or present significant distractions to our management.

In fiscal 2019, we acquired three companies and made investments in two other companies. We are continuing to actively evaluate opportunities to grow our portfolio of cell and gene therapy tools. In the event we engage in an acquisition or strategic transaction, including by making an investment in another company, we may need to acquire additional financing. Obtaining financing through the issuance or sale of additional equity and/or debt securities, if possible, may not be at favorable terms and may result in additional dilution to our current stockholders. Additionally, any such transaction may require us to incur non-recurring or other charges, may increase our near and long-term expenditures and may pose significant integration challenges or disrupt our management or business, which could adversely affect our operations and financial results. For example, an acquisition or strategic transaction may entail numerous operational and financial risks, including the risks outlined above and additionally:

- exposure to unknown liabilities;
- disruption of our business and diversion of our management's time and attention in order to develop acquired products or technologies;
- higher than expected acquisition and integration costs;
- write-downs of assets or goodwill or impairment charges;
- increased amortization expenses;
- difficulty and cost in combining the operations and personnel of any acquired businesses with our operations and personnel;
- impairment of relationships with key suppliers or customers of any acquired businesses due to changes in management and ownership; and
- inability to retain key employees of any acquired businesses.

Accordingly, although there can be no assurance that we will undertake or successfully complete any transactions of the nature described above, and any transactions that we do complete could have a material adverse effect on our business, results of operations, financial condition and prospects.

If intangible assets and goodwill that we recorded in connection with our acquisitions become impaired, we may have to take significant charges against earnings.

In connection with the accounting for our completed acquisitions in 2019, we recorded a significant amount of intangible assets, including developed technology and customer relationships relating to the acquired product lines, and goodwill. Under U.S. GAAP, we must assess, at least annually and potentially more frequently, whether the value of intangible assets and goodwill has been impaired. Intangible assets and goodwill will be assessed for impairment in the event of an impairment indicator. Any reduction or impairment of the value of intangible assets and goodwill will result in a charge against earnings, which could materially adversely affect our results of operations and shareholders' equity in future periods.

Our acquisitions expose us to risks that could adversely affect our business, and we may not achieve the anticipated benefits of acquisitions of businesses or technologies.

As a part of our growth strategy, we may make selected acquisitions of complementary products and/or businesses. Any acquisition involves numerous risks and operational, financial, and managerial challenges, including the following, any of which could adversely affect our business, financial condition, or results of operations:

- difficulties in integrating new operations, technologies, products, and personnel;
- problems maintaining uniform procedures, controls and policies with respect to our financial accounting systems;
- lack of synergies or the inability to realize expected synergies and cost-savings;
- difficulties in managing geographically dispersed operations, including risks associated with entering foreign markets in which we have no or limited prior experience;
- underperformance of any acquired technology, product, or business relative to our expectations and the price we paid;
- negative near-term impacts on financial results after an acquisition, including acquisition-related earnings charges;
- the potential loss of key employees, customers, and strategic partners of acquired companies;
- claims by terminated employees and shareholders of acquired companies or other third parties related to the transaction;
- the assumption or incurrence of additional debt obligations or expenses, or use of substantial portions of our cash;
- the issuance of equity securities to finance or as consideration for any acquisitions that dilute the ownership of our stockholders;
- the issuance of equity securities to finance or as consideration for any acquisitions may not be an option if the price of our common stock is low or volatile which could preclude us from completing any such acquisitions;
- diversion of management's attention and company resources from existing operations of the business;
- inconsistencies in standards, controls, procedures, and policies;
- the impairment of intangible assets as a result of technological advancements, or worse-than-expected performance of acquired companies;
- assumption of, or exposure to, historical liabilities of the acquired business, including unknown contingent or similar liabilities that are difficult to identify or accurately quantify; and
- risks associated with acquiring intellectual property, including potential disputes regarding acquired companies' intellectual property.

In addition, the successful integration of acquired businesses requires significant efforts and expense across all operational areas, including sales and marketing, research and development, manufacturing, finance, legal, and information technologies. There can be no assurance that any of the acquisitions we may make will be successful or will be, or will remain, profitable. Our failure to successfully address the foregoing risks may prevent us from achieving the anticipated benefits from any acquisition in a reasonable time frame, or at all.

Healthcare reform measures could adversely affect our business.

The efforts of governmental and third-party payors to contain or reduce the costs of healthcare may adversely affect the business and financial condition of pharmaceutical and biotechnology companies, including ours. Specifically, in both the United States and some foreign jurisdictions, there have been a number of legislative and regulatory proposals to change the healthcare system in ways that could affect our ability to sell our products profitably. Efforts by governments and other third-party payors to contain or reduce the costs of healthcare through various means may limit our commercial opportunities and adversely affect our operating results and result in a decrease in the price of our common stock or limit our ability to raise capital.

If our products do not perform as expected or the reliability of the technology on which our products are based is questioned, we could experience lost revenue, delayed or reduced market acceptance of our products, increased costs and damage to our reputation.

Our success depends on the market's confidence that we can provide reliable, high-quality products to our customers. We believe that customers in our target markets are likely to be particularly sensitive to product defects and errors. Our reputation and the public image of our products and technologies may be impaired if our products fail to perform as expected. Although our products are tested prior to shipment, defects or errors could nonetheless occur in our products. In the future, if our products experience, or are perceived to experience, a material defect or error, this could result in loss or delay of revenues, delayed market acceptance, damaged reputation, diversion of development resources, legal claims, increased insurance costs or increased service and warranty costs, any of which could harm our business. Such defects or errors could also narrow the scope of the use of our products, which could hinder our success in the market. Even after any underlying concerns or problems are resolved, any lingering concerns in our target market regarding our technology or any manufacturing defects or performance errors in our products could continue to result in lost revenue, delayed market acceptance, damaged reputation, increased service and warranty costs and claims against us.

We face significant competition.

The life sciences industry is highly competitive. We anticipate that we will continue to face increased competition as existing companies may choose to develop new or improved products and as new companies could enter the market with new technologies, any of which could compete with our product or even render our products obsolete. Many of our competitors are significantly larger than us and have greater financial, technical, research, marketing, sales, distribution and other resources than us. There can be no assurance that our competitors will not succeed in developing or marketing technologies and products that are more effective or commercially attractive than any that are being developed or marketed by us, or that such competitors will not succeed in obtaining regulatory approval, or introducing or commercializing any such products, prior to us. Such developments could have a material adverse effect on our business, financial condition and results of operations. Also, even if we can compete successfully, there can be no assurance that we can continue do so in a profitable manner.

We are dependent on outside suppliers for all our manufacturing supplies.

We rely on outside suppliers for all our manufacturing supplies, parts and components. Although we believe we could develop alternative sources of supply for most of these components within a reasonable period of time, there can be no assurance that, in the future, our current or alternative sources will be able to meet all our demands on a timely basis, particularly given the uncertainty surrounding the COVID-19 pandemic. Unavailability of necessary components could require us to re-engineer our products to accommodate available substitutions, which could increase costs to us and/or have a material adverse effect on manufacturing schedules, products performance and market acceptance. In addition, an uncorrected defect or supplier's variation in a component or raw material, either unknown to us or incompatible with our manufacturing process, could harm our ability to manufacture products. We might not be able to find a sufficient alternative supplier in a reasonable amount of time, or on commercially reasonable terms, if at all. If we fail to obtain a supplier for the components of our products, our operations could be disrupted.

Our success will depend on our ability to attract and retain key personnel.

In order to execute our business plan, we must attract, retain and motivate highly qualified managerial, scientific, manufacturing, and sales personnel. If we fail to attract and retain skilled scientific and sales personnel, our sales efforts will be hindered. Our future success depends to a significant degree upon the continued services of key scientific and technical personnel. If we do not attract and retain qualified personnel, we will not be able to achieve our growth objectives.

Difficulties in manufacturing could have an adverse effect upon our expenses and our product revenues.

We currently manufacture all of our biopreservation media products, freezer products and related components. We currently outsource most of the manufacturing of our ThawSTAR and evo products. The manufacturing of our products is difficult and complex. To support our current and prospective clinical customers, we comply with and intend to continue to comply with cGMP in the manufacture of our products. Our ability to adequately manufacture and supply our products in a timely matter is dependent on the uninterrupted and efficient operation of our facilities and those of third-parties producing raw materials and supplies upon which we rely in our manufacturing. The manufacture of our products may be impacted by:

- availability or contamination of raw materials and components used in the manufacturing process, particularly those for which we have no other source or supplier;
- the ongoing capacity of our facilities;
- our ability to comply with new regulatory requirements, including our ability to comply with cGMP;
- inclement weather and natural disasters;
- changes in forecasts of future demand for product components;
- potential facility contamination by microorganisms or viruses;
- updating of manufacturing specifications;
- product quality success rates and yields; and
- global viruses and pandemics, including the current COVID-19 pandemic.

If efficient manufacture and supply of our products is interrupted, we may experience delayed shipments or supply constraints. If we are at any time unable to provide an uninterrupted supply of our products to customers, our customers may be unable to supply their end-products incorporating our products to their patients and other customers, which could materially and adversely affect our product revenue and results of operations.

While we are not currently subject to FDA or other regulatory approvals on our products, if we become subject to regulatory requirements, the manufacture and sale of our products may be delayed or prevented, or we may become subject to increased expenses.

None of our products are subject to FDA. In particular, we are not required to sponsor formal prospective, controlled clinical-trials to establish safety and efficacy. Additionally, we comply with cGMP requirements. This is done solely to support our current and prospective clinical customers. However, there can be no assurance that we will not be required to obtain approval from the FDA, or foreign regulatory authorities, as applicable, prior to marketing any of our products in the future. Any such requirements could delay or prevent the sale of our products or may subject us to additional expenses.

Expiration of our patents may subject us to increased competition and reduce our opportunity to generate product revenue.

The patents for our products have varying expiration dates and, when these patents expire, we may be subject to increased competition and we may not be able to recover our development costs. In some of the larger economic territories, such as the United States and Europe, patent term extension/restoration may be available. We cannot, however, be certain that an extension will be granted or, if granted, what the applicable time or the scope of patent protection afforded during any extended period will be. If we are unable to obtain patent term extension/restoration or some other exclusivity, we could be subject to increased competition and our opportunity to establish or maintain product revenue could be substantially reduced or eliminated. Furthermore, we may not have sufficient time to recover our development costs prior to the expiration of our U.S. and non-U.S. patents.

US Patent 6,045,990, which provides patent coverage relating to HypoThermosol FRS, expired in April 2019, and its foreign patent counterparts expired in July 2019. This may reduce the barrier to entry for competition for this product, which may materially affect the pricing of HypoThermosol FRS and our ability to retain market share. We hold various trade secrets and other confidential know-how related to the manufacturing and testing of our products which limit our exposure to the expiration of US patent 6,045,990.

Our proprietary rights may not adequately protect our technologies and products.

Our commercial success will depend on our ability to obtain patents and/or regulatory exclusivity and maintain adequate protection for our technologies and products in the United States and other countries. We will be able to protect our proprietary rights from unauthorized use by third parties only to the extent that our proprietary technologies and products are covered by valid and enforceable patents or are effectively maintained as trade secrets.

We intend to apply for additional patents covering both our technologies and products, as we deem appropriate. We may, however, fail to apply for patents on important technologies or products in a timely fashion, if at all. Our existing patents and any future patents we obtain may not be sufficiently broad to prevent others from practicing our technologies or from developing competing products and technologies. In addition, the patent positions of life science industry companies are highly uncertain and involve complex legal and factual questions for which important legal principles remain unresolved. As a result, the validity and enforceability of our patents cannot be predicted with certainty. In addition, we cannot guarantee that:

- we were the first to make the inventions covered by each of our issued patents and pending patent applications;
- we were the first to file patent applications for these inventions;
- others will not independently develop similar or alternative technologies or duplicate any of our technologies;
- any of our pending patent applications will result in issued patents;
- any of our patents will be valid or enforceable;
- any patents issued to us will provide us with any competitive advantages, or will not be challenged by third parties; and
- we will develop additional proprietary technologies that are patentable, or the patents of others will not have an adverse effect on our business.

The actual protection afforded by a patent varies on a product-by-product basis, from country to country and depends on many factors, including the type of patent, the scope of its coverage, the availability of regulatory related extensions, the availability of legal remedies in a particular country and the validity and enforceability of the patents. Our ability to maintain and solidify our proprietary position for our products will depend on our success in obtaining effective claims and enforcing those claims once granted. Our issued patents and those that may be issued in the future, or those licensed to us, may be challenged, invalidated, unenforceable or circumvented, and the rights granted under any issued patents may not provide us with proprietary protection or competitive advantages against competitors with similar products. We also rely on trade secrets to protect some of our technology, especially where it is believed that patent protection is inappropriate or unobtainable. However, trade secrets are difficult to maintain. While we use reasonable efforts to protect our trade secrets, our employees, consultants, contractors or scientific and other advisors may unintentionally or willfully disclose our proprietary information to competitors. Enforcement of claims that a third party has illegally obtained and is using trade secrets is expensive, time consuming and uncertain. In addition, non-U.S. courts are sometimes less willing than U.S. courts to protect trade secrets. If our competitors independently develop equivalent knowledge, methods and know-how, we would not be able to assert our trade secrets against them and our business could be harmed.

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

Filing, prosecuting and defending patents on all our products in every jurisdiction would be prohibitively expensive. Competitors may use our technologies in jurisdictions where we have not obtained patent protection to develop their own products. These products may compete with our products and may not be covered by any patent claims or other intellectual property rights.

The laws of some non-U.S. countries do not protect intellectual property rights to the same extent as the laws of the United States, and many companies have encountered significant problems in protecting and defending such rights in foreign jurisdictions. The legal systems of certain countries, particularly certain developing countries, do not favor the enforcement of patents and other intellectual property protection, particularly those relating to biotechnology, which could make it difficult for us to stop the infringement of our patents. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial cost and divert our efforts and attention from other aspects of our business.

If we fail to protect our intellectual property rights, our competitors may take advantage of our ideas and compete directly against us.

Our success will depend to a significant degree on our ability to secure and protect intellectual property rights and enforce patent and trademark protections relating to our technology. While we believe that the protection of patents and trademarks is important to our business, we also rely on a combination of copyright, trade secret, nondisclosure and confidentiality agreements, know-how and continuing technological innovation to maintain our competitive position. From time to time, litigation may be advisable to protect our intellectual property position. However, these legal means afford only limited protection and may not adequately protect our rights or permit us to gain or keep any competitive advantage. Any litigation in this regard could be costly, and it is possible that we will not have sufficient resources to fully pursue litigation or to protect our intellectual property rights. This could result in the rejection or invalidation of our existing and future patents. Any adverse outcome in litigation relating to the validity of our patents, or any failure to pursue litigation or otherwise to protect our patent position, could materially harm our business and financial condition. In addition, confidentiality agreements with our employees, consultants, customers, and key vendors may not prevent the unauthorized disclosure or use of our technology. It is possible that these agreements will be breached or that they will not be enforceable in every instance, and that we will not have adequate remedies for any such breach. Enforcement of these agreements may be costly and time consuming. Furthermore, the laws of foreign countries may not protect our intellectual property rights to the same extent as the laws of the United States.

We may incur substantial costs as a result of litigation or other proceedings relating to patent and other intellectual property rights and we may be unable to protect our rights to, or use of, our technology.

If we choose to go to court to stop someone else from using the inventions claimed in our patents or our licensed patents, that individual or company has the right to ask the court to rule that these patents are invalid and/or should not be enforced against that third party. These lawsuits are expensive and would consume time and other resources even if we were successful in stopping the infringement of these patents. In addition, there is a risk that the court will decide that these patents are invalid or unenforceable and that we do not have the right to stop the other party from using the inventions. There is also the risk that, even if the validity or enforceability of these patents is upheld, the court will refuse to stop the other party on the grounds that such other party's activities do not infringe our rights.

If we wish to use the technology claimed in issued and unexpired patents owned by others, we will need to obtain a license from the owner, enter into litigation to challenge the validity or enforceability of the patents or incur the risk of litigation in the event that the owner asserts that we infringed its patents. The failure to obtain a license to technology or the failure to challenge an issued patent that we may require to discover, develop or commercialize our products may have a material adverse effect on us.

If a third party asserts that we infringed its patents or other proprietary rights, we could face a number of risks that could seriously harm our results of operations, financial condition and competitive position, including:

- patent infringement and other intellectual property claims, which would be costly and time consuming to defend, whether or not the claims have merit, and which could delay a product and divert management's attention from our business;
- substantial damages for past infringement, which we may have to pay if a court determines that our product or technologies infringe a competitor's patent or other proprietary rights;
- a court prohibiting us from selling or licensing our technologies unless the third party licenses its patents or other proprietary rights to us on commercially reasonable terms, which it is not required to do; and
- if a license is available from a third party, we may have to pay substantial royalties or lump-sum payments or grant cross licenses to our patents or other proprietary rights to obtain that license.

The biotechnology industry has produced a proliferation of patents, and it is not always clear to industry participants, including us, which patents cover various types of products or methods of use. The coverage of patents is subject to interpretation by the courts, and the interpretation is not always uniform. If we are sued for patent infringement, we would need to demonstrate that our products or methods of use either do not infringe the patent claims of the relevant patent, and/or that the patent claims are invalid, and/or that the patent is unenforceable, and we may not be able to do this. Proving invalidity, in particular, is difficult since it requires a showing of clear and convincing evidence to overcome the presumption of validity enjoyed by issued patents.

U.S. patent laws as well as the laws of some foreign jurisdictions provide for provisional rights in published patent applications beginning on the date of publication, including the right to obtain reasonable royalties, if a patent subsequently issues and certain other conditions are met.

Because some patent applications in the United States may be maintained in secrecy until the patents are issued, because patent applications in the United States and many foreign jurisdictions are typically not published until 18 months after filing, and because publications in the scientific literature often lag behind actual discoveries, we cannot be certain that others have not filed patent applications for technology covered by our issued patents or our pending applications, or that we were the first to invent the technology.

Patent applications filed by third parties that cover technology similar to ours may have priority over our patent applications and could further require us to obtain rights to issued patents covering such technologies. If another party files a U.S. patent application on an invention similar to ours, we may elect to participate in or be drawn into an interference proceeding declared by the U.S. Patent and Trademark Office to determine priority of invention in the United States. The costs of these proceedings could be substantial, and it is possible that such efforts would be unsuccessful, resulting in a loss of our U.S. patent position with respect to such inventions. Some of our competitors may be able to sustain the costs of complex patent litigation more effectively than we can because they have substantially greater resources. In addition, any uncertainties resulting from the initiation and continuation of any litigation could have a material adverse effect on our ability to raise the funds necessary to continue our operations. We cannot predict whether third parties will assert these claims against us, or whether those claims will harm our business. If we are forced to defend against these claims, whether they are with or without any merit and whether they are resolved in favor of or against us, we may face costly litigation and diversion of management's attention and resources. As a result of these disputes, we may have to develop costly non-infringing technology, or enter into licensing agreements. These agreements, if necessary, may be unavailable on terms acceptable to us, if at all, which could seriously harm our business or financial condition.

Our inability to protect our systems and data from continually evolving cybersecurity risks or other technological risks, including as a result of breaches of our associated third parties, could affect our ability to conduct our business.

In conducting our business, we process, transmit and store sensitive business information and personal information about our customers, vendors, and other parties. This information may include account access credentials, credit and debit card numbers, bank account numbers, social security numbers, driver's license numbers, names and addresses and other types of sensitive business or personal information. Some of this information is also processed and stored by our third-party service providers to whom we outsource certain functions and other agents, including our customers, which we refer to collectively as our associated third parties.

We are a regular target of malicious third-party attempts to identify and exploit system vulnerabilities, and/or penetrate or bypass our security measures, in order to gain unauthorized access to our networks and systems or those of our associated third parties. Such access could lead to the compromise of sensitive, business, personal or confidential information. As a result, we proactively employ multiple methods at different layers of our systems to defend our systems against intrusion and attack and to protect the data we collect. However, we cannot be certain that these measures will be successful and will be sufficient to counter all current and emerging technology threats that are designed to breach our systems in order to gain access to confidential information.

Our computer systems and our associated third parties' computer systems could be in the future, subject to breach, and our data protection measures may not prevent unauthorized access. The techniques used to obtain unauthorized access, disable or degrade service, or sabotage systems change frequently and are often difficult to detect. Threats to our systems and our associated third parties' systems can derive from human error, fraud or malice on the part of employees or third parties, or may result from accidental technological failure. Computer viruses and other malware can be distributed and could infiltrate our systems or those of our associated third parties. In addition, denial of service or other attacks could be launched against us for a variety of purposes, including to interfere with our services or create a diversion for other malicious activities. Our defensive measures may not prevent downtime, unauthorized access or use of sensitive data. Further, while we select our third party service providers carefully, and we seek to ensure that our customers adequately protect their systems and data, we do not control their actions and are not able to oversee their processes. Any problems experienced by our associated third parties, including those resulting from breakdowns or other disruptions in the services provided by such parties or cyber-attacks and security breaches, could adversely affect our ability to conduct our business and our financial condition.

We could also be subject to liability for claims relating to misuse of personal information, such as violation of data privacy laws. We cannot provide assurance that the contractual requirements related to security and privacy that we impose on our service providers who have access to customer data will be followed or will be adequate to prevent the unauthorized use or disclosure of data. Any failure to adequately enforce or provide these protective measures could result in liability, protracted and costly litigation, governmental intervention and fines.

The market for our common stock is limited and our stock price is volatile.

Our common stock, traded on the NASDAQ Capital Market, is volatile and has experienced price and volume fluctuations.

The market prices of many publicly traded companies, including emerging companies in the life sciences industry, have been, and can be expected to be, highly volatile. The future market price of our common stock could be significantly impacted by numerous factors, including, but not limited to:

- Future sales of our common stock or other fundraising events;
- Sales of our common stock by existing shareholders;
- Changes in our capital structure, including stock splits or reverse stock splits;
- Announcements of technological innovations for new commercial products by our present or potential competitors;
- Developments concerning proprietary rights;
- Adverse results in our field or with clinical tests of our products in customer applications;
- Adverse litigation;
- Unfavorable legislation or regulatory decisions;
- Public concerns regarding our products;
- Variations in quarterly operating results;
- General trends in the health care industry;
- Global viruses, epidemics and pandemics, including the current COVID-19 pandemic; and
- Other factors outside of our control, including significant market fluctuations.

A significant percentage of our outstanding common stock is held by two stockholders, and these stockholders therefore have significant influence on us and our corporate actions.

As of December 31, 2019, two of our existing stockholders, Taurus4757 GmbH ("Taurus") and WAVI Holdings AG ("WAVI"), owned, collectively, 4.7 million shares of our common stock, representing 22% of the issued and outstanding shares of common stock and warrants to purchase 3.9 million shares of our common stock and options to purchase 68,000 shares of our common stock. Taurus and WAVI were previously secured lenders to our Company, and the chairman of Taurus, Mr. Girschweiler, is a member of our board of directors. Accordingly, these stockholders have had, and will continue to have, significant influence in determining the outcome of any corporate transaction or other matter submitted to the stockholders for approval, including mergers, consolidations and the sale of all or substantially all our assets, election of directors and other significant corporate actions. In addition, without the consent of these stockholders, we could be prevented from entering into transactions that could be beneficial to us.

Anti-takeover provisions in our charter documents and under Delaware law could make a third-party acquisition of us difficult.

Our amended and restated certificate of incorporation and amended and restated bylaws contain provisions that may discourage unsolicited takeover proposals that stockholders may consider to be in their best interests. These provisions include the ability of our board to designate the terms of and issue new series of preferred stock without stockholder approval and to amend our bylaws without stockholder approval. Further, as a Delaware corporation, we are subject to Section 203 of the Delaware General Corporation Law, which generally prohibits a Delaware corporation from engaging in any business combination with any interested stockholder for a period of three years following the date that the stockholder became an interested stockholder, unless certain specific requirements are met as set forth in Section 203. Collectively, these provisions could make a third-party acquisition of us difficult or could discourage transactions that otherwise could involve payment of a premium over prevailing market prices for our common stock.

Any future sales of our securities in the public markets may cause the trading price of our common stock to decline and could impair our ability to raise capital through future equity offerings.

Sales of a substantial number of shares of our common stock or other securities in the public markets, or the perception that these sales may occur, could cause the market price of our common stock or other securities to decline and could materially impair our ability to raise capital through the sale of additional securities. In addition to the 3.9 million warrants to purchase shares of our common stock owned by Taurus and WAVI, we have an additional 88,000 warrants exercisable to purchase shares of common stock outstanding which will be freely tradable upon exercise. We have agreed to use our best efforts to keep a registration statement registering the issuance and resale of many such shares effective during the term of the warrants. In addition, we have a significant number of shares of our common stock reserved for issuance pursuant to other outstanding options and rights. If such shares are issued upon exercise of options, warrants or other rights, or if we issue additional securities in a public offering or a private placement, such sales or any resales of such securities could further adversely affect the market price of our common stock. The sale of a large number of shares of our common stock or other securities also might make it more difficult for us to sell equity or equity-related securities in the future at a time and at the prices that we deem appropriate.

Securities or industry analysts may not publish favorable research or reports about our business or may publish no information, which could cause our stock price or trading volume to decline.

The trading market for our common stock is influenced by the research and reports that industry or securities analysts publish about us and our business. We do not have any control over these analysts and we cannot provide any assurance that analysts will cover us or provide favorable coverage. If any of the analysts who cover us issue an adverse opinion regarding our stock price, our business or stock price would likely decline. If one or more of these analyst cease coverage of our company or fail to regularly publish reports covering us, we could lose visibility in the market, which in turn could cause our stock price or trading volume to decline.

We do not anticipate declaring any cash dividends on our common stock.

We have never declared or paid cash dividends on our common stock and do not plan to pay any cash dividends in the near future. Our current policy is to retain all funds and earnings for use in the operation and expansion of our business.

Changes in accounting standards and subjective assumptions, estimates, and judgments by management related to complex accounting matters could significantly affect our financial results or financial condition.

Generally accepted accounting principles and related accounting pronouncements, implementation guidelines, and interpretations with regard to a wide range of matters that are relevant to our business, such as revenue recognition, asset impairment and fair value determinations, inventories, business combinations and intangible asset valuations, leases, and litigation, are highly complex and involve many subjective assumptions, estimates, and judgments. Changes in these rules or their interpretation or changes in underlying assumptions, estimates, or judgments could significantly change our reported or expected financial performance or financial condition and could require us to restate our prior financial statements and issue a non-reliance statement regarding our prior financial disclosures.

Our ability to use net operating loss and tax credit carryforwards and certain built-in losses to reduce future tax payments is limited by provisions of the Internal Revenue Code, and it is possible that certain transactions or a combination of certain transactions may result in material additional limitations on our ability to use our net operating loss and tax credit carryforwards.

Section 382 and 383 of the Internal Revenue Code of 1986, as amended, contain rules that limit the ability of a company that undergoes an ownership change, which is generally any change in ownership of more than 50% of its stock over a three-year period, to utilize its net operating loss and tax credit carryforwards and certain built-in losses recognized in years after the ownership change. These rules generally operate by focusing on ownership changes involving stockholders owning directly or indirectly 5% or more of the stock of a company and any change in ownership arising from a new issuance of stock by the company. Generally, if an ownership change occurs, the yearly taxable income limitation on the use of net operating loss and tax credit carryforwards and certain built-in losses is equal to the product of the applicable long-term, tax-exempt rate and the value of the company's stock immediately before the ownership change. We may be unable to offset our taxable income with losses, or our tax liability with credits, before such losses and credits expire and therefore would incur larger federal income tax liability.

If we fail to maintain an effective system of internal controls, we may not be able to accurately report financial results or prevent fraud. If we identify a material weakness in our internal control over financial reporting, our ability to meet our reporting obligations and the trading price of our stock could be negatively affected.

As described in Item 9A — Controls and Procedures and elsewhere in this Form 10-K, in connection with the restatement of our Consolidated Financial Statements, we identified a material weakness in our internal control over financial reporting with regard to having sufficient technical resources to appropriately analyze and account for complex financial instruments and complex share-based awards. With regard to our prior interpretation of ASC 480, "Distinguishing Liabilities from Equity", as it related to the initial classification and subsequent accounting of our registered Warrants as equity instruments dating back to March 2014. Upon a reassessment, we determined that we should have accounted for these Warrants as liabilities instead of equity. This material weakness with regard to lacking sufficient technical resources also affected our ability to appropriately value and account for share based payment instruments with market-based vesting provisions under ASC 718, "Stock Compensation". We determined that we should have used a Monte Carlo simulation to value share based payment instruments with a market-based vesting condition. Given this material weakness, management concluded that we did not maintain effective internal control over financial reporting as of December 31, 2019.

Effective internal controls are necessary to provide reliable financial reports and to assist in the effective prevention of fraud. Any inability to provide reliable financial reports or prevent fraud could harm our business. We regularly review and update our internal controls, disclosure controls and procedures, and corporate governance policies. In addition, we are required under the Sarbanes-Oxley Act of 2002 to report annually on our internal control over financial reporting. Any system of internal controls, however well designed and operated, is based in part on certain assumptions and can provide only reasonable, not absolute, assurances that the objectives of the system are met. A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of our annual or interim financial statements will not be prevented or detected on a timely basis. Accordingly, a material weakness increases the risk that the financial information we report contains material errors.

While we plan on addressing our material weakness as disclosed herein, elements of our remediation plan can only be accomplished over time and we can offer no assurance that these initiatives will ultimately have the intended effects. Any failure to maintain such internal controls could adversely impact our ability to report our financial results on a timely and accurate basis. If our financial statements are not accurate, investors may not have a complete understanding of our operations or may lose confidence in our reported financial information. Likewise, if our financial statements are not filed on a timely basis as required by the SEC and The Nasdaq Stock Market, we could face severe consequences from those authorities. In either case, it could result in a material adverse effect on our business or have a negative effect on the trading price of our common stock. Further, if we fail to remedy this deficiency (or any other future deficiencies) or maintain the adequacy of our internal controls, we could be subject to regulatory scrutiny, civil or criminal penalties or shareholder litigation. We can give no assurance that the measures we have taken and plan to take in the future will remediate the material weakness identified or that any additional material weaknesses or restatements of our financial statements will not arise in the future due to a failure to implement and maintain adequate internal control over financial reporting or circumvention of those controls.

Further, in the future, if we cannot conclude that we have effective internal control over our financial reporting, or if our independent registered public accounting firm is unable to provide an unqualified opinion regarding the effectiveness of our internal control over financial reporting, investors could lose confidence in the reliability of our financial statements, which could lead to a decline in our stock price. Failure to comply with reporting requirements could also subject us to sanctions and/or investigations by the SEC, The Nasdaq Stock Market or other regulatory authorities.

Our financial condition and results of operations for fiscal 2020 may be adversely affected by the recent COVID-19 outbreak.

The Seattle area, including the location of our corporate headquarters and our media production facility and warehouse, was an early location of coronavirus cases in the U.S. We are currently following the recommendations of local health authorities to minimize exposure risk for our team members and visitors. However, the scale and scope of this pandemic is unknown and the duration of the business disruption and related financial impact cannot be reasonably estimated at this time. While we have implemented specific business continuity plans to reduce the potential impact of COVID-19 and believe that we have sufficient inventory to meet previously forecasted demand for the next six to nine months, there is no guarantee that our continuity plan, once in place, will be successful or that our inventory will meet forecasted or actual demand.

We have already experienced certain disruptions to our business such as temporary closure of our offices and similar disruptions may occur for our customers or suppliers that may materially affect our ability to obtain supplies or other components for our products, produce our products or deliver inventory in a timely manner. This would result in lost product revenue, additional costs, or penalties, or damage our reputation. Similarly, COVID-19 could impact our customers and/or suppliers as a result of a health epidemic or other outbreak occurring in other locations which could reduce their demand for our products or their ability to deliver needed supplies for the production of our products. The extent to which COVID-19 or any other health epidemic may impact our results will depend on future developments, which are highly uncertain and cannot be predicted, including new information which may emerge concerning the severity of COVID-19 and the actions to contain COVID-19 or treat its impact, among others. Accordingly, COVID-19 could have a material adverse effect on our business, results of operations, financial condition and prospects.

The restatement of our historical financial statements has consumed a significant amount of our time and resources and may continue to do so.

As described herein, we have restated our Consolidated Financial Statements for the periods discussed herein. The restatement process was highly time and resource-intensive and involved substantial attention from management, as well as significant legal and accounting costs. Although we have now completed the restatement, we cannot guarantee that we will have no further inquiries from the SEC or The Nasdaq Stock Market regarding our restated Consolidated Financial Statements or matters relating thereto.

Any future inquiries from the SEC or The Nasdaq Stock Market as a result of the restatement of our historical financial statements will, regardless of the outcome, likely consume a significant amount of our resources in addition to those resources already consumed in connection with the restatement itself.

Further, many companies that have been required to restate their historical financial statements have experienced a decline in stock price and stockholder lawsuits related thereto.

Natural disasters, geopolitical unrest, war, terrorism, public health issues or other catastrophic events could disrupt the supply, delivery or demand of products, which could negatively affect our operations and performance.

We are subject to the risk of disruption by earthquakes, floods and other natural disasters, fire, power shortages, geopolitical unrest, war, terrorist attacks and other hostile acts, public health issues, epidemics or pandemics and other events beyond our control and the control of the third parties on which we depend. Any of these catastrophic events, whether in the United States or abroad, may have a strong negative impact on the global economy, our employees, facilities, partners, suppliers, distributors or customers, and could decrease demand for our products, create delays and inefficiencies in our supply chain and make it difficult or impossible for us to deliver products to our customers. A catastrophic event that results in the destruction or disruption of our data centers or our critical business or information technology systems would severely affect our ability to conduct normal business operations and, as a result, our operating results would be adversely affected.

ITEM 1B. UNRESOLVED STAFF COMMENTS

Not applicable.

ITEM 2. PROPERTIES

Our material office and manufacturing leases are detailed below:

Location	Square Feet	Principal Use	Lease Expiration
Bothell, WA	32,106	Corporate headquarters, manufacturing, research and development, marketing and administrative offices	July 2021
Menlo Park, CA	1,250	Research and development, and administrative offices	July 2020
Albuquerque, NM	9,932	Manufacturing, research and development, and administrative offices	December 2021
Bruce Township, MI	106,998	Manufacturing, research and development, and administrative offices	November 2020

We consider the facilities to be in a condition suitable for their current uses. Because of anticipated growth in the business and due to the increasing requirements of customers or regulatory agencies, we may need to acquire additional space or upgrade and enhance existing space. We believe that adequate facilities will be available upon the conclusion of our leases.

ITEM 3. LEGAL PROCEEDINGS

From time to time, we may be subject to legal proceedings and claims in the ordinary course of business. We are not currently aware of any such proceedings or claims that we believe will have, individually or in the aggregate, a material adverse effect on our business, financial condition or results of operations.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

Our common stock is traded on the NASDAQ Capital Market exchange under the ticker symbol "BLFS."

As of May 5, 2020, there were approximately 161 holders of record of our common stock. We have never paid cash dividends on our common stock and do not anticipate that any cash dividends will be paid in the foreseeable future.

See Item 12 for information regarding securities authorized for issuance under our equity compensation plans.

Issuer Repurchases of Equity Securities

Not applicable.

ITEM 6. SELECTED CONSOLIDATED FINANCIAL DATA

Not applicable.

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

This Form 10-K contains "forward-looking statements". These forward-looking statements involve a number of risks and uncertainties. We caution readers that any forward-looking statement is not a guarantee of future performance and that actual results could differ materially from those contained in the forward-looking statement. These statements are based on current expectations of future events. Such statements include, but are not limited to, statements about our products, including our newly acquired products, customers, regulatory approvals, the potential utility of and market for our products and services, our ability to implement our business strategy and anticipated business and operations, in particular following the 2019 acquisitions, future financial and operational performance, our anticipated future growth strategy, including the acquisition of synergistic cell and gene therapy manufacturing tools and services or technologies, or other companies or technologies, capital requirements, intellectual property, suppliers, joint venture partners, future financial and operating results, the impact of the COVID-19 pandemic, plans, objectives, expectations and intentions, revenues, costs and expenses, interest rates, outcome of contingencies, business strategies, regulatory filings and requirements, the estimated potential size of markets, capital requirements, the terms of any capital financing agreements and other statements that are not historical facts. You can find many of these statements by looking for words like "believes," "expects," "anticipates," "estimates," "may," "should," "will," "could," "plan," "intend," or similar expressions in this Form 10-K. We intend that such forward-looking statements be subject to the safe harbors created thereby.

These forward-looking statements are based on the current beliefs and expectations of our management and are subject to significant risks and uncertainties. If underlying assumptions prove inaccurate or unknown risks or uncertainties materialize, actual results may differ materially from current expectations and projections. Factors that might cause such a difference include those discussed under “Risk Factors,” as well as those discussed elsewhere in the Form 10-K.

You are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date of this Form 10-K or, in the case of documents referred to or incorporated by reference, the date of those documents.

All subsequent written or oral forward-looking statements attributable to us or any person acting on our behalf are expressly qualified in their entirety by the cautionary statements contained or referred to in this section. We do not undertake any obligation to release publicly any revisions to these forward-looking statements to reflect events or circumstances after the date of this Form 10-K or to reflect the occurrence of unanticipated events, except as may be required under applicable U.S. securities law. If we do update one or more forward-looking statements, no inference should be drawn that we will make additional updates with respect to those or other forward-looking statements.

Restatement

As discussed in the Explanatory Note and Note 2: “Restatement of Consolidated Financial Statements” to this Form 10-K, we are amending and restating our audited consolidated financial statements and related disclosures for the year ended December 31, 2018 presented in this Form 10-K along with our unaudited consolidated financial statements and related disclosures for the quarters ended March 31, 2018, June 30, 2018, September 30, 2018, March 31, 2019, June 30, 2019 and September 30, 2019 (see Note 16; “*Quarterly Financial Information (Unaudited)*” to our consolidated financial statements).

The following discussion and analysis of our financial condition and results of operations incorporates the restated amounts. For this reason, the data set forth in this section may not be comparable to discussion and data in our previously filed Annual Report on Form 10-K for the year ended December 31, 2018.

We are a life sciences company that develops and commercializes innovative technologies used in the manufacture, storage and transportation of biological drugs.

We develop, manufacture and market bioproduction tools to the cell and gene therapy industry, which are designed to improve quality and de-risk biologic manufacturing and delivery. Our products are used in basic and applied research, and commercial manufacturing of biologic based therapies by maintaining the health and function of biologic material during sourcing, manufacturing, storage, distribution, and patient delivery of cells and tissues.

Our current portfolio of bioprocessing tools includes our biopreservation media for the preservation of cells and tissues, automated thaw devices which provide controlled, consistent thawing of frozen biologics in vials and cryobags, a line of “smart”, cloud connected devices for transporting biologic payloads at a variety of temperature ranges and a full line of isothermal and liquid nitrogen freezers and accessories for freezing and storage of biologic samples.

We currently operate as one bioproduction tools business with product lines that serve the continuum in the biologic drug manufacturing and delivery process. We have a diversified portfolio of tools that focus on the freezing and thawing process of biologic drugs. We have in-house expertise in cryobiology and continue to capitalize on opportunities to maximize the value of our product platform for our extensive customer base through both organic growth innovations and acquisitions.

Astero Bio Corporation Acquisition

On April 1, 2019, BioLife completed the acquisition of all the outstanding shares of Astero. Astero's ThawSTAR product line is comprised of a family of automated thawing devices for frozen cell and gene therapies packaged in cryovials and cryobags. The products improve the quality of administration of high-value, temperature-sensitive biologic therapies to patients by standardizing the thawing process and reducing the risks of contamination and overheating, which are inherent with the use of traditional water baths.

The Astero Acquisition was accounted for as a purchase of a business under Financial Accounting Standards Board ("FASB") Accounting Standard Codification No. ("ASC") 805, "Business Combinations." In connection with the Acquisition, the Company paid (i) a base payment in the amount of $12.5 million consisting of (x) an initial cash payment of $8.0 million at the closing of the transactions contemplated by the Purchase Agreement, subject to adjustment for working capital, net debt and transaction expenses, and (y) a deferred cash payment that was paid into escrow of $4.5 million payable upon the earlier of Astero meeting certain product development milestones or one year after the date of the Closing and (ii) earnout payments in calendar years 2019, 2020 and 2021 of up to an aggregate of $3.5 million, which shall be payable upon Astero achieving certain specified revenue targets in each year and a separate earnout payment of $5.0 million for calendar year 2021 which shall be payable upon Astero achieving a cumulative revenue target over the three-year period from 2019 to 2021.

SAVSU Technologies, Inc. Acquisition

On August 7, 2019, the Company consummated the acquisition (the "SAVSU Acquisition") of the remaining shares of SAVSU Technologies, Inc., a Delaware corporation, pursuant to a Share Exchange Agreement (the "Exchange Agreement") by and among the Company, SAVSU and SAVSU Origin LLC, a Delaware limited liability company ("Origin"). Pursuant to the Exchange Agreement, Origin agreed to transfer to the Company and the Company agreed to acquire from Origin 8,616 shares of common stock of SAVSU, representing the remaining 56% of the outstanding shares of SAVSU that the Company did not own, in exchange for 1,100,000 shares of common stock of the Company. On August 8, 2019, the Company completed the SAVSU Acquisition, and SAVSU became a wholly owned subsidiary of the Company.

SAVSU is a leading developer and supplier of next generation cold chain management tools for C&GT. The evo® cloud connect platform allows biologic products to be traced and tracked in real time. Our evo platform consists of rentable cloud connected shippers and evo technology tracking software provides real-time information on geolocation, payload temperature, ambient temperature, tilt of shipper, humidity, altitude, and real-time alerts when a shipper has been opened. Our internally developed evo software allows customers to customize alert notifications both in data measurements and user requirements. The evo Dry Vapor Shipper ("DVS") is specifically marketed to C&GT companies. The evo DVS has improved form factor and ergonomics over the traditional dewar, including extended thermal performance, reduced liquid nitrogen recharge time, improved payload extractors and ability to maintain temperature for longer periods on its side. The evo DVS does not require to be shipped in a pallet format, enabling shipping on narrow-bodied aircraft which is not an option for competitors who use palletized shipments. Our integrated system of internal and external packing innovations reduces risk of payload breakage due to shock while in transportation.

The SAVSU Acquisition was accounted for as a purchase of a business under ASC 805, "Business Combinations." The Company paid to Origin 1,100,000 shares of unregistered common stock totaling $19.9 million (based on a share price of $18.12 at the time of acquisition) for the 56% we did not previously own.

Custom Biogenic Systems, Inc. Acquisition

On November 10, 2019, we entered into an Asset Purchase Agreement, by and among the Company, Arctic Solutions, Inc., a Delaware corporation and wholly-owned subsidiary of the Company, and Custom Biogenic Systems, Inc., a Michigan corporation ("CBS Seller"), pursuant to which we agreed to purchase from the CBS Seller substantially all of CBS Seller's assets, properties and rights (the "CBS Acquisition"). The CBS Seller, a privately held company with operations located near Detroit, Michigan, designs and manufactures liquid nitrogen laboratory freezers and cryogenic equipment and also offers a related cloud-based monitoring system that continuously assesses biologic sample storage conditions and alerts equipment owners if a fault condition occurs. The Acquisition closed on November 12, 2019.

In connection with the CBS Acquisition, we paid to CBS Seller (i) a base payment in the amount of $15.0 million, consisting of a cash payment of $11.0 million paid at the closing of the CBS Acquisition, less a cash holdback escrow of $550,000 to satisfy certain indemnification claims, and an aggregate number of shares of our common stock, with an aggregate fair value equal to $4.0 million, less a holdback escrow of shares of Common Stock with an aggregate value equal to $3.0 million to satisfy potential payments related to any product liability claims outstanding as of March 13, 2019 and (ii) potential earnout payments in calendar years 2020, 2021, 2022, 2023 and 2024 of up to an aggregate of, but not exceeding, $15.0 million payable to CBS Seller upon achieving certain specified revenue targets in each year for certain product lines.

The CBS acquisition was accounted for as a purchase of a business under FASB ASC Topic 805, "Business Combinations". Under the acquisition method of accounting, the acquired assets and liabilities assumed from CBS were recorded as of the acquisition date, at their fair values, and consolidated with BioLife. The preliminary fair value of the net tangible assets acquired is $6.0 million, the preliminary fair value of the identifiable intangibles is $6.8 million, and the preliminary residual goodwill is $3.1 million. The fair value estimates required critical estimates, including, but not limited to, future expected cash flows, revenue and expense projections, discount rates, revenue volatility, and royalty rates. BioLife believes these estimates to be reasonable. Actual results may differ from these estimates.

Critical Accounting Policies and Estimates

We have identified the policies and estimates below as being critical to our business operations and the understanding of our results of operations. These policies require management's most difficult, subjective or complex judgements, often as a result of the need to make estimates about the effect of matters that are inherently uncertain. The impact of and any associated risks related to these policies on our business operations are discussed throughout "Management's Discussion and Analysis of Financial Condition," including in the "Results of Operations" section, where such policies affect our reported and expected financial results. Although we believe that our estimates, assumptions, and judgements are reasonable, they are based upon information presently available. Actual results may differ significantly from these estimates under different assumptions, judgments, or conditions.

Revenue Recognition

We generate revenue from the sale of our products, primarily to customers within the C&GT market. Under ASC 606, "Revenue from Contracts with Customers," revenue is recognized when, or as, obligations under the terms of a contract are satisfied, which occurs when control of the promised products or services is transferred to customers. Revenue is measured as the amount of consideration the Company expects to receive in exchange for transferring products or services to a customer ("transaction price"). To the extent the transaction price includes variable consideration, the Company estimates the amount of variable consideration that should be included in the transaction price utilizing the expected value method or the most likely amount method, depending on the facts and circumstances relative to the contract. When determining the transaction price of a contract, an adjustment is made if payment from a customer occurs either significantly before or significantly after performance, resulting in a significant financing component. Applying the practical expedient in paragraph 606-10-32-18, the Company does not assess whether a significant financing component exists if the period between when the Company performs its obligations under the contract and when the customer pays is one year or less. None of the Company's contracts contained a significant financing component or variable consideration as of and during the year ended December 31, 2019.

Contracts with customers may contain multiple performance obligations. For such arrangements, the transaction price is allocated to each performance obligation based on the estimated relative standalone selling prices of the promised products or services underlying each performance obligation. The Company determines standalone selling prices based on the price at which the performance obligation is sold separately. If the standalone selling price is not observable through past transactions, the Company estimates the standalone selling price taking into account available information such as market conditions and internally approved pricing guidelines related to the performance obligations. The Company recognizes product revenue under the terms of each customer agreement upon transfer of control to the customer, which occurs at a point in time.

Inventories

We value inventory at the lower of cost or net realizable value, using the first-in first-out method. We review our inventory at least quarterly and record a provision for excess and obsolete inventory based on our estimates of expected product revenue volume, production capacity and expiration dates of raw materials, work-in-process and finished products. We write down inventory that has become obsolete, inventory that has a cost basis in excess of its expected net realizable value, and inventory in excess of expected requirements to cost of product revenue. Manufacturing of bioprocessing finished goods is done to order and tested for quality specifications prior to shipment.

A change in the estimated timing or amount of demand for our products could result in additional provisions for excess inventory quantities on hand. Any significant unanticipated changes in demand or unexpected quality failures could have a significant impact on the value of inventory and reported operating results. During all periods presented in the accompanying consolidated financial statements, there have been no material adjustments related to a revised estimate of inventory valuations.

Assets held for rent

Assets held for rent consists of all evo shippers and related components, in process of being assembled, and evo shippers and accessories complete and ready to be deployed and placed in service upon a customer order. Our customers rent the shippers per a rental agreement, which includes access to the evo.is cloud based tracking and information app. We retain ownership of the evo shippers and the evo tracking software platform. At the end of the rental agreement, the customer returns the shipper to the Company. Once an evo shipper is deployed and placed in service with a customer, we depreciate the cost of the evo shippers and related accessories over an estimated useful life of three years.

Business combinations

Amounts paid for acquisitions are allocated to the tangible and intangible assets acquired and liabilities assumed, if any, based on their fair values at the dates of acquisition. This purchase price allocation process requires management to make significant estimates and assumptions with respect to intangible assets and deferred revenue obligations. The fair value of identifiable intangible assets is based on detailed valuations that use information and assumptions determined by management. Any excess of purchase price over the fair value of the net tangible and intangible assets acquired is allocated to goodwill. While we use our best estimates and assumptions to accurately value assets acquired and liabilities assumed at the acquisition date as well as any contingent consideration, where applicable, our estimates are inherently uncertain and subject to refinement. As a result, during the measurement period, which may be up to one year from the acquisition date, we record adjustments to the assets acquired and liabilities assumed with the corresponding offset to goodwill. Upon conclusion of the measurement period or final determination of the values of assets acquired or liabilities assumed, whichever comes first, any subsequent adjustments are recorded to our consolidated statements of comprehensive income. The fair value of contingent consideration includes estimates and judgments made by management regarding the probability that future contingent payments will be made, the extent of royalties to be earned in excess of the defined minimum royalties, etc. Management updates these estimates and the related fair value of contingent consideration at each reporting period based on the estimated probability of achieving the earnout targets and applying a discount rate that captures the risk associated with the expected contingent payments. To the extent our estimates change in the future regarding the likelihood of achieving these targets we may need to record material adjustments to our accrued contingent consideration. Changes in the fair value of contingent consideration are recorded in our consolidated statements of operations. We use the income approach to determine the fair value of certain identifiable intangible assets including customer relationships and developed technology. This approach determines fair value by estimating after-tax cash flows attributable to these assets over their respective useful lives and then discounting these after-tax cash flows back to a present value. We base our assumptions on estimates of future cash flows, expected growth rates, expected trends in technology, etc. We base the discount rates used to arrive at a present value as of the date of acquisition on the time value of money and certain industry-specific risk factors. We believe the estimated purchased customer relationships, developed technologies, trademark/tradename, patents, and in process research and development amounts so determined represent the fair value at the date of acquisition and do not exceed the amount a third party would pay for the assets.

Intangible Assets and Goodwill

Intangible assets

Intangible assets with a definite life are amortized over their estimated useful lives using the straight-line method and the amortization expense is recorded within intangible asset amortization in the consolidated statements of operations. Intangible assets and their related estimated useful lives are reviewed at least annually to determine if any adverse conditions exist that would indicate the carrying value of these assets may not be recoverable. More frequent impairment assessments are conducted if certain conditions exist, including a change in the competitive landscape, any internal decisions to pursue new or different technology strategies, a loss of a significant customer, or a significant change in the marketplace, including changes in the prices paid for the Company's products or changes in the size of the market for the Company's products. If impairment indicators are present, the Company determines whether the underlying intangible asset is recoverable through estimated future undiscounted cash flows. If the asset is not found to be recoverable, it is written down to the estimated fair value of the asset based on the sum of the future discounted cash flows expected to result from the use and disposition of the asset. If the estimate of an intangible asset's remaining useful life is changed, the remaining carrying amount of the intangible asset is amortized prospectively over the revised remaining useful life. The Company continues to believe that its definite-lived intangible assets are recoverable at December 31, 2019.

Goodwill

We test goodwill for impairment on an annual basis, and between annual tests if events and circumstances indicate it is more likely than not that the fair value of our goodwill is less than its carrying value. Events that would indicate impairment and trigger an interim impairment assessment include, but are not limited to, current economic and market conditions, including a decline in the Company's market capitalization, a significant adverse change in legal factors, business climate or operational performance of the business, and an adverse action or assessment by a regulator. Goodwill is tested for impairment as of December 31st of each year, or more frequently as warranted by events or changes in circumstances mentioned above. Accounting guidance also permits an optional qualitative assessment for goodwill to determine whether it is more likely than not that the carrying value of a reporting unit exceeds its fair value. If, after this qualitative assessment, we determine that it is not more likely than not that the fair value of a reporting unit is less than its carrying amount, then no further quantitative testing would be necessary. A quantitative assessment is performed if the qualitative assessment results in a more likely than not determination or if a qualitative assessment is not performed. The quantitative assessment considers whether the carrying amount of a reporting unit exceeds its fair value, in which case an impairment charge is recorded to the extent the reporting unit's carrying value exceeds its fair value. The Company operates as one reporting unit as of the goodwill impairment measurement date of December 31, 2019. As a result of our 2019 quantitative assessment, we concluded that goodwill does not need to be impaired as of December 31, 2019.

Contingent Consideration

We estimate the acquisition date fair value of the acquisition-related contingent consideration using various valuation approaches, including option pricing models and Monte Carlo simulations, as well as significant unobservable inputs, reflecting the Company's assessment of the assumptions market participants would use to value these liabilities. The fair value of the contingent consideration is remeasured each reporting period, with any change in the value recorded in our consolidated statements of operations as change in fair value of contingent consideration.

Stock-based Compensation

We measure and record compensation expense using the applicable accounting guidance for share-based payments related to stock options, time-based restricted stock, and performance-based awards granted to our directors and employees. The fair value of stock options is determined by using the Black-Scholes option-pricing model. The fair value of market-based restricted stock awards is estimated, at the date of grant, using the Monte Carlo Simulation model. The Black-Scholes and Monte Carlo Simulation valuation models incorporate assumptions as to stock price volatility, the expected life of options or awards, a risk-free interest rate and dividend yield. In valuing our stock options and market-based stock awards, significant judgment is required in determining the expected volatility of our common stock and the expected life that individuals will hold their stock options prior to exercising. Expected volatility for stock options is based on the historical and implied volatility of our own common stock while the volatility for our market-based restricted stock awards is based on the historical volatility of our own stock and the stock of companies within our defined peer group. Further, our expected volatility may change in the future, which could substantially change the grant-date fair value of future awards and, ultimately, the expense we record. The fair value of restricted stock, including performance awards, without a market condition is estimated using the current market price of our common stock on the date of grant.

We expense stock-based compensation for stock options, restricted stock awards, and performance awards over the requisite service period. For awards with only a service condition, we expense stock-based compensation using the straight-line method over the requisite service period for the entire award. For awards with a market condition, we expense over the vesting period regardless of the value that the award recipients ultimately receive.

Provision for Income Taxes

We maintain a full valuation allowance on our net deferred tax assets. The assessment regarding whether a valuation allowance is required considers both positive and negative evidence when determining whether it is more likely than not that deferred tax assets are recoverable. In making this assessment, significant weight is given to evidence that can be objectively verified. In its evaluation, the Company considered its cumulative loss and its forecasted losses in the near-term as significant negative evidence. Based upon a review of the four sources of income identified within ASC 740, "Accounting for Income Taxes", the Company determined that the negative evidence outweighed the positive evidence and a full valuation allowance on its assets will be maintained. The Company will continue to assess the realizability of its assets going forward and will adjust the valuation allowance as needed.

The Company determines its uncertain tax positions based on a determination of whether and how much of a tax benefit taken by the Company in its tax filings or positions is more likely than not to be sustained upon examination by the relevant income tax authorities. The Company is generally subject to examination by U.S. federal and local income tax authorities for all tax years in which loss carryforward is available.

The Company applies judgment in the determination of the financial statement recognition and measurement of tax positions taken or expected to be taken in a tax return. As of December 31, 2019, the Company had no uncertain tax positions.

As of December 31, 2019, the Company had U.S. federal net operating loss ("NOL") carryforwards of approximately $44.7 million, which is available to reduce future taxable income. Approximately $34.9 million of NOL will expire from 2020 through 2037, and approximately $9.8 million of NOL will be carried forward indefinitely. The NOL carryforwards may become subject to an annual limitation in the event of certain cumulative changes in the ownership interest. This could limit the amount of tax attributes that can be utilized annually to offset future taxable income or tax liabilities. Subsequent ownership changes may further affect the limitation in future years.

Recent Accounting Standards Update

See Note 1: "*Organization and Significant Accounting Policies – Recent Accounting Pronouncements*," to our consolidated financial statements included in this report for more information.

Results of Operations

The following discussion of the financial condition and results of operations should be read in conjunction with the accompanying consolidated financial statements and the related footnotes thereto.

Revenue

In 2019, we acquired three companies which resulted in increased revenue diversification compared to prior years, in which nearly all revenue was derived from our biopreservation media product line. Although our revenues in 2019 were more diversified, both in terms of product and customer concentration, a trend we expect to see continue in 2020, we did realize quarterly fluctuations based on large customer ordering patterns, which is something we expect will continue in 2020.

Revenue for years ended December 31, 2019, and 2018 were comprised of the following:

	Year Ended December 31,	
(In thousands)	**2019(1)**	**2018**
Biopreservation media	$ 23,358	$ 19,742
Automated thawing	1,184	—
evo shippers	692	—
Freezers and accessories	2,137	—
Total revenue	$ 27,371	$ 19,742

(1) 2019 revenue includes automated thawing revenue related to Astero from April 1, 2019 through December 31, 2019; evo shipper rental revenue related to SAVSU from August 8, 2019 through December 31, 2019; and freezer and accessory revenue related to CBS from November 12, 2019 through December 31, 2019.

For 2019, revenue increased by $7.6 million, or 39%, compared with 2018. The increase is due to the acquisitions throughout 2019, and an increase in product revenue of our biopreservation media products. Product revenue of our biopreservation media products in 2019 increased $3.6 million, or 18% compared with 2018. Our biopreservation media products continued to be adopted by customers in the C&GT market and we realized a higher selling price per liter in 2019 compared to 2018. Revenue is impacted by the relatively high degree of customer concentration, the timing of orders, the development efforts of our customers or end-users and regulatory approvals for biologics that incorporate our products, which may result in significant quarterly fluctuations. Such quarterly fluctuations are expected, but they may not be predictive of future revenue or otherwise indicative of a trend.

Costs and Operating Expenses

Total costs and operating expenses for years ended December 31, 2019 and 2018 were comprised of the following:

	Year Ended December 31,			
(In thousands, except percentages)	**2019**	**2018**	**$ Change**	**% Change**
Cost of revenue	$ 8,760	$ 6,217	$ 2,543	41%
Research and development	3,168	1,298	1,870	144%
Sales and marketing	4,701	2,615	2,086	80%
General and administrative	8,893	5,950	2,943	49%
Intangible asset amortization	1,079	—	1,079	—%
Acquisition costs	940	—	940	—%
Change in fair value of contingent consideration	50	—	50	—%
Total costs and operating expenses	$ 27,591	$ 16,080	$ 11,511	72%

Cost of Revenue

In 2019 cost of revenue increased $2.5 million, or 41% when compared to 2018, due primarily to the increase in revenue mentioned above. We expect that cost of product revenue may fluctuate in future quarters based on production volumes and product mix. The product lines acquired in 2019 have a higher cost of product revenue than our biopreservation media products.

Cost of product revenue as a percentage of revenue was 32%, and 31% for 2019 and 2018, respectively. Cost of product revenue in 2019 includes $289,000 in inventory step-up related amortization recorded in the purchase accounting of our Astero and CBS acquisitions. The increase in cost of product revenue as a percentage of revenue is a result of the inventory step-up, and higher costs of product revenue as a percentage of revenue for the product lines acquired in 2019 through the Astero, Savsu and CBS acquisitions.

Research and Development Expenses

During 2019 and 2018 research and development (“R&D”) expense consisted primarily of salaries and other personnel-related costs, consulting and external product development services.

R&D expense increased $1.9 million in 2019, or 144%, compared with 2018. The increase is primarily due to our three acquisitions in 2019 and stock compensation expense.

We expect our R&D expense to increase as we continue to expand, develop and refine the product lines we acquired in 2019.

Sales and Marketing Expenses

Sales and marketing expense (“S&M”) consists primarily of salaries, and other personnel-related costs, stock compensation expense, trade shows, sales commissions and advertising.

In 2019, S&M expense increased $2.1 million, or 80%, compared with 2018. The increase reflects the S&M costs we absorbed related to our acquisitions, stock compensation expense and an increase in our direct selling costs.

We expect S&M expense to increase, as we expand our direct selling efforts to support the broader product line offerings resulting from our 2019 acquisitions.

General and Administrative Expenses

General and administrative (“G&A”) expense consists primarily of personnel-related expenses, non-cash stock-based compensation for administrative personnel and members of the board of directors, professional fees, such as accounting and legal, and corporate insurance.

In 2019, G&A expenses increased by $2.9 million, or 49%, compared with 2018. The increase reflects the assumption of G&A expenses related to our 2019 acquisitions, and the continued buildout of our administrative infrastructure, primarily through increased headcount and information technology expenditures, to support expected future growth and stock compensation expense.

We expect G&A expense to increase reflecting the infrastructure and costs related to supporting the larger expected enterprise created as a result of our 2019 acquisitions.

Intangible asset amortization expense

Amortization expense consists of charges related to the amortization of intangible assets associated with acquisitions, Astero, SAVSU and CBS in which we acquired definite-lived intangible assets.

Acquisition costs

Acquisition costs consist of legal, accounting, third-party valuations, and other due diligence costs related to our Astero, SAVSU and CBS acquisitions.

Change in fair value of contingent consideration

Change in fair value of contingent consideration consists of changes in estimated fair value of our potential earnouts related to our Astero acquisition.

Other Income and Expenses

Total other expenses for years ended December 31, 2019 and 2018 were comprised of the following:

	Year Ended December 31,			
(In thousands, except percentages)	**2019**	**2018 (restated)**	**$ Change**	**% Change**
Change in fair value of warrant liability	$ (12,835)	$ (28,271)	$ 15,436	55%
Interest income (expense), net	501	276	225	81%
Other	(13)	—	(13)	—
Loss on equity method investment – SAVSU	(739)	(672)	(67)	(10%)
Gain on acquisition - SAVSU	10,108	—	10,108	—
Total other income (expenses)	$ (2,978)	$ (28,667)	$ 25,689	90%

Change in fair value of warrant liability. Reflects the changes in fair value associated with the periodic "mark to market" valuation of certain warrants that were issued in 2014. See Note 1: "*Organization and Significant Accounting Policies*" of our accompanying consolidated financial statements "Certain Warrants which have Features that may Result in Cash Settlement" for more information.

Interest Income. We earn interest on cash held in our money market account. We had a higher weighted average cash balance in our money market account for the year ended December 31, 2019 compared to 2018.

Interest Expense. Interest expense is related to equipment financing.

Loss on equity method investment. The non-cash loss associated with our proportionate share of the net loss in our investment in SAVSU prior to our acquisition of the remaining shares of SAVSU and subsequent consolidation of SAVSU in our financial statements.

Gain on acquisition of SAVSU. The non-cash gain associated with our equity investment in SAVSU due to the acquisition of the remaining shares of SAVSU and subsequent consolidation of SAVSU in our financial statements.

Liquidity and Capital Resources

On December 31, 2019, we had $6.4 million in cash and cash equivalents, compared to $30.7 million at December 31, 2018. The reduction in cash is primarily due to the cash payments associated with the 2019 acquisitions of Astero and CBS. We acquired Astero on April 1, 2019 for $12.5 million in cash and contingent consideration of up to $8.5 million (which payment requirement has not been triggered or otherwise paid to date). We anticipate paying $484,000 for the earnout related to 2019 revenues of Astero in early 2020. On August 8, 2019, we acquired SAVSU for 1,100,000 shares of common stock. On November 12, 2019, we acquired CBS for $11.0 million in cash, $4.0 million in shares of our common stock, and up to $15.0 million in contingent consideration payable in cash or stock (which payment requirement has not been triggered or otherwise paid to date).

Based on our current expectations with respect to our future revenue and expenses, we believe that our current level of cash and cash equivalents will be sufficient to meet our liquidity needs for at least the next 12 months. However, if our revenues do not grow as expected, including as a result of the COVID-19 pandemic, and if we are not able to manage expenses sufficiently, we may be required to obtain additional equity or debt financing if our cash resources are depleted. Further, the Company may choose to raise additional capital through a debt or equity financing in an attempt to mitigate the heightened level of business uncertainty caused by the COVID-19 pandemic, or in order to pursue additional acquisition or strategic investment opportunities. Additional capital, if required, may not be available on reasonable terms, if at all.

Cash Flows

(In thousands)	Year Ended December 31, 2019	2018 (restated)	$ Change
Operating activities	$ 1,213	$ 2,348	$ (1,135)
Investing activities	(27,018)	(6,500)	(20,518)
Financing activities	1,596	28,146	(26,550)
Net increase (decrease) in cash and cash equivalents	$ (24,209)	$ 23,994	$ (48,203)

Operating Activities

In 2019, our operating activities provided cash of $1.2 million reflecting a net loss of $1.7 million and non-cash charges totaling $6.6 million primarily related to depreciation, amortization, gain on acquisition of SAVSU, changes in fair value contingent consideration, income tax benefit related to the acquisition of SAVSU, fair value change in warrant liability and stock-based compensation charges. An increase in accounts receivable used $290,000 of cash and was primarily driven by the 39% year-to-date increase in revenues and an increase in inventory used $3.7 million to support future revenue. These cash items used for operating activities were offset by cash items provided by operating activities that included an increase in accounts payable and accrued liabilities of $1.4 million. The remaining cash used in operating activities resulted from unfavorable changes in various other working capital accounts.

For 2018, our operating activities provided cash of $2.3 million reflecting net loss of $25.0 million and non-cash charges totaling $30.7 million primarily related to fair value change in warrant liability, depreciation, amortization of deferred rent related to lease incentives, loss in our equity investment in SAVSU and stock-based compensation charges. An increase in receivables consumed $2.0 million of cash and was primarily driven by the 79% year-to-date increase in revenues. An increase in inventory levels to accommodate future revenue growth used $1.7 million of cash. The remaining cash flow provided by operations resulted from net favorable changes in various other working capital accounts.

Investing Activities

Our investing activities used $27.0 million of cash during 2019. We used $12.4 million, gained $1.3 million, and used $11.0 million in cash for the Astero, SAVSU, and CBS acquisitions, respectively. We also invested $1.0 million and $1.5 million in our strategic investments in iVexSol and Sexton Bio, respectively. Capital expenditures used $2.3 million as we continue to invest in our manufacturing facilities and increase in SAVSU's assets held for rent.

For 2018, our investing activities used $6.5 million of cash, including $6.0 million for the purchase of additional shares of SAVSU. The remaining $500,000 was used for purchases of equipment.

Financing Activities

In 2019, cash provided by financing activities of $1.6 million included $1.8 million from the proceeds of warrant and stock option exercises.

In 2018, our financing activities provided $28.1 million of cash. We received proceeds of $20.0 million from the sale of stock to an institutional investor, $12.9 million from the proceeds of outstanding warrant and stock option exercises. We used $4.3 million in cash to redeem Series A preferred shares and $436,000 related to dividend payments on Series A preferred shares.

Period subsequent to year-end

The Seattle area, including the location of our corporate headquarters and our media production facility and warehouse, was at the epicenter of the coronavirus outbreak in the U.S. We are currently following the recommendations of local health authorities to minimize exposure risk for our team members and visitors. However, the scale and scope of this pandemic is unknown and the duration of the business disruption and related financial impact cannot be reasonably estimated at this time. While we are currently implementing specific business continuity plans to reduce the potential impact of COVID-19 and believe that we have sufficient inventory to meet previously forecasted demand for the next six to nine months, there is no guarantee that our continuity plan, once in place, will be successful or that our inventory will meet forecasted demand.

We have already experienced certain disruptions to our business such as temporary closure of our offices and similar disruptions may occur for our customers or suppliers that may materially affect our ability to obtain supplies or other components for our products, produce our products or deliver inventory in a timely manner. This would result in lost product revenue, additional costs, or penalties, or damage our reputation. Similarly, COVID-19 could impact our customers and/or suppliers as a result of a health epidemic or other outbreak occurring in other locations which could reduce their demand for our products or their ability to deliver needed supplies for the production of our products. The extent to which COVID-19 or any other health epidemic may impact our results will depend on future developments, which are highly uncertain and cannot be predicted, including new information which may emerge concerning the severity of COVID-19 and the actions to contain COVID-19 or treat its impact, among others. Accordingly, COVID-19 could have a material adverse effect on our business, results of operations, financial condition and prospects.

We experienced an increase in demand for our biopreservation media products in the latter half of March 2020, which we attribute to our customers' desire to secure inventory in the face of wide-spread uncertainty. However, the ultimate future impact of COVID-19 on our business is subject to significant uncertainty.

Off-Balance Sheet Arrangements

We do not have any special purpose entities or off-balance sheet financing arrangements.

Capital Requirements

Our future capital requirements will depend on many factors, including the following:

- the expansion of our cell and gene therapy tools business;
- the ability to sustain product revenue and profits of our cell and gene therapy products;
- The degree to which we implement additional automated production equipment throughout our facilities;
- our ability to acquire additional cell and gene therapy products;
- the scope of and progress made in our research and development activities
- the extent of any share repurchase activity; and
- the success of any proposed financing efforts.

Absent acquisitions of additional products, product candidates or intellectual property, we believe our current cash balances are adequate to meet our cash needs for at least the next 12 months. We expect operating expenses in the year ending December 31, 2020 to increase as we continue to expand our C&GT tools business. We expect to incur continued spending related to the development and expansion of our product lines and expansion of our commercial capabilities for the foreseeable future. Our future capital requirements may include, but are not limited to, purchases of property, plant and equipment, the acquisition of additional cell and gene therapy products and technologies to complement our existing manufacturing capabilities, and continued investment in our intellectual property portfolio.

We actively evaluate various strategic transactions on an ongoing basis, including acquiring complementary products, technologies or businesses that would complement our existing portfolio. We continue to seek to acquire such potential assets that may offer us the best opportunity to create value for our shareholders. In order to acquire such assets, we may need to seek additional financing to fund these investments. If our available cash balances and anticipated cash flow from operations are insufficient to satisfy our liquidity requirements, including because of any such acquisition-related financing needs or lower demand for our products, we may seek to sell common or preferred equity or convertible debt securities, enter into a credit facility or another form of third-party funding, or seek other debt funding. The sale of equity and convertible debt securities may result in dilution to our stockholders, and those securities may have rights senior to those of our common shares. If we raise additional funds through the issuance of preferred stock, convertible debt securities or other debt financing, these securities or other debt could contain covenants that would restrict our operations. Any other third-party funding arrangement could require us to relinquish valuable rights. We may require additional capital beyond our currently anticipated amounts. Further, the Company may choose to raise additional capital through a debt or equity financing in an attempt to mitigate the heightened level of business uncertainty caused by the COVID-19 pandemic. Additional capital may not be available on reasonable terms, if at all.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURE ABOUT MARKET RISK

Not applicable.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

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REPORTS OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRMS

Shareholders and Board of Directors
BioLife Solutions, Inc.
Bothell, Washington

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheet of BioLife Solutions, Inc. (the "Company") as of December 31, 2019, the related consolidated statements of operations, shareholders' equity, and cash flows for the year ended December 31, 2019, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2019, and the results of its operations and its cash flows for the year ended December 31, 2019**,** in conformity with accounting principles generally accepted in the United States of America.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") and our report dated May 15, 2020 expressed an adverse opinion thereon.

Change in Accounting Principle

As discussed in Note 1 to the financial statements, the Company has changed its method of accounting for leases in 2019 due to the adoption of the Accounting Standards Codification Topic 842, "Leases."

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's consolidated financial statements based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud.

Our audit included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audit also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audit provides a reasonable basis for our opinion.

/S/ BDO USA, LLP

We have served as the Company's auditor since 2019.

Seattle, Washington

May 15, 2020

To the Board of Directors and Shareholders
BioLife Solutions, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheet of BioLife Solutions, Inc. ("the Company") as of December 31, 2018, the related consolidated statements of operations, shareholders' equity, and cash flows for the year then ended, and the related notes (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2018, and the results of its operations and its cash flows for the year then ended, in conformity with accounting principles generally accepted in the United States.

Restatement of Previously Issued Financial Statements

As discussed in Note 2 to the financial statements, the Company has restated its 2018 financial statements to correct an error.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audit included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audit also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audit provides a reasonable basis for our opinion.

/S/ PETERSON SULLIVAN LLP

We served as the Company's auditor since 2007 until 2019.

Seattle, Washington
March 15, 2019, except for the effects of the restatement discussed in Note 2 to the financial statements, as to which the date is May 15, 2020

BioLife Solutions, Inc.
Consolidated Balance Sheets

(In thousands, except per share and share data)	December 31, 2019	December 31, 2018 (restated)
Assets		
Current assets		
Cash and cash equivalents	$ 6,448	$ 30,657
Accounts receivable, trade, net of allowance for doubtful accounts of $68 and $0 at December 31, 2019 and 2018, respectively	5,345	3,045
Inventories	10,972	3,509
Prepaid expenses and other current assets	1,348	353
Total current assets	24,113	37,564
Assets held for rent, net	3,922	—
Property and equipment, net	5,572	1,319
Operating lease right-of-use assets, net	1,040	—
Long-term deposits and other assets	50	36
Investments	2,500	—
Equity method investment in SAVSU	—	6,548
Intangible assets, net	21,982	—
Goodwill	33,637	—
Total assets	$ 92,816	$ 45,467
Liabilities and Shareholders' Equity		
Current liabilities		
Accounts payable	$ 3,119	$ 720
Accrued expenses and other current liabilities	3,369	1,219
Lease liabilities, operating, current portion	804	—
Contingent consideration, current portion	377	—
Total current liabilities	7,669	1,939
Warrant liability	39,602	28,516
Contingent consideration, long term	1,537	—
Lease liabilities, operating, long-term	550	—
Other long-term liabilities	4	380
Total liabilities	49,362	30,835
Commitments and Contingencies (Note 12)		
Shareholders' equity		
Preferred stock, $0.001 par value; 1,000,000 shares authorized, Series A, 4,250 shares designated, and 0 shares issued and outstanding at December 31, 2019 and 2018	—	—
Common stock, $0.001 par value; 150,000,000 shares authorized, 20,825,452 and 18,547,406 shares issued and outstanding at December 31, 2019 and 2018, respectively	21	19
Additional paid-in capital	143,485	113,008
Accumulated deficit	(100,052)	(98,395)
Total shareholders' equity	43,454	14,632
Total liabilities and shareholders' equity	$ 92,816	$ 45,467

The accompanying Notes to consolidated Financial Statements are an integral part of these consolidated financial statements

BioLife Solutions, Inc.
Consolidated Statements of Operations

(In thousands, except per share and share data)	Years Ended December 31, 2019	2018 (restated)
Product revenue	$ 26,844	$ 19,742
Rental revenue	527	—
Total product and rental revenue	27,371	19,742
Costs and operating expenses:		
Cost of product and rental revenue (exclusive of intangible assets amortization)	8,760	6,217
Research and development	3,168	1,298
Sales and marketing	4,701	2,615
General and administrative	8,893	5,950
Intangible assets amortization	1,079	—
Acquisition costs	940	—
Change in fair value of contingent consideration	50	—
Total operating expenses	27,591	16,080
Operating income (loss)	(220)	3,662
Other income (expenses)		
Change in fair value of warrant liability	(12,835)	(28,271)
Interest income	506	281
Interest expense	(5)	(5)
Other expenses	(13)	—
Loss from equity-method investment in SAVSU	(739)	(672)
Gain on acquisition of SAVSU	10,108	—
Total other expenses	(2,978)	(28,667)
Net loss before provision for income taxes	(3,198)	(25,005)
Income tax (benefit)	(1,541)	—
Net loss	(1,657)	(25,005)
Less: Preferred stock dividends and accumulated deficit impact of preferred stock redemption	–	(339)
Net income (loss) attributable to common stockholders	(1,657)	(25,344)
Earnings per share attributable to common stockholders:		
Basic and Diluted	$ (0.09)	$ (1.56)
Weighted average shares used to compute earnings per share attributable to common stockholders:		
Basic and Diluted	19,460,299	16,256,465

The accompanying Notes to Consolidated Financial Statements are an integral part of these consolidated financial statements

BioLife Solutions, Inc.
Consolidated Statements of Shareholders' Equity

(In thousands, except share data)	Preferred Stock Shares – Series A	Preferred Stock Amount – Series A	Common Stock Shares	Common Stock Amount	Additional Paid-in Capital	Accumulated Deficit	Total Shareholders' Equity (Deficit)
Balance, December 31, 2017 (restated)	4,250	$ —	14,021,422	$ 14	$ 63,505	$ (73,051)	$ (9,532)
Series A preferred stock redemption	(4,250)	—	—	—	(4,241)	(9)	(4,250)
Stock based compensation	—	—	—	—	1,519	—	1,519
Stock issued for private equity transaction – Casdin Capital, net of legal fees of $85,000	—	—	1,428,571	2	19,913	—	19,915
Stock option exercises	—	—	365,983	—	508	—	508
Warrant exercises (restated)	—	—	2,608,844	3	31,768	—	31,771
Stock issued – on vested RSUs	—	—	116,647	—	—	—	—
Stock issued for services	—	—	5,939	—	36	—	36
Preferred stock dividends	—	—	—	—	—	(330)	(330)
Net loss (restated)	—	—	—	—	—	(25,005)	(25,005)
Balance, December 31, 2018 (restated)	—	$ —	18,547,406	$ 19	$ 113,008	$ (98,395)	$ 14,632
Stock based compensation	—	—	—	—	3,043	—	3,043
Shares issued in acquisitions	—	—	1,334,219	1	23,931	—	23,932
Stock option exercises	—	—	697,010	1	1,180	—	1,181
Warrant exercises	—	—	121,000	—	2,323	—	2,323
Stock issued – on vested RSUs	—	—	125,817	—	—	—	—
Net loss	—	—	—	—	—	(1,657)	(1,657)
Balance, December 31, 2019	—	$ —	20,825,452	$ 21	$ 143,485	$ (100,052)	$ 43,454

The accompanying Notes to Consolidated Financial Statements are an integral part of these consolidated financial statements

BioLife Solutions, Inc.
Consolidated Statements of Cash Flows

(In thousands)	Years Ended December 31, 2019	2018 (restated)
Cash flows from operating activities		
Net loss	$ (1,657)	$ (25,005)
Adjustments to reconcile net income to net cash provided by operating activities		
Depreciation	718	338
Amortization of intangible assets	1,079	—
Stock-based compensation	3,043	1,519
Non cash lease expense	512	—
Loss from equity method investment in SAVSU	739	672
Gain on acquisition of SAVSU	(10,108)	—
Change in fair value of contingent consideration	50	—
Deferred income tax benefit	(1,541)	—
Change in fair value of warrant liability	12,835	28,271
Other	15	(127)
Change in operating assets and liabilities		
Accounts receivable, trade, net	(290)	(2,024)
Inventories	(3,777)	(1,662)
Prepaid expenses and other current assets	(704)	(104)
Accounts payable	768	(11)
Accrued expenses and other current liabilities	(246)	497
Other liabilities	(81)	—
Other	(142)	(16)
Net cash provided by operating activities	1,213	2,348
Cash flows from investing activities		
Cash acquired in acquisition of SAVSU	1,251	—
Acquisition of Astero Bio, net of cash acquired	(12,439)	—
Payments related to the acquisition of CBS	(11,000)	—
Investment in Sexton	(1,500)	—
Investment in iVexSol convertible debt	(1,000)	—
Purchase of property and equipment	(675)	(500)
Purchase of assets held for lease	(1,655)	—
Investment in SAVSU	—	(6,000)
Net cash used in investing activities	(27,018)	(6,500)
Cash flows from financing activities		
Stock issue from private equity transaction	—	20,000
Proceeds from exercise of common stock options	1,181	508
Proceeds from exercise of warrants	574	12,392
Payments for redemption of preferred stock	—	(4,250)
Payments of preferred stock dividends	—	(436)
Other	(159)	(68)
Net cash provided by financing activities	1,596	28,146
Net increase (decrease) in cash and cash equivalents	(24,209)	23,994
Cash and cash equivalents – beginning of year	30,657	6,663
Cash and cash equivalents – end of year	$ 6,448	$ 30,657
Non-cash investing and financing activities		
Purchase of property and equipment not yet paid	$ 29	$ 54
Stock issued as consideration to acquire SAVSU	19,932	—
Stock issued as consideration to acquire assets of CBS	4,000	—
Stock issued for services in prior period included in liabilities at prior year-end	—	36
Reclassification of warrant liabilities to equity upon exercise	1,749	19,378
Receivables converted to equity investment in SAVSU	—	150
Purchase of equipment with debt	—	18
Legal fees for private equity transaction not yet paid	—	44

The accompanying Notes to Consolidated Financial Statements are an integral part of these consolidated financial statements

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. Organization and Significant Accounting Policies

Business

BioLife Solutions, Inc. (“BioLife,” “us,” “we,” “our,” or the “Company”) is a leading developer, manufacturer and supplier of a portfolio of bioproduction tools including; proprietary biopreservation media, automated thawing devices, cloud-connected shipping containers, and freezer technology for cell and gene therapies. Our CryoStor® freeze media and HypoThermosol® hypothermic storage are optimized to preserve cells in the regenerative medicine market. These novel biopreservation media products are serum-free and protein-free, fully defined, and are formulated to reduce preservation-induced cell damage and death; offering commercial companies and clinical researchers significant improvement in shelf life and post-preservation viability and function. Our ThawSTAR® product line is comprised of a family of automated thawing devices for frozen cell and gene therapies packaged in cryovials and cryobags. These products improve the quality of administration of high-value, temperature-sensitive biologic therapies to patients by standardizing the thawing process and reducing the risks of contamination and overheating, which are inherent with the use of traditional water baths. Our evo shipping containers are innovative high-performance cloud-connected passive storage and transport containers for temperature-sensitive biologics and pharmaceuticals. Our cryogenic freezer technology, provides for controlled rate freezing and storage of biologic materials.

Use of estimates

The preparation of financial statements in conformity with generally accepted accounting principles ("GAAP") requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the financial statements and reported amounts of revenue and expenses during the reporting period. Actual results could differ from those estimates.

Significant estimates and assumptions by management affect the Company's allowance for doubtful accounts, the net realizable value of inventory, fair value of warrant liability, valuation of market based awards, valuations and purchase price allocations related to investments and business combinations, expected future cash flows including growth rates, discount rates, terminal values and other assumptions and estimates used to evaluate the recoverability of long-lived assets, estimated fair values of intangible assets and goodwill, amortization methods and periods, certain accrued expenses, share-based compensation, contingent consideration from business combinations, tax reserves and recoverability of the Company's net deferred tax assets, and related valuation allowance.

The Company regularly assesses these estimates, however, actual results could differ materially from these estimates. Changes in estimates are recorded in the period in which they become known. The Company bases its estimates on historical experience and various other assumptions that it believes to be reasonable under the circumstances.

Basis of Presentation

The consolidated financial statements include the accounts of the Company and its wholly-owned subsidiaries, Astero Bio Corporation ("Astero" or "ThawStar" acquired on April 1, 2019), SAVSU Technologies, Inc. ("SAVSU" acquired on August 8, 2019), and Arctic Solutions, Inc. dba Custom Biogenic Systems ("CBS" acquired on November 12, 2019). All significant intercompany accounts and transactions have been eliminated in consolidation.

The Company operates and manages its business as one reportable and operating segment, which is the business of bioproduction tools. The Company's Chief Executive Officer and Chief Financial and Operating Officer, who are the chief operating decision makers, review financial information on an aggregate basis for purposes of allocating and evaluating financial performance. All long-lived assets are maintained in the United States of America.

Liquidity and capital resources

As of December 31, 2019, we had $6.4 million in cash and cash equivalents, compared to $30.7 million at December 31, 2018. The reduction in cash is primarily due to the cash payments associated with the 2019 acquisitions of Astero and CBS. We acquired Astero on April 1, 2019 for $12.5 million in cash and contingent consideration of up to $8.5 million (which payment requirement has not been triggered or otherwise paid to date). We anticipate paying $484,000 for the earnout related to 2019 revenues of Astero in early 2020. On August 8, 2019, we acquired SAVSU for 1,100,000 shares of common stock. On November 12, 2019, we acquired CBS for $11.0 million in cash, $4.0 million in shares of our common stock, and up to $15.0 million in contingent consideration payable in cash or stock (which payment requirement has not been triggered or otherwise paid to date).

Based on our current expectations with respect to our future revenue and expenses, we believe that our current level of cash and cash equivalents will be sufficient to meet our liquidity needs for at least the next 12 months. However, if our revenues do not grow as expected, including as a result of the COVID-19 pandemic, and if we are not able to manage expenses sufficiently, we may be required to obtain additional equity or debt financing if our cash resources are depleted. Further, the Company may choose to raise additional capital through a debt or equity financing in an attempt to mitigate the heightened level of business uncertainty caused by the COVID-19 pandemic, or in order to pursue additional acquisition or strategic investment opportunities. Additional capital, if required, may not be available on reasonable terms, if at all.

Revenue recognition

To determine revenue recognition for contractual arrangements that we determine are within the scope of Financial Accounting Standards Board ("FASB") Topic 606, "Revenue from Contracts with Customers", we perform the following five steps: (i) identify each contract with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to our performance obligations in the contract; and (v) recognize revenue when (or as) we satisfy the relevant performance obligation. We only apply the five-step model to contracts when it is probable that we will collect the consideration we are entitled to in exchange for the goods or services we transfer to the customer. Our revenues are primarily generated from the sale of our biopreservation media, ThawStar, and freezer products. We generally recognize product revenue, including shipping and handling charges billed to customers, when we transfer control of our products to our customers (transfer of control generally occurs upon shipment of our product). Shipping and handling costs are classified as part of cost of product revenue in the statement of operations. We are not required to disclose the value of unsatisfied performance obligations as our contracts have a duration of one year or less.

The Company also generates revenue from the leasing of our evo cold chain systems, which are typically cloud-connected shippers with enabling cold chain cloud applications, to customers pursuant to rental arrangements entered into with the customer. Revenue from the rental of cold chain systems is not within the scope of FASB ASC Topic 606 as it is within the scope of FASB ASC Topic 842, "Leases". All customers leasing shippers currently do so under month-to-month rental arrangements. We account for these rental transactions as operating leases and record rental revenue on a straight-line basis over the rental term. These rental arrangements may contain both lease and non-lease components. We have elected to utilize the practical expedient to account for lease and non-lease components together as a single combined lease component as the timing and pattern of transfer are the same for the non-lease components and associated lease component and, the lease component, if accounted for separately, would be classified as an operating lease.

The following table presents revenues by product line:

(In thousands)	Year Ended December 31, 2019	2018
Biopreservation media	$ 23,358	$ 19,742
Automated thaw	1,184	—
evo shippers	692	—
Freezers and accessories	2,137	—
Total revenue	$ 27,371	$ 19,742

Risks and Uncertainties

The Company evaluates its operations periodically to determine if any risks and uncertainties exist that could impact its operations in the near term. The Company does not believe that there are any significant risks which have not already been disclosed in the consolidated financial statements. A loss of certain suppliers could temporarily disrupt operations, although alternate sources of supply exist for these items. The Company has mitigated these risks by building finished good and raw material inventory from certain key suppliers. See Note 17: “Subsequent Events” for more information regarding the impact of COVID-19.

Earnings per share

The Company considers its unexercised warrants and unvested restricted shares, which contain non-forfeitable rights to dividends, participating securities, and includes such participating securities in its computation of earnings per share pursuant to the two-class method. Basic earnings per share for the two classes of stock (common stock and warrants) is calculated by dividing net income by the weighted average number of shares of common stock and warrants outstanding during the reporting period. Diluted earnings per share is calculated using the weighted average number of shares of common stock plus the potentially dilutive effect of common equivalent shares outstanding determined under both the two class method and the treasury stock method, whichever is more dilutive.

The following table presents computations of basic and diluted earnings per share under the two class method:

(In thousands, except share and earnings per share data)	Year Ended December 31, 2019	2018 (restated)
Numerator:		
Net loss attributable to BioLife Solutions	$ (1,657)	$ (25,005)
Less: Preferred stock dividends and accumulated deficit impact of preferred stock redemption	—	(339)
Basic net loss attributable to common stockholders	(1,657)	(25,344)
Denominator:		
Basic and diluted weighted average shares outstanding	19,460,299	16,256,465
Basic and diluted earnings per share attributable to common stockholders	$ (0.09)	$ (1.56)

The following table sets forth the number of shares excluded from the computation of diluted loss per share, as their inclusion would have been anti-dilutive:

	Year Ended December 31, 2019	2018 (restated)
Stock options and restricted stock awards	2,564,456	2,819,306
Warrants	2,903,813	2,551,507
Total	5,520,495	5,370,813

Cash and cash equivalents

Cash equivalents consist primarily of interest-bearing money market accounts. We consider all highly liquid debt instruments purchased with an initial maturity of three months or less to be cash equivalents. We maintain cash balances that may exceed federally insured limits. We do not believe that this results in any significant credit risk.

Inventories

Inventories relate to the Company's cell and gene therapy products. The Company values inventory at cost or, if lower, net realizable value, using the first-in, first-out method. The Company reviews its inventories at least quarterly and records a provision for excess and obsolete inventory based on its estimates of expected product revenue volume, production capacity and expiration dates of raw materials, work-in-process and finished products. The Company writes down inventory that has become obsolete, inventory that has a cost basis in excess of its expected net realizable value, and inventory in excess of expected requirements to cost of product revenue. A change in the estimated timing or amount of demand for the Company's products could result in additional provisions for excess inventory quantities on hand. Any significant unanticipated changes in demand or unexpected quality failures could have a significant impact on the value of inventory and reported operating results. During all periods presented in the accompanying consolidated financial statements, there have been no material adjustments related to a revised estimate of inventory valuations. Work-in-process and finished products inventories consist of material, labor, outside testing costs and manufacturing overhead.

Accounts receivable

Accounts receivable consist of short-term amounts due from our customers (generally 30 to 90 days) and are stated at the amount we expect to collect. We establish an allowance for doubtful accounts based on our assessment of the collectability of specific customer accounts. Changes in accounts receivable are primarily due to the timing and magnitude of orders of our products, the timing of when control of our products is transferred to our customers and the timing of cash collections.

Accounts receivable are stated at principal amount, do not bear interest, and are generally unsecured. We provide an allowance for doubtful accounts based on an evaluation of customer account balances past due ninety days from the date of invoicing. Accounts considered uncollectible are charged against the established allowance.

Investments

We periodically invest in securities of private companies to promote business and strategic objectives. These investments are measured and recorded as follows:

Non-marketable equity securities are equity securities without a readily determinable fair value. At December 31, 2019 this investment is comprised of $1.5 million in Series A Preferred Stock in Sexton BioTechnologies, Inc. ("Sexton") This investment is measured and recorded using a measurement alternative that measures the securities at cost minus impairment, if any. The preferred stock is also convertible at our option into common stock at a price of $0.33 per share.

As of December 31, 2019, management believes there are no indications of impairment for Sexton.

In September of 2019 the company invested $1.0 million in a convertible note receivable of iVexSol, Inc. ("iVexSol"). The Company has made an irrevocable election to record this convertible note in its entirety at fair value utilizing the fair value option available under U.S. GAAP. The company believes that carrying this investment at fair value better portrays the economic substance of the investment. Under the fair value option, gains and losses on the convertible note are included in unrealized gains/(losses) on investments within net earnings each reporting period. Gains/(losses) related to this convertible note were not material for the year ended December 31, 2019. The fair value of the Note on the date of investment was determined to be equal to its principal amount. Interest income related to this Note is recorded separately from other changes in its fair value within interest income each period.

The following table represents the difference between the fair value and the unpaid principal balance of the convertible note as of December 31, 2019:

Fair value as of December 31, 2019	Unpaid principal balance as of December 31, 2019	Fair value carry amount (over)/under
$1,000,000	$1,000,000	$—

Equity Method Investments

Equity method investments at December 31, 2018, consist entirely of our investment in SAVSU. We accounted for our ownership in SAVSU using the equity method of accounting prior to our acquisition of the remaining ownership interest in SAVSU on August 8, 2019. This method states that if the investment provides us the ability to exercise significant influence, but not control, over the investee, we account for the investment under the equity method. Significant influence is generally deemed to exist if the Company's ownership interest in the voting stock of the investee ranges between 20% and 50%, although other factors, such as representation on the investee's board of directors, are considered in determining whether the equity method of accounting is appropriate. Under the equity method of accounting, the investment is recorded at its initial carrying value in the consolidated balance sheet and is periodically adjusted for capital contributions, dividends received and our share of the investee's earnings or losses together with other-than-temporary impairments which are recorded as a component of other income (expense), net in the consolidated statements of operations. For the period prior to acquisition, January 1, 2019 through August 7, 2019, SAVSU's net loss totaled $1.7 million. For the year ended December 31, 2018, SAVSU's net loss totaled $1.9 million.

Property and equipment

Property and equipment are stated at cost and are depreciated using the straight-line method over estimated useful lives of three to ten years. Leasehold improvements are amortized using the straight-line method over the shorter of the estimated useful lives of the assets or the remaining lease term of the respective assets. Gains or losses on disposals of property and equipment are recorded within income from operations. Costs of repairs and maintenance are included as part of operating expenses unless they are incurred in relation to major improvements to existing property and equipment, at which time they are capitalized.

Property and equipment are reviewed for impairment whenever events or changes in circumstances indicate that their net book value may not be recoverable. If the sum of the expected future cash flows (undiscounted and before interest) from the use of the assets is less than the net book value of the asset an impairment could exist and the amount of the impairment loss, if any, will generally be measured as the difference between the net book value of the assets and their estimated fair values. There were no impairment losses recognized during the years ended December 31, 2019 and 2018.

Assets held for rent

Assets held for rent are carried at cost less accumulated depreciation. These assets consist of evo shippers and related components in production shippers complete and ready to be deployed and placed in service upon a customer order, shippers in the process of being assembled, and components available to build shippers. When the shipper is sent to our customers, we depreciate the cost of the shippers over its estimated useful life of three years.

Our customers rent the shippers per a rental agreement. Each agreement provides for fixed monthly rent. Rental revenue and fees are recognized over the rental term on a straight-line basis. We retain the ownership of the shippers and the evo tracking software platform. At the end of the rental agreement, the customer returns the shipper to the company.

Assets held for rent are reviewed for impairment whenever events or changes in circumstances indicate that their net book value may not be recoverable. If the sum of the expected future cash flows (undiscounted and before interest) from the use of the assets is less than the net book value of the asset an impairment could exist and the amount of the impairment loss, if any, will generally be measured as the difference between the net book value of the assets and their estimated fair values. There were no impairment losses recognized during the years ended December 31, 2019 and 2018.

Lease Accounting

In February 2016, the FASB issued Accounting Standards Update (“ASU”) No. 2016-02, Leases: ASC Topic 842, “Leases” (“ASU 2016-02”) that replaces existing lease guidance. The new standard is intended to provide enhanced transparency and comparability by requiring lessees to record right-of-use assets and corresponding lease liabilities on the balance sheet. Under the new guidance, leases will continue to be classified as either finance or operating, with classification affecting the pattern of expense recognition in the consolidated Statements of Operations. Lessor accounting is largely unchanged under ASU 2016-02.

We adopted ASU 2016-02 and related ASUs (collectively Accounting Standards Codification (“ASC”) 842) effective January 1, 2019 using the modified retrospective method and did not restate comparative periods. Consequently, periods before January 1, 2019 will continue to be reported in accordance with the prior accounting guidance, ASC 840, “Leases”. We elected the package of practical expedients, which permits us to retain prior conclusions about lease identification, lease classification and initial direct costs for leases that commenced before January 1, 2019. The new standard also provides practical expedients for an entity’s ongoing accounting. We elected the short-term lease recognition exemption for all leases that qualify. We also elected the practical expedient to combine lease and non-lease components for all of our leases other than net lease real estate leases.

The adoption of this standard resulted in the recording of operating lease right-of-use assets of $1.3 million and short-term and long-term lease liabilities of $1.8 million as of January 1, 2019. The difference between right-of-use assets and lease liabilities relates to liabilities of $0.5 million for deferred rent and lease incentives liabilities that were included on our Balance Sheet prior to adoption of ASC Topic 842, “Leases”. These amounts were eliminated at the time of adoption and are included in the lease liabilities. Adoption of ASC Topic 842, “Leases” did not have a material impact on the Company’s net earnings and had no impact on cash flows.

Income taxes

We account for income taxes using an asset and liability method which generally requires recognition of deferred tax assets and liabilities for the expected future tax effects of events that have been included in the financial statements or tax returns. Under this method, deferred tax assets and liabilities are recognized for the future tax effects of differences between tax bases of assets and liabilities, and financial reporting amounts, based upon enacted tax laws and statutory rates applicable to the periods in which the differences are expected to affect taxable income. We evaluate the likelihood of realization of deferred tax assets and provide an allowance where, in management’s opinion, it is more likely than not that the asset will not be realized.

We determine any uncertain tax positions based on a determination of whether and how much of a tax benefit taken in the Company’s tax filings or positions is more likely than not to be sustained upon examination by the relevant income tax authorities.

Judgment is applied in the determination of the financial statement recognition and measurement of tax positions taken or expected to be taken in a tax return. We have not recorded any liabilities for uncertain tax positions or any related interest and penalties. Our tax returns are open to audit for years ending December 31, 2016 to 2019.

Advertising

Advertising costs are expensed as incurred and totaled $43,000 and $30,000 for the years ended December 31, 2019 and 2018, respectively.

Concentrations of credit risk and business risk

In the years 2019 and 2018, we derived approximately 15% of our revenue from one customer and 29% of our revenue from two customers, respectively. All revenue from foreign customers are denominated in United States dollars.

The following table represents the Company's total revenue by geographic area (based on the location of the customer):

Revenue by customers' geographic locations	Year Ended December 31, 2019	2018
United States	69%	77%
Canada	16%	13%
Europe, Middle East, Africa (EMEA)	14%	8%
Other	1%	2%
Total revenue	100%	100%

At December 31, 2019, two customers accounted for 25% of gross accounts receivable. At December 31, 2018, three customers accounted for 71% of gross accounts receivable. No other customers accounted for more than 10% of our gross accounts receivable. In the years 2019 and 2018, we derived approximately 74% and 88%, respectively, of our revenue from CryoStor products.

Research and development

Research and development costs are expensed as incurred.

Stock-based Compensation

We measure and record compensation expense using the applicable accounting guidance for share-based payments related to stock options, time-based restricted stock, and performance-based awards granted to our directors and employees. The fair value of stock options, including performance awards, without a market condition is determined by using the Black-Scholes option-pricing model. The fair value of restricted stock awards with a market condition is estimated, at the date of grant, using the Monte Carlo Simulation model. The Black-Scholes and Monte Carlo Simulation valuation models incorporate assumptions as to stock price volatility, the expected life of options or awards, a risk-free interest rate and dividend yield. In valuing our stock options, significant judgment is required in determining the expected volatility of our common stock and the expected life that individuals will hold their stock options prior to exercising. Expected volatility for stock options is based on the historical and implied volatility of our own common stock while the volatility for our restricted stock awards with a market condition is based on the historical volatility of our own stock and the stock of companies within our defined peer group. Further, our expected volatility may change in the future, which could substantially change the grant-date fair value of future awards and, ultimately, the expense we record. The fair value of restricted stock, including performance awards, without a market condition is estimated using the current market price of our common stock on the date of grant.

We expense stock-based compensation for stock options, restricted stock awards, and performance awards over the requisite service period. For awards with only a service condition, we expense stock-based compensation using the straight-line method over the requisite service period for the entire award. For awards with a market condition, we expense over the vesting period regardless of the value that the award recipients ultimately receive.

Business Combinations, Goodwill and Intangible Assets

Business Combinations

The Company accounts for business acquisitions using the acquisition method as required by FASB ASC Topic 805, “Business Combinations”.

The Company’s identifiable assets acquired and liabilities, including identified intangible assets, assumed in a business combination are recorded at their acquisition date fair values. The valuation requires management to make significant estimates and assumptions, especially with respect to long-lived and intangible assets. Critical estimates in valuing intangible assets include, but are not limited to:

- future expected cash flows, including revenue and expense projections;
- discount rates to determine the present value of recognized assets and liabilities and;
- revenue volatility to determine contingent consideration using option pricing models

The Company’s estimates of fair value are based upon assumptions it believes to be reasonable, but that are inherently uncertain and unpredictable. Assumptions may be incomplete or inaccurate, and unanticipated events and circumstances may occur. While the Company uses its best estimates and assumptions to value assets acquired and liabilities assumed as of the acquisition date, the estimates are inherently uncertain and subject to refinement.

Goodwill is calculated as the excess of the acquisition price over the fair value of net assets acquired, including the amount assigned to identifiable intangible assets. Acquisition-related costs, including advisory, legal, accounting, valuation, and other costs, are expensed in the periods in which these costs are incurred. The results of operations of an acquired business are included in the consolidated financial statements beginning at the acquisition date.

The Company estimates the acquisition date fair value of the acquisition-related contingent consideration using various valuation approaches, including option pricing models, as well as significant unobservable inputs, reflecting the Company’s assessment of the assumptions market participants would use to value these liabilities. The fair value of the contingent consideration is remeasured each reporting period, with any change in the value recorded as other income or expense.

During the measurement period, which may be up to one year from the acquisition date, any refinements made to the fair value of the assets acquired, liabilities assumed, or contingent consideration are recorded in the period in which the adjustments are recognized. Upon the conclusion of the measurement period or final determination of the fair value of the assets acquired, liabilities assumed, or contingent consideration, whichever comes first, any subsequent adjustments are recognized in the consolidated statements of operations.

Goodwill

Goodwill represents the excess of the purchase price over the net amount of identifiable assets acquired and liabilities assumed in a business combination measured at fair value. Goodwill is not amortized but is tested for impairment at least annually. The Company reviews goodwill for impairment annually at the end of its fourth fiscal quarter and whenever events or changes in circumstances indicate that the fair value of a reporting unit may be less than its carrying amount (a triggering event). The Company first assesses qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount as a basis for determining whether it is necessary to perform the quantitative goodwill impairment test described in FASB ASC Topic 350, “Intangibles – Goodwill and Other”. The more likely than not threshold is defined as having a likelihood of more than 50 percent. If, after assessing the totality of events or circumstances, the Company determines that it is not more likely than not that the fair value of a reporting unit is less than its carrying amount, then performing the quantitative goodwill impairment test is unnecessary and goodwill is considered to be unimpaired. However, if based on the qualitative assessment the Company concludes that it is more likely than not that the fair value of a reporting unit is less than its carrying amount, the Company will proceed with performing the quantitative goodwill impairment test. In performing the quantitative goodwill impairment test, the Company determines the fair value of each reporting unit and compares it to its carrying value. If the fair value of the reporting unit exceeds the carrying value of the net assets assigned to that unit, goodwill is not impaired. If the carrying value of a reporting unit exceeds its fair value, the Company records an impairment loss equal to the difference. As of December 31, 2019, management believes there are no indications of impairment.

Intangible Assets

Intangible assets consist of developed technology, customer relationships, and tradenames and trademarks, resulting from the Company's acquisitions. Intangible assets are recorded at fair value on the date of acquisition and amortized over their estimated useful lives on a straight-line basis. Intangible assets and their related useful lives are reviewed at least annually to determine if any adverse conditions exist that would indicate the carrying value of these assets may not be recoverable. More frequent impairment assessments are conducted if certain conditions exist, including a change in the competitive landscape, any internal decisions to pursue new or different technology strategies, a loss of a significant customer, or a significant change in the marketplace, including changes in the prices paid for the Company's products or changes in the size of the market for the Company's products. If impairment indicators are present, the Company determines whether the underlying intangible asset is recoverable through estimated future undiscounted cash flows. If the asset is not found to be recoverable, it is written down to the estimated fair value of the asset based on the sum of the future discounted cash flows expected to result from the use and disposition of the asset. If the estimate of an intangible asset's remaining useful life is changed, the remaining carrying amount of the intangible asset is amortized prospectively over the revised remaining useful life. The Company continues to believe that its definitive-lived intangible assets are recoverable at December 31, 2019.

Certain Warrants which have Features that may Result in Cash Settlement

Warrants that include cash settlement features are recorded as liabilities at their estimated fair value at the date of issuance and are remeasured at fair value each reporting period with the increase or decrease in fair value recorded in the Consolidated Statements of Operations. The warrants are measured at estimated fair value using the Black Scholes valuation model, which is based, in part, upon inputs for which there is little or no observable market data, requiring the Company to develop its own assumptions. Inherent in this model are assumptions related to expected stock-price volatility, expected life, risk-free interest rate and dividend yield. We estimate the volatility of our common stock at the date of issuance, and at each subsequent reporting period, based on historical volatility that matches the expected remaining life of the warrants. The risk-free interest rate is based on the U.S. Treasury zero-coupon yield curve on the grant date for a maturity similar to the expected remaining life of the warrants. The expected life of the warrants is assumed to be equivalent to their remaining contractual term. The dividend rate is based on our historical rate, which we anticipate to remain at zero. The assumptions used in calculating the estimated fair value of the warrants represent our best estimates. However, these estimates involve inherent uncertainties and the application of management judgment. As a result, if factors change and different assumptions are used, the warrant liability and the change in estimated fair value could be materially different. The following is our weighted average assumptions used in the Black Scholes calculations of the warrants:

	Year Ended December 31,	
	2019	**2018**
Risk free interest rate	1.9%	2.6%
Expected dividend yield	0.0%	0.0%
Expected lives	1.7	2.8
Expected volatility	70.3%	63.4%

Recent accounting pronouncements

In August 2018, the FASB issued ASU 2018-13, “Fair Value Measurement (Topic 820): Disclosure Framework – Changes to the Disclosure Requirements for Fair Value Measurement.” ASU 2018-13 includes amendments that aim to improve the effectiveness of fair value measurement disclosures. The amendments in this guidance modify the disclosure requirements on fair value measurements based on the concepts in FASB Concepts Statement, “Conceptual Framework for Financial Reporting—Chapter 8: Notes to Financial Statements,” including the consideration of costs and benefits. The amendments become effective for the Company in the year ending December 31, 2020 and early adoption is permitted. The Company will adopt this guidance in the first quarter of 2020 and expects there to be no material impact on its consolidated financial statements.

In December 2019, the FASB issued ASU 2019-12, “Income Taxes (Topic 740) – Simplifying the Accounting for Income Taxes.” ASU 2019-12 simplifies the accounting for income taxes by removing certain exceptions to the general principles in Topic 740, including, but not limited to, the exception to the incremental approach for intraperiod tax allocation when there is a loss from continuing operations and income or a gain from other items, the exceptions related to the recognition of a deferred tax liability related to an equity method investment and the exception to methodology for calculating income taxes in an interim period when a year-to-date loss exceeds the anticipated loss for the year. ASU 2019-12 becomes effective for the Company in the year ended December 31, 2021, including interim periods. The Company is considering early adoption in 2020. Due to the full valuation allowance on the Company’s net deferred tax assets, the Company is currently expecting no material impact from the adoption of ASU 2019-12 on its consolidated financial statements.

In June 2016, the FASB issued ASU No. 2016-13, “Financial Instruments – Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments.” ASU 2016-13 requires companies to measure credit losses utilizing a methodology that reflects expected credit losses and requires a consideration of a broader range of reasonable and supportable information to inform credit loss estimates. For Smaller Reporting Companies as defined by the SEC, ASU 2016-13 is effective for fiscal years beginning after December 15, 2022, including interim periods within those fiscal years. The Company is evaluating the impact of the guidance on its financial statements.

In August 2018, the FASB issued ASU No. 2018-15, “Intangibles—Goodwill and Other—Internal-Use Software (Subtopic 350-40): Customer’s Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract”, which clarifies the accounting for implementation costs in cloud computing arrangements. ASU 2018-15 is effective for fiscal years beginning after December 15, 2019, including interim periods within those fiscal years. The Company will adopt the standard prospectively on January 1, 2020. The Company does not expect the adoption of ASU 2018-15 to result in a material change to its financial statements.

2. Restatement of Consolidated Financial Statements

Background

In March 2014, pursuant to a registered public offering and note conversion agreement with certain note holders of the Company, the Company issued warrants ("Warrants") to purchase common stock of the Company. These Warrants were initially classified as equity. The Warrants included a cash settlement feature that could arise in certain very limited events, therefore, the Company is now of the view that the Warrants should have been accounted for as a liability, recorded at fair value at the date of issuance, and marked to market at each reporting period. All changes in fair value should have been recorded in earnings. The company has evaluated the financial statement impact of changing the warrant classification from equity to liability for previously reported periods and concluded that this impact is material.

As a result, the amounts previously reported for the periods ended March 31, June 30, September 30 and December 31, 2018 and March 31, June 30, and September 30 2019 are restated in these financial statements, collectively known as the "Affected Periods." See Note 16: "*Quarterly Financial Information (Unaudited)*" for more information on further restatements affecting quarterly periods.

Impact of the Restatement

The cumulative effect of these adjustments on the Company's previously-reported accumulated deficit and total shareholders' equity was an increase of $27.4 million and a decrease of $28.5 million, respectively, as of the beginning of the fiscal year ended December 31, 2018. These adjustments do not impact the amounts previously reported for the Company's cash and cash equivalents, net cash used for operating activities, revenue or operating expenses in any of the Affected Periods.

All of the following adjustments relate to marking the Warrants to fair value at period end. The effects of the restatement on the following financial statement line items as of and for the periods indicated are summarized in the following tables:

	Balance Sheet		
(In thousands)	**As Previously Reported**	**Adjustments**	**As Restated**
As of December 31, 2018			
Warrant liability	$ —	$ 28,516	$ 28,516
Total liabilities	$ 2,319	$ 28,516	$ 30,835
Additional paid in capital	$ 114,160	$ (1,152)	$ 113,008
Accumulated deficit	$ (71,031)	$ (27,364)	$ (98,395)
Total shareholders' equity	$ 43,148	$ (28,516)	$ 14,632

	Statement of Operations		
(In thousands, except per share data)	**As Previously Reported**	**Adjustments**	**As Restated**
For the year ended December 31, 2018			
Change in fair value of warrants	$ —	$ (28,271)	$ (28,271)
Total other expense	$ (396)	$ (28,271)	$ (28,667)
Net income (loss) before provision for income taxes	$ 3,266	$ (28,271)	$ (25,005)
Net income (loss)	$ 3,266	$ (28,271)	$ (25,005)
Net income (loss) attributable to common stockholders	$ 2,927	$ (28,271)	$ (25,344)
Basic net income (loss) per common share	$ 0.18	$ (1.74)	$ (1.56)
Diluted net income (loss) per common share	$ 0.14	$ (1.70)	$ (1.56)

	Statement of Shareholders' Equity / Deficit		
(In thousands)	**As Previously Reported**	**Adjustments**	**As Restated**
From March 31, 2014 to January 1, 2018			
Additional paid-in capital	$ 84,036	$ (20,531)	$ 63,505
Accumulated deficit	$ (73,958)	$ 907	$ (73,051)
Total shareholders' equity / (deficit)	$ 10,092	$ (19,624)	$ (9,532)

	Statement of Cash Flows		
(In thousands)	**As Previously Reported**	**Adjustments**	**As Restated**
For the year ended December 31, 2018			
Net income (loss)	$ 3,266	$ (28,271)	$ (25,005)
Change in fair value of warrant liability	$ —	$ 28,271	$ 28,271

3. Fair Value Measurement

In accordance with FASB ASC Topic 820, "Fair Value Measurements and Disclosures," ("ASC Topic 820"), the Company measures its cash and cash equivalents and investments at fair value on a recurring basis. The company also measures certain assets and liabilities at fair value on a non-recurring basis when applying acquisition accounting. ASC Topic 820 clarifies that fair value is an exit price, representing the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. As such, fair value is a market-based measurement that should be determined based on assumptions that market participants would use in pricing an asset or liability. As a basis for considering such assumptions, ASC Topic 820 establishes a three-tier value fair hierarchy, which prioritizes the inputs used in measuring fair value as follows:

Level 1 – Observable inputs that reflect quoted prices (unadjusted) in active markets for identical assets or liabilities.

Level 2 – Observable inputs other than quoted prices included in Level 1 for similar assets or liabilities, quoted prices in markets that are not active or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the related assets or liabilities.

Level 3 – Unobservable data points for the asset or liability, and include situations where there is little, if any, market activity for the asset or liability.

As of December 31, 2019, the Company valued the Astero and CBS contingent consideration and warrant liabilities at fair value. As of December 31, 2018, the Company valued warrant liabilities at fair value.

There were no remeasurements to fair value during the year ended December 31, 2019 of financial assets and liabilities that are not measured at fair value on a recurring basis.

The following tables set forth the Company's financial assets and liabilities measured at fair value on a recurring basis as of December 31, 2019 and December 31, 2018, based on the three-tier fair value hierarchy:

(In thousands)

As of December 31, 2019	**Level 1**	**Level 2**	**Level 3**	**Total**
Assets:				
Money market accounts	$ 6,448	$ —	$ —	$ 6,448
Convertible debt held at fair value	—	—	1,000	1,000
Total	6,448	—	1,000	7,448
Liabilities:				
Contingent consideration - business combinations	—	—	1,914	1,914
Warrant liability	$ —	$ —	$ 39,602	$ 39,602
Total	—	—	41,516	41,516

As of December 31, 2018	**Level 1**	**Level 2**	**Level 3**	**Total**
Assets:				
Money market accounts	$ 30,657	$ —	$ —	$ 30,657
Liabilities:				
Warrant liability (restated)	$ —	$ —	$ 28,516	$ 28,516

The fair values of money market funds classified as Level 1 were derived from quoted market prices as active markets for these instruments exist. The fair values of investments and contingent consideration classified as Level 3 were derived from management assumptions (see Note 1 – "*Organization and Significant Accounting Policies.*") There have been no transfers of assets or liabilities between the fair value measurement levels. The following table presents the changes in investments held at fair value which are measured using Level 3 inputs:

(In thousands)	**Year ended December 31, 2019**
Beginning balance	$ —
Purchases	1,000
Change in fair value recognized in net income	—
Total	$ 1,000

The following table presents the changes in fair value of contingent consideration liabilities which are measured using Level 3 inputs:

(In thousands)	**Year ended December 31, 2019**
Beginning balance	$ —
Additions	2,347
Change in fair value recognized in net income	50
Payments earned, reclassified to accrued liabilities	(483)
Total	$ 1,914

The following table presents the changes in fair value of warrant liabilities which are measured using Level 3 inputs:

(In thousands)	**Year ended December 31, 2019**	**Year ended December 31, 2018 (restated)**
Beginning balance (as restated)	$ 28,516	$ 19,623
Exercised warrants	(1,749)	(19,378)
Change in fair value recognized in net income	12,835	28,271
Ending balance	$ 39,602	$ 28,516

4. Inventories

Inventories consist of the following at December 31, 2019 and 2018:

(In thousands)	**2019**	**2018**
Raw materials	$ 2,979	$ 1,453
Work in progress	1,896	652
Finished goods	6,097	1,404
Total	$ 10,972	$ 3,509

5. Assets held for rent

Assets held for rent consist of the following at December 31, 2019:

(In thousands)	**December 31, 2019**
Shippers placed in service	$ 3,073
Accumulated depreciation	(174)
Net	2,899
Shippers and related components in production	1,023
Total	$ 3,922

Shippers and related components in production include shippers complete and ready to be deployed and placed in service upon a customer order, shippers in the process of being assembled, and components available to build shippers. We recognized $174,000 in depreciation expense related to assets held for rent during the year ended December 31, 2019.

6. Leases

We lease approximately 32,106 square feet in our Bothell, Washington headquarters. The term of our lease continues until July 31, 2021 with two options to extend the term of the lease, each of which is for an additional period of five years, with the first extension term commencing, if at all, on August 1, 2021, and the second extension term commencing, if at all, immediately following the expiration of the first extension term. In accordance with the amended lease agreement, our monthly base rent is approximately $63,000 at December 31, 2019, with scheduled annual increases each August and again in October for the most recent amendment. We are also required to pay an amount equal to the Company's proportionate share of certain taxes and operating expenses.

We lease approximately 1,250 square feet in our Menlo Park, California location. The term of our lease continues until July 1, 2020. In accordance with the lease agreement, the monthly base rent is approximately $5,000 at December 31, 2019. We are also required to pay an amount equal to the Company's proportionate electrical expenses.

We lease approximately 9,932 square feet in our Albuquerque, New Mexico location. The term of our lease continues until December 31, 2021 with two options to extend the terms of the lease, each of which is for an additional period of three years, with the first extension term commencing, if at all, on December 1, 2021, and the second extension term commencing, if at all, December 1, 2024. In accordance with the lease agreement, the monthly base rent is approximately $9,000 at December 31, 2019, with a monthly increase if the term is extended.

We lease approximately 106,998 square feet in our Detroit, Michigan location. The term of our lease continues until November 30, 2020 with one option to extend the term of the lease, for an additional sixty months, with the extension term commencing, if at all, on November 12, 2020. These extension options are not accounted for under ASC Topic 842, "Leases" because we are not reasonably certain we will enter into the renewal options in their current terms and the current term is less than 12 months. With adequate notice prior to expiration of the option notice period, we have the right to purchase the premises for a purchase price that is mutually acceptable to landlord and tenant as agreed to by the parties on or before the expiration of the option notice period. In the event that the parties are unable to mutually agree on the option purchase price then each party shall obtain, at its sole cost and expense, an appraisal of the premises and the option purchase price will be the average of the two appraisals. For the avoidance of doubt, tenant's right to elect to purchase the premises for the option purchase price shall terminate upon the expiration of the option notice period, but tenant shall not be obligated to close on the purchase of the premises prior to the expiration of the initial term. In accordance with the lease agreement, the monthly base rent is approximately $15,000 at December 31, 2019, with scheduled annual increases if the term is extended.

Operating leases recorded on our consolidated balance sheet are primarily related to our Bothell, Washington headquarters space lease and our Albuquerque, New Mexico, SAVSU, space lease. We have not included extension options in our ROU assets or lease liabilities as we are not reasonably certain we will enter into the renewal options in their current terms. Our Detroit, Michigan and Menlo Park, California lease are not recorded on our consolidated balance sheet as the term expires in one year or less.

Our financing lease is related to research equipment.

We used a weighted average discount rate of 6.5%, our market collateralized borrowing rate, and 8.1%, the weighted average implied interest on our leases, to determine our operating and financing lease liabilities, respectively. The weighted average remaining term of our operating and financing leases are 1.8 years and 1.2 years, respectively. We initially recognized $1.3 million in operating lease right of use assets and initially recognized $1.8 million in operating lease liabilities. Through the SAVSU acquisition we acquired $232,000 in operating lease right of use assets and acquired $232,000 in operating lease liabilities. The operating lease costs recognized in the year ended December 31, 2019 were $663,000, which consist of $612,000 in operating lease costs and $51,000 in short-term lease costs, we did not have any variable lease costs. The operating lease cash paid in the year ended December 31, 2019 of $778,000. Rent expense for the year ended December 31, 2018, was recognized under prior GAAP (ASC 840) and amounted to $809,000.

Maturities of our operating lease liabilities as of December 31, 2019 is as follows:

(In thousands)	Operating Leases	Financing Leases
2020	$ 873	$ 15
2021	559	3
Total lease payments	1,432	18
Less: interest	(78)	(1)
Total present value of lease liabilities	$ 1,354	$ 17

The following table provides the future minimum lease payments under noncancelable operating leases with lease terms in excess of one year at December 31, 2018 in accordance with ASC 840:

(In thousands)	Operating Leases
2019	$ 748
2020	764
2021	452
Total	1,964

7. Deferred Rent

We eliminated our deferred rent at January 1, 2019 as a result of the implementation of ASU 2016-02. Deferred rent consists of the following at December 31, 2018:

(In thousands)	2018
Landlord-funded leasehold improvements	$ 1,125
Less accumulated amortization	(757)
Total (current portion $130 December 31, 2018)	368
Straight line rent adjustment	111
Total deferred rent	$ 479

During the year ended December 31, 2018, the Company recorded $127,000 in deferred rent amortization of these landlord funded leasehold improvements.

Straight line rent adjustment for the year ended December 31, 2018 represents the difference between cash rent payments and the recognition of rent expense on a straight-line basis over the terms of the lease.

8. Goodwill and Intangible Assets

Goodwill

The following table represents the changes in the carrying value of goodwill for the year ended December 31, 2019:

(In thousands)	Goodwill
Balance as of December 31, 2018	$ —
Goodwill related to Astero acquisition	9,515
Goodwill related to SAVSU acquisition	21,037
Goodwill related to CBS acquisition	3,085
Balance as of December 31, 2019	$ 33,637

Intangible Assets

Intangible assets, net consisted of the following at December 31, 2019:

(In thousands, except weighted average useful life)	December 31, 2019			
Finite-lived intangible assets:	Gross Carrying Value	Accumulated Amortization	Net Carrying Value	Weighted Average Useful Life (in years)
Customer Relationships	$ 800	$ (51)	$ 749	5.6
Tradenames	2,590	(123)	2,467	8.1
Technology – acquired	19,020	(904)	18,116	8.4
In-process R&D(1)	650	—	650	9.0
Total intangible assets	$ 23,060	$ (1,078)	$ 21,982	8.3

(1) In-process R&D represents the fair value of incomplete research and development that has not yet reached technological feasibility. We will amortize the asset upon technological feasibility, which has been placed in service in the second quarter of 2020.

Amortization expense for finite-lived intangible assets was $1.1 million for the year ended December 31, 2019. In-process research and development was put into service in the second quarter of 2020, as such we have included the amortization in the schedule below based on an estimated life of 9 years. As of December 31, 2019, the Company expects to record the following amortization expense:

(In thousands) **For the Years Ended December 31,**	**Estimated Amortization Expense**
2020	$ 2,788
2021	2,825
2022	2,825
2023	2,795
2024	2,770
Thereafter	7,979
Total	$ 21,982

9. Income Taxes

The provision (benefit) for income taxes consists of the following:

	Year Ended December 31,	
(In thousands)	**2019**	**2018**
Federal	—	—
State	—	—
Total current tax provision	—	—
Federal	(1,541)	—
State	—	—
Total deferred tax provision	(1,541)	—
Provision (benefit) for income taxes	$ (1,541)	—

In connection with the 2019 SAVSU Acquisition, the Company recognized a deferred tax liability of $1.5 million on acquired intangible assets. As a result, the Company recorded an income tax benefit of $1.5 million for the release of valuation allowance on our existing U.S. deferred tax assets as a result of the offset of deferred tax liabilities established for intangible assets from the acquisition.

A reconciliation of income taxes computed using the U.S. federal statutory rate to that reflected in operations follows:

	Year Ended December 31,	
(In thousands)	**2019**	**2018**
Tax on net income at federal statutory rate	21%	21%
Change in valuation allowance	(5%)	2%
Stock-based compensation	74%	3%
Section 162(m) limitation on executive compensation	(17%)	(1%)
Book loss on equity method investment	(5%)	(1%)
Fair value change in warrant liability	(82%)	(24%)
Gain on stock acquisition	64%	—%
Transaction costs	(4%)	—%
Tax credits	5%	—%
Expired net operating losses	(5%)	—%
Other	1%	—%
Total	47%	—%

The principal components of the Company's net deferred tax assets are as follows:

	December 31,	
(In thousands)	**2019**	**2018**
Deferred tax assets related to:		
Net operating loss carryforward	$ 9,495	$ 7,381
Stock-based compensation	1,110	664
Accruals and reserves	192	181
Inventory	88	42
Lease liabilities	208	101
Tax credit carryforward	152	—
Other	4	—
Total deferred tax assets	11,249	8,369
Deferred tax liabilities related to:		
Intangibles	(2,217)	—
Right-of-use assets	(218)	—
Fixed assets	(108)	(24)
Total deferred tax liabilities	(2,543)	(24)
Total deferred taxes	8,706	8,345
Less: valuation allowance	(8,706)	(8,345)
Net deferred taxes	—	—

The Company maintains a full valuation allowance on its net deferred tax assets. The assessment regarding whether a valuation allowance is required considers both positive and negative evidence when determining whether it is more likely than not that deferred tax assets are recoverable. In making this assessment, significant weight is given to evidence that can be objectively verified. In its evaluation, the Company considered its cumulative book losses, not including transaction gains, as significant negative evidence. Based upon a review of the four sources of income identified within ASC 740, "Accounting for Income Taxes", the Company determined that the negative evidence outweighed the positive evidence and a full valuation allowance on its deferred tax assets will be maintained. The Company will continue to assess the realizability of its deferred tax assets going forward and will adjust the valuation allowance as needed. Our valuation allowance increased by $0.4 million from 2018 to 2019, primarily due to increases in the net operating loss carryforwards and stock compensation deferred tax assets offset by an increase in the deferred tax liabilities for intangibles. Our valuation allowance decreased by $0.4 million from 2017 to 2018, primarily due to a decrease in the deferred tax asset for net operating loss carryforwards.

The Company determines its uncertain tax positions based on a determination of whether and how much of a tax benefit taken by the Company in its tax filings or positions is more likely than not to be sustained upon examination by the relevant income tax authorities. The Company is generally subject to examination by U.S. federal and local income tax authorities for all tax years in which loss carryforward is available.

The Company applies judgment in the determination of the financial statement recognition and measurement of tax positions taken or expected to be taken in a tax return. As of December 31, 2019, the Company had no uncertain tax positions.

As of December 31, 2019, the Company had U.S. federal net operating loss ("NOL") carryforwards of approximately $44.7 million, which is available to reduce future taxable income. Approximately $34.9 million of NOL will expire from 2020 through 2036, and approximately $9.8 million of NOL will be carried forward indefinitely. The NOL carryforwards may become subject to an annual limitation in the event of certain cumulative changes in the ownership interest. This could limit the amount of tax attributes that can be utilized annually to offset future taxable income or tax liabilities. The Company is planning to complete a study during 2020 to determine whether the net operating losses are subject to such limitations. Subsequent ownership changes may further affect the limitation in future years.

10. Warrants

In March 2014, pursuant to a to a registered public offering and note conversion agreement with certain note holders, the Company issued warrants to purchase 6,910,283 shares of common stock at $4.75 per share. The warrants expire in March 2021.

In May 2016, in connection with our WAVI credit facility, the Company issued a warrant to purchase 550,000 shares of common stock at $1.75 per share. The warrant was immediately exercisable and expires in May 2021.

The following table summarizes warrant activity for the years ended December 31, 2019 and 2018:

	Year Ended December 31, 2019		Year Ended December 31, 2018	
	Shares	Wtd. Avg. Exercise Price	Shares	Wtd. Avg. Exercise Price
Outstanding at beginning of year	4,080,005	$ 4.35	6,688,849	$ 4.50
Exercised	(121,000)	4.75	(2,608,844)	4.75
Outstanding and exercisable at end of year	3,959,005	$ 4.33	4,080,005	$ 4.35

11. Stock-Based Compensation

Stock Compensation Plans

Our stock-based compensation programs are long-term retention programs that are intended to attract, retain and provide incentives for talented employees, officers and directors, and to align stockholder and employee interests. We have the following stock-based compensation plans and programs:

During 2013, we adopted the 2013 Performance Incentive Plan (the "2013 Plan"), which allows us to grant options or restricted stock units to all employees, including executive officers, outside consultants and non-employee directors. An aggregate of 3.1 million shares of common stock were initially reserved for issuance under the 2013 Plan. In May 2017, the shareholders approved an increase in the number of shares available for issuance to 4.1 million shares. As of December 31, 2019, there were outstanding options to purchase 2.1 million shares of Company common stock and 553,000 unvested restricted stock awards outstanding under the 2013 Plan.

The Company also issued, outside any approved compensation plans, non-incentive stock options. As of December 31, 2019, there were 188,000 such options outstanding which were fully vested prior to 2018.

Issuance of Shares

When options and warrants are exercised, it is the Company's policy to issue new shares.

Stock Option Activity

Service Vesting-Based Stock Options

The following is a summary of service vesting-based stock option activity for 2019 and 2018, and the status of service vesting-based stock options outstanding at December 31, 2019 and 2018:

	Year Ended December 31, 2019		Year Ended December 31, 2018	
	Shares	Wtd. Avg. Exercise Price	Shares	Wtd. Avg. Exercise Price
Outstanding at beginning of year	2,043,402	$ 1.91	2,390,012	$ 1.85
Granted	—	—	—	—
Exercised	(469,510)	1.72	(330,983)	1.36
Forfeited	(3,437)	5.69	(15,627)	4.34
Expired - vested	—	—	—	—
Outstanding at end of year	1,570,455	$ 1.96	2,043,402	$ 1.91
Stock options exercisable at year end	1,465,599	$ 1.94	1,661,999	$ 1.87

We recognized stock compensation expense related to performance-based options of $370,000 and $509,000 during the year ended December 31, 2018. None was recognized in the year ended December 31, 2019 and 2018. As of December 31, 2019, there was $22.3 million of aggregate intrinsic value of outstanding service vesting-based stock options, including $20.9 million of aggregate intrinsic value of exercisable service vesting-based stock options. Intrinsic value is the total pretax intrinsic value for all "in-the-money" options (i.e., the difference between the Company's closing stock price on the last trading day of the year and the exercise price, multiplied by the number of shares) that would have been received by the option holders had all option holders exercised their options on December 31, 2019. This amount will change based on the fair market value of the Company's stock. Intrinsic value of service vesting-based awards exercised during the years ended December 31, 2019 and 2018 was $7.1 million and $3.8 million, respectively. There were no service based-vesting options granted during the years ended December 31, 2019 and 2018. The weighted average remaining contractual life of service vesting-based options outstanding and exercisable at December 31, 2019 is 5.0 years and 5.4 years, respectively. Total unrecognized compensation cost of service vesting-based stock options at December 31, 2019 of $148,000 is expected to be recognized over a weighted average period of 1.1 years.

The following table summarizes information about service vesting-based stock options outstanding at December 31, 2019:

Range of Exercise Prices	Number Outstanding at December 31, 2019	Weighted Average Remaining Contractual Life	Weighted Average Exercise Price
$0.49 - 1.00	3,571	1.91	$ 0.49
$1.01 - 1.50	175,199	1.32	$ 1.24
$1.51 - 2.50	1,328,367	5.46	$ 1.94
$2.51 - 8.60	63,318	5.71	$ 4.42
	1,570,455	5.00	$ 1.96

Performance-based Stock Options

The Company's Board of Directors implemented a Management Performance Bonus Plan for 2017. Based on achieving varying levels of specified revenue for the year ending December 31, 2017, up to 1,000,000 options to purchase shares of the Company's common stock may be vested. The options have an exercise price of $1.64, and if revenue levels for 2017 were met. If the minimum performance targets are not achieved, no options will vest. On February 27, 2018, the Company's Board of Directors determined that the specified revenue target had been achieved. Accordingly, 999,997 options to purchase shares of the Company's common stock vested in 2017 and 2018.

The following is a summary of performance-based stock option activity under our stock option plans for 2019 and 2018, and the status of performance-based stock options outstanding at December 31, 2019 and 2018:

	Year Ended December 31, 2019		Year Ended December 31, 2018	
	Shares	Wtd. Avg. Exercise Price	Shares	Wtd. Avg. Exercise Price
Outstanding at beginning of year	964,997	$ 1.64	999,997	$ 1.64
Granted	—	—	—	—
Exercised	(227,500)	1.64	(35,000)	1.64
Outstanding at end of year	737,497	$ 1.64	964,997	$ 1.64
Stock options exercisable at year end	737,497	$ 1.64	465,001	$ 1.64

We recognized stock compensation expense related to performance-based options of $509,000 during the year ended December 31, 2018. None was recognized in the year ended December 31, 2019. As of December 31, 2019, there was $10.7 million of aggregate intrinsic value outstanding and exercisable performance-based stock options. Intrinsic value is the total pretax intrinsic value for all "in-the-money" options (i.e., the difference between the Company's closing stock price on the last trading day of the quarter and the exercise price, multiplied by the number of shares) that would have been received by the option holders had all option holders exercised their options on December 31, 2019. This amount will change based on the fair market value of the Company's stock. Intrinsic value of performance-based awards exercised during the years ending December 31, 2019 and 2018 was $3.7 million and $285,000, respectively. The weighted average remaining contractual life of performance-based options outstanding and exercisable at December 31, 2019, is 2.0 years.

There were no stock options granted to employees and non-employee directors in the year ending December 31, 2019 and 2018.

Restricted Stock

Service vesting-based restricted stock

The following is a summary of service vesting-based restricted stock activity for the year ended December 31, 2019 and 2018, and the status of unvested service vesting-based restricted stock outstanding at December 31, 2019 and 2018:

	Year Ended December 31, 2019		Year Ended December 31, 2018	
	Shares	Wtd. Avg. Grant Date Fair Value	Shares	Wtd. Avg. Grant Date Fair Value
Outstanding at beginning of year	279,919	$ 5.00	237,926	$ 1.79
Granted	309, 218	17.15	181,268	7.02
Vested	(125,818)	4.57	(116,647)	1.81
Forfeited	(33,920)	12.88	(22,628)	3.95
Non-vested at end of year	429,399	$ 13.25	279,919	$ 5.00

The aggregate fair value of the service vesting-based awards granted during the years ended December 31, 2019 and 2018 was $5.3 million and $1.3 million, respectively, which represents the market value of BioLife common stock on the date that the restricted stock awards were granted. The aggregate fair value of the service vesting-based awards that vested during the years ended December 31, 2019 and 2018 was $1.9 million and $1.1 million, respectively.

We recognized stock compensation expense of $1.2 million and $413,000 related to service vesting-based awards during the years ended December 31, 2019 and 2018, respectively. As of December 31, 2019, there was $4.9 million in unrecognized compensation costs related to service vesting-based awards. We expect to recognize those costs over 3.3 years.

Market-based restricted stock

On February 25, 2019 the Company granted 94,247 shares and on April 1, 2019 granted 29,604 shares of market-based stock to its executives in the form of restricted stock. The shares granted contain a market condition based on Total Shareholder Return (“TSR”). The TSR market condition measures the Company’s performance against a peer group. The market-based restricted stock awards will vest as to between 0% and 200% of the number of restricted shares granted to each recipient based on our total shareholder return during the period beginning on January 1, 2019 through December 31, 2020 as compared to the total shareholder return of 20 of our peers. The fair value of this award was determined using a Monte Carlo simulation with the following assumptions: a historical volatility of 69%, 0% dividend yield and a risk-free interest rate of 2.5%. The historical volatility was based on the most recent 2-year period for the Company and correlated with the components of the peer group. The stock price projection for the Company and the components of the peer group assumes a 0% dividend yield. This is mathematically equivalent to reinvesting dividends in the issuing entity over the performance period. The risk-free interest is based on the yield on the U.S. Treasury Strips as of the Measurement Date with a maturity consistent with the 2-year term associated with the market condition of the award. The fair value of this award will be expensed on a straight-line basis over the grant date to the vesting date of December 31, 2020. For the period ended December 31, 2019, the aggregate grant date fair value of the market-based restricted stock awards was $3.3 million. We recognized stock compensation expense of $1.5 million for the year ended December 31, 2019 related to market-based restricted stock awards. As of December 31, 2019, there was $1.8 million in unrecognized non-cash compensation costs related to market-based restricted stock awards expected to vest. We expect to recognize those costs over 1 year.

Total Stock Compensation Expense

We recorded total stock compensation expense for the years ended December 31, 2019 and 2018, as follows:

(In thousands)	Year Ended December 31, 2019	2018
Research and development costs	$ 571	$ 260
Sales and marketing costs	711	269
General and administrative costs	1,584	809
Cost of product revenue	177	181
Total	$ 3,043	$ 1,519

12. Commitments and Contingencies

Employment agreements

We have employment agreements with our Chief Executive Officer, Chief Financial and Operating Officer, Chief Science Officer, Chief Quality Officer, Chief Marketing Officer, Chief Revenue Officer, Vice President, Freezer Technologies, and Vice President, Cold Chain Technologies Sales. None of these employment agreements is for a definitive period, but rather each will continue indefinitely until terminated in accordance with its terms. The agreements provide for a base annual salary, payable in monthly (or shorter) installments. In addition, the agreement with the Chief Executive Officer provides for incentive bonuses at the discretion of the Board of Directors. Under certain conditions and for certain of these officers, we may be required to pay additional amounts upon terminating the officer or upon the officer resigning for good reason.

Litigation

From time to time, the Company is subject to various legal proceedings that arise in the ordinary course of business, none of which are currently material to the Company's business. The Company's industry is characterized by frequent claims and litigation, including claims regarding intellectual property. As a result, the Company may be subject to various legal proceedings from time to time. The results of any future litigation cannot be predicted with certainty, and regardless of the outcome, litigation can have an adverse impact on the Company because of defense and settlement costs, diversion of management resources and other factors. Management is not aware of any pending or threatened litigation.

Indemnification

As permitted under Delaware law and in accordance with the Company's bylaws, the Company is required to indemnify its officers and directors for certain errors and occurrences while the officer or director is or was serving in such capacity. The Company is also party to indemnification agreements with its directors. The Company believes the fair value of the indemnification rights and agreements is minimal. Accordingly, the Company has not recorded any liabilities for these indemnification rights and agreements as of December 31, 2019.

13. Acquisitions

Astero Acquisition

On April 1, 2019, BioLife completed the acquisition of all the outstanding shares of Astero. Astero's ThawSTAR product line is comprised of a family of automated thawing devices for frozen cell and gene therapies packaged in cryovials and cryobags. The products improve the quality of administration of high-value, temperature-sensitive biologic therapies to patients by standardizing the thawing process and reducing the risks of contamination and overheating, which are inherent with the use of traditional water baths.

In connection with the Acquisition, the Company paid (i) a base payment in the amount of $12.5 million consisting of (x) an initial cash payment of $8.0 million at the closing of the transactions contemplated by the Purchase Agreement, subject to adjustment for working capital, net debt and transaction expenses, and (y) a deferred cash payment that was paid into escrow of $4.5 million payable upon the earlier of Astero meeting certain product development milestones or one year after the date of the Closing and (ii) earnout payments in calendar years 2019, 2020 and 2021 of up to an aggregate of $3.5 million, which shall be payable upon Astero achieving certain specified revenue targets in each year and a separate earnout payment of $5.0 million for calendar year 2021 which shall be payable upon Astero achieving a cumulative revenue target over the three-year period from 2019 to 2021.

Consideration transferred

The Astero Acquisition was accounted for as a purchase of a business under FASB ASC Topic 805, “Business Combinations”. The Astero Acquisition was funded through payment of approximately $12.5 million in cash and under the terms of the share purchase agreement, Astero shareholders are eligible to receive up to an additional $8.5 million of contingent consideration in cash over the next three years based on attainment of specific revenue targets. Under the acquisition method of accounting, the assets acquired and liabilities assumed from Astero were recorded as of the acquisition date, at their respective fair values, and consolidated with those of BioLife. The fair value of the contingent consideration of $1.5 million was determined using an option pricing model. The fair value of the net tangible assets acquired is estimated to be approximately $324,000, the fair value of the intangible assets acquired is estimated to be approximately $4.1 million, and the residual goodwill is estimated to be approximately $9.5 million. The fair value estimates required critical estimates, including, but not limited to, future expected cash flows, revenue and expense projections, discount rates, revenue volatility, and royalty rates. BioLife believes these estimates to be reasonable. Actual results may differ from these estimates.

Total consideration recorded for the acquisition of Astero is as follows (amounts in thousands):

Cash consideration	$	12,521
Contingent consideration		1,491
Working capital adjustment		(71)
Total consideration transferred	**$**	**13,941**

Fair Value of Net Assets Acquired

The table below represents the purchase price allocation to the net assets acquired based on their estimated fair values (amounts in thousands). Such amounts were estimated using the most recent financial statements from Astero as of March 31, 2019.

Cash and cash equivalents	$ 11
Accounts receivable, net	154
Inventory	456
Customer relationships	160
Tradenames	470
Developed technology	2,840
In-process research and development	650
Goodwill	9,515
Other assets	99
Accounts Payable	(250)
Other liabilities	(164)
Fair value of net assets acquired	**$ 13,941**

The fair value of Astero's identifiable intangible assets and estimated useful lives have been estimated as follows (amounts in thousands except years):

	Estimated Fair Value	Estimated Useful Life (Years)
Customer relationships	$ 160	4
Tradenames	470	9
Developed technology	2,840	5 – 9
In-process research and development	650	N/A
Total identifiable intangible assets	**$ 4,120**	

Fair value measurement methodologies used to calculate the value of any asset can be broadly classified into one of three approaches, referred to as the cost, market and income approaches. In any fair value measurement analysis, all three approaches must be considered, and the approach or approaches deemed most relevant will then be selected for use in the fair value measurement of that asset. The fair value of identifiable intangible assets was determined by third-party appraisal primarily using variations of the income approach, which is based on the present value of the future after-tax cash flows attributable to each identifiable intangible asset. The fair value of inventories was determined using both the cost approach and the market approach.

Some of the more significant assumptions inherent in the development of intangible asset fair values, from the perspective of a market participant, include, but are not limited to (i) the amount and timing of projected future cash flows (including revenue and expenses), (ii) the discount rate selected to measure the risks inherent in the future cash flows, (iii) the assessment of the asset's life cycle, and (iv) the competitive trends impacting the asset. Some of the more significant assumptions inherent in valuing the contingent consideration, include, but are not limited to (i) the amount and timing of projected future revenue, (ii) the volatility rate selected to measure the risks inherent in the revenue, and (iii) risk free interest rate.

Acquired Goodwill

The goodwill of $9.5 million represents future economic benefits expected to arise from synergies from combining operations and commercial organizations to increase market presence and the extension of existing customer relationships. All but $1.1 million of the goodwill recorded is not expected to be deductible for income tax purposes.

SAVSU Acquisition

On August 8, 2019, we closed the acquisition of SAVSU pursuant to a Share Exchange Agreement. Pursuant to the Share Exchange Agreement, SAVSU Origin, LLC agreed to transfer to us and we agreed to acquire from the Seller 8,616 shares of common stock of SAVSU, representing the remaining 56% of the outstanding shares of SAVSU that we did not previously own, in exchange for 1,100,000 shares of BioLife common stock. As a result of the acquisition, SAVSU became a wholly-owned subsidiary on August 8, 2019, the acquisition date.

Consideration transferred

The SAVSU acquisition was accounted for as a purchase of a business under FASB ASC Topic 805, “Business Combinations”. The acquisition of 56% of SAVSU was funded through a transfer of 1,100,000 shares of BioLife common stock, which had a fair value of $18.12 per share or $19.9 million at time of closing. The total value of 100% of SAVSU consisting of the fair value of the stock issued and the fair value of our existing investment in SAVSU was $35.8 million at time of closing. Prior to the acquisition, we accounted for our investment of SAVSU using the equity method of accounting which resulted in a recorded book value of $5.8 million at the acquisition date. We remeasured to fair value the equity interest in SAVSU held immediately before the business combination. The fair value of our equity interest was determined to be $15.9 million on our existing 44% ownership based on the fair value of shares transferred at the time of acquisition for the 56% we did not previously own. As a result, we recorded a non-operating gain of $10.1 million.

Under the acquisition method of accounting, the assets acquired and liabilities assumed from SAVSU were recorded as of the acquisition date, at their respective fair values, and consolidated with those of BioLife. The fair value of the net tangible assets acquired is estimated to be approximately $4.2 million, the fair value of the intangible assets acquired is estimated to be approximately $12.2 million, and the residual goodwill is estimated to be approximately $19.5 million. The fair value estimates required critical estimates, including, but not limited to, future expected cash flows, revenue and expense projections, discount rates, revenue volatility, and royalty rates. BioLife believes these estimates to be reasonable. Actual results may differ from these estimates.

Total consideration paid for the acquisition of SAVSU is as follows (amounts in thousands):

Stock consideration for 55.6% equity interest purchased	$	19,932

This stock consideration plus the fair value of our existing equity investment in SAVSU of $15.9 million results in the total purchase price for accounting purposes of $35.8 million.

Fair Value of Net Assets Acquired

The table below represents the purchase price allocation to the net assets acquired based on their estimated fair values (amounts in thousands). Such amounts were estimated using the most recent financial statements from SAVSU as of August 7, 2019.

Cash and cash equivalents	$	1,251
Accounts receivable, net		753
Prepaid expenses and other current assets		19
Property, plant and equipment, net		546
Operating right-of-use asset		233
Assets held for lease		2,441
Customer relationships		80
Tradenames		1,320
Developed technology		10,750
Goodwill		21,037
Accounts Payable and accrued expenses		(807)
Deferred tax liabilities		(1,541)
Other liabilities		(232)
Fair value of net assets acquired	**$**	**35,850**

The fair value of SAVSU's identifiable intangible assets and estimated useful lives have been estimated as follows (amounts in thousands except years):

	Estimated Fair Value	Estimated Useful Life (Years)
Customer relationships	$ 80	6
Tradenames	1,320	9
Developed technology	10,750	7 – 8
Total identifiable intangible assets	**$ 12,150**	

Fair value measurement methodologies used to calculate the value of any asset can be broadly classified into one of three approaches, referred to as the cost, market and income approaches. In any fair value measurement analysis, all three approaches must be considered, and the approach or approaches deemed most relevant will then be selected for use in the fair value measurement of that asset. The fair value of identifiable intangible assets was determined primarily using variations of the income approach, which is based on the present value of the future after-tax cash flows attributable to each identifiable intangible asset. The fair value of assets held for rent and property, plant and equipment was determined using both the cost approach and the market approach.

Some of the more significant assumptions inherent in the development of intangible asset fair values, from the perspective of a market participant, include, but are not limited to (i) the amount and timing of projected future cash flows (including revenue and expenses), (ii) the discount rate selected to measure the risks inherent in the future cash flows, (iii) the assessment of the asset's life cycle, and (iv) the competitive trends impacting the asset. Some of the more significant assumptions inherent in the in valuing the contingent consideration, include, but are not limited to (i) the amount and timing of projected future revenue, (ii) the volatility rate selected to measure the risks inherent in the revenue, and (iii) risk free interest rate.

Acquired Goodwill

The goodwill of $21.0 million represents future economic benefits expected to arise from synergies from combining operations and commercial organizations to increase market presence and the extension of existing customer relationships. None of the goodwill recorded is expected to be deductible for income tax purposes.

Custom Biogenic Systems Acquisition

On November 10, 2019, we entered into an Asset Purchase Agreement, by and among the Company, Arctic Solutions, Inc., a Delaware corporation and wholly-owned subsidiary of the Company, and Custom Biogenic Systems, Inc., a Michigan corporation ("CBS Seller"), pursuant to which we agreed to purchase from the CBS Seller substantially all of CBS Seller's assets, properties and rights (the "CBS Acquisition"). The CBS Seller, a privately held company with operations located near Detroit, Michigan, designs and manufactures liquid nitrogen laboratory freezers and cryogenic equipment and also offers a related cloud-based monitoring system that continuously assesses biologic sample storage conditions and alerts equipment owners if a fault condition occurs. The Acquisition closed on November 12, 2019.

In connection with the CBS Acquisition, we paid to CBS Seller (i) a base payment in the amount of $15.0 million, consisting of a cash payment of $11.0 million paid at the closing of the CBS Acquisition, less a cash holdback escrow of $550,000 to satisfy certain indemnification claims, and an aggregate number of shares of our common stock, with an aggregate fair value equal to $4.0 million, less a holdback escrow of shares of Common Stock with an aggregate value equal to $3.0 million to satisfy potential payments related to any product liability claims outstanding as of March 13, 2019 and (ii) potential earnout payments in calendar years 2020, 2021, 2022, 2023 and 2024 of up to an aggregate of, but not exceeding, $15.0 million payable to CBS Seller upon achieving certain specified revenue targets in each year for certain product lines.

The CBS acquisition was accounted for as a purchase of a business under FASB ASC Topic 805, "Business Combinations". Under the acquisition method of accounting, the acquired assets and liabilities assumed from CBS were recorded as of the acquisition date, at their fair values, and consolidated with BioLife. The fair value of the net tangible assets acquired is $6.0 million, the fair value of the identifiable intangibles is $6.8 million, and the residual goodwill is $3.1 million. The fair value estimates required critical estimates, including, but not limited to, future expected cash flows, revenue and expense projections, discount rates, revenue volatility, and royalty rates. BioLife believes these estimates to be reasonable. Actual results may differ from these estimates.

Total consideration transferred (in thousands):

Cash consideration	$	11,000
Stock consideration		4,000
Contingent consideration		856
Total consideration transferred	**$**	**15,856**

Fair Value of Net Assets Acquired

The table below represents the purchase price allocation to the net assets acquired based on their fair values (amounts in thousands). Such amounts were estimated using the most recent financial statements from CBS as of November 11, 2019.

Accounts receivable, net	$	1,044
Inventory		3,232
Prepaid expenses and other current assets		29
Property, plant and equipment, net		3,615
Customer relationships		560
Tradenames		800
Developed technology		5,430
Goodwill		3,085
Accounts Payable		(1,328)
Other liabilities		(611)
Fair value of net assets acquired	**$**	**15,856**

The fair value of CBS's identifiable intangible assets and weighted average useful lives have been estimated as follows (amounts in thousands except years):

		Estimated Fair Value	Estimated Useful Life (Years)
Customer relationships	$	560	6
Tradenames		800	6
Developed technology		5,430	9
Total identifiable intangible assets	$	6,790	

Fair value measurement methodologies used to calculate the value of any asset can be broadly classified into one of three approaches, referred to as the cost, market and income approaches. In any fair value measurement analysis, all three approaches must be considered, and the approach or approaches deemed most relevant will then be selected for use in the fair value measurement of that asset. The fair value of identifiable intangible assets was determined primarily using variations of the income approach, which is based on the present value of the future after-tax cash flows attributable to each identifiable intangible asset. The fair value of inventories was determined using both the cost approach and the market approach and the fair value of property, plant and equipment was determined using the cost and market approach.

Some of the more significant assumptions inherent in the development of intangible asset fair values, from the perspective of a market participant, include, but are not limited to (i) the amount and timing of projected future cash flows (including revenue and expenses), (ii) the discount rate selected to measure the risks inherent in the future cash flows, (iii) the assessment of the asset's life cycle, and (iv) the competitive trends impacting the asset. Some of the more significant assumptions inherent in valuing the contingent consideration, include, but are not limited to (i) the amount and timing of projected future revenue, (ii) the volatility rate selected to measure the risks inherent in the revenue, and (iii) risk free interest rate.

Acquired Goodwill

The goodwill of $3.1 million represents future economic benefits expected to arise from synergies from combining operations and commercial organizations to increase market presence and the extension of existing customer relationships. All of the goodwill recorded is expected to be deductible for income tax purposes.

Revenue, Net Income and Pro Forma Presentation

The Company recorded revenue from Astero of $1.2 million and a net loss of $1.5 million from April 1, 2019, the date of acquisition, to December 31, 2019. The Company recorded revenue from SAVSU of $692,000 and a net loss of $1.7 million from August 8, 2019, the date of acquisition, to December 31, 2019. The Company recorded revenue from CBS of $2.1 million and net income of $187,000 from November 12, 2019, the date of acquisition, to December 31, 2019. The Company has included the operating results of the acquisitions in its consolidated statements of operations since their respective acquisition date. The following pro forma financial information presents the combined results of operations of Astero, SAVSU and CBS as if the acquisition had occurred on January 1, 2018 after giving effect to certain pro forma adjustments. These pro forma adjustments include amortization expense on the acquired identifiable intangible assets, adjustments to stock-based compensation expense for equity compensation issued to employees and the income tax effect of the adjustments made. In addition, acquisition-related transaction costs and an accounting adjustment to record inventory at fair value were excluded from pro forma net income in 2019.

The following pro forma financial information does not reflect any adjustments for anticipated expense savings resulting from the acquisition and is not necessarily indicative of the operating results that would have actually occurred had the transactions been consummated on January 1, 2018 or of future results. Common stock equivalents are excluded since the effect is anti-dilutive due to the Company's pro forma net losses. Common stock equivalents include unvested restricted stock, stock options and warrants:

	Year Ended December 31, (unaudited)	
(In thousands)	**2019**	**2018**
Total revenue	$ 37,728	$ 32,353
Net income (loss)	(3,160)	(3,397)
Loss per share:		
Basic and diluted	$ (0.16)	$ (0.20)

14. Consolidated Balance Sheet Detail

Property and Equipment

Property and equipment consist of the following:

(In thousands)	December 31, 2019	December 31, 2018
Property and equipment		
Leasehold improvements	$ 2,112	$ 1,284
Furniture and computer equipment	794	706
Manufacturing and other equipment	5,187	1,657
Subtotal	8,093	3,647
Less: Accumulated depreciation	(2,521)	(2,328)
Net property and equipment	$ 5,572	$ 1,319

Depreciation expense for property and equipment was $544,000 and $338,000 for the years ended December 31, 2019 and 2018, respectively.

Accrued Expenses and Other Current Liabilities

Accrued expenses and other current liabilities consist of the following:

(In thousands)	December 31, 2019	December 31, 2018
Accrued expenses and other current liabilities	$ 302	$ 62
Other payables	1,018	—
Accrued compensation	1,554	998
Deferred revenue	324	—
Deferred rent, current portion	—	130
Other	171	29
Total accrued expenses and other current liabilities	$ 3,369	$ 1,219

15. Employee Benefit Plan

The Company sponsors a 401(k) defined contribution plan for its employees. This plan provides for pre-tax and post-tax contributions for all employees. Employee contributions are voluntary. Employees may contribute up to 100% of their annual compensation to this plan, as limited by an annual maximum amount as determined by the Internal Revenue Service. The Company matches employee contributions in amounts to be determined at the Company's sole discretion. The Company made $158,000 and no contributions to the plan for the years ended December 31, 2019 and 2018.

16. Quarterly Financial Information (Unaudited)

In addition to the warrant liability misstatement described in Note 2: *"Restatement of Consolidated Financial Statements"*, we identified the following adjustments described below for the quarters ended March 31, June 30 and September 30, 2019.

On March 25, 2019 and April 1, 2019, we granted restricted stock awards with market-based vesting provisions see Note 11: "*Stock-Based Compensation*". These awards were inappropriately valued. In the accompanying quarterly information, we valued these market-based awards using a Monte Carlo simulation. This resulted in a change in stock compensation expense decrease of $75,000, increase of $172,000 and increase of $175,000 for the quarters ended March 31, June 30, and September 30 2019.

We discovered a computational error in the calculation in the fair value contingent consideration related to the Astero acquisition. The correction of this error is corrected in the consolidated balance sheet as of June 30 and September 30, 2019 presented below. This change resulted in a decrease of $439,000 in contingent consideration and increase of $439,000 in goodwill and other intangible assets as of June 30 and September 30, 2019.

Financial Statement Reclassification

Certain operating expenses related to cost of revenue and intangible amortization related to acquisitions were reclassified from research and development and sales and marketing to conform to the presentation of those operating expenses in the statement of operations for the year ended December 31, 2019. These reclassifications have no impact on previously reported total revenue, net income (loss), net assets, or total cash flows.

The effect of the adjustments on the restated balance sheets, statements of operations, and statements of cash flows for the quarters ended March 31, June 30, and September 30, 2019 and 2018 is presented below. Earnings per shares has been corrected to reflect all adjustments including the effect of participating securities.

Consolidated Balance Sheets
(unaudited)

(In thousands, except share and per share data)	Balance Sheet March 31, 2018 As Previously Reported	Adjustments		As Restated
Assets				
Current assets				
Cash and cash equivalents	$ 7,033	$ -		$ 7,033
Accounts receivable, trade, net of allowance for doubtful accounts of $6 at March 31, 2018	1,043	-		1,043
Inventories	1,837	-		1,837
Prepaid expenses and other current assets	331	-		331
Total current assets	10,244	-		10,244
Property and equipment, net		-		
Leasehold improvements	1,284	-		1,284
Furniture and computer equipment	692	-		692
Manufacturing and other equipment	1,195	-		1,195
Subtotal	3,171	-		3,171
Less: Accumulated depreciation	(2,084)	-		(2,084)
Net property and equipment	1,087	-		1,087
Investment in SAVSU	926	-		926
Long-term deposits	36	-		36
Total assets	$ 12,293	$ -		$ 12,293
Liabilities and Shareholders' Equity				
Current liabilities				
Accounts payable	586	-		586
Accrued expenses and other current liabilities	204	-		204
Accrued compensation	392	-		392
Deferred rent, current portion	130	-		
Total current liabilities	1,312	-		1,312
Deferred rent, long-term	457	-		457
Warrant liability	-	14,725	(a)	14,725
Other long-term liabilities	52	-		52
Total liabilities	1,821	14,725		16,546
Commitments and Contingencies				
Shareholders' equity (deficit)				
Preferred stock, $0.001 par value; 1,000,000 shares authorized, Series A, 4,250 shares designated, and 4,250 shares issued and outstanding at March 31, 2018	-	-		-
Common stock, $0.001 par value; 150,000,000 shares authorized, 14,145,413 shares issued and outstanding at March 31, 2018	14	-		14
Additional paid-in capital	84,518	(20,501)	(a)	64,017
Accumulated deficit	(74,060)	5,776	(a)	(68,284)
Total shareholders' equity (deficit)	10,472	(14,725)		(4,253)
Total liabilities and shareholders' equity	$ 12,293	$ -		$ 12,293

(In thousands, except share and per share data)	Balance Sheet June 30, 2018 As Previously Reported	Adjustments		As Restated
Assets				
Current assets				
Cash and cash equivalents	$ 14,167	$ -		$ 14,167
Accounts receivable, trade, net of allowance for doubtful accounts of $0 at June 30, 2018	2,166	-		2,166
Inventories	2,122	-		2,122
Prepaid expenses and other current assets	352	-		352
Total current assets	18,807	-		18,807
Property and equipment, net		-		
Leasehold improvements	1,284	-		1,284
Furniture and computer equipment	693	-		693
Manufacturing and other equipment	1,230	-		1,230
Subtotal	3,207	-		3,207
Less: Accumulated depreciation	(2,163)	-		(2,163)
Net property and equipment	1,044	-		1,044
Investment in SAVSU	1,900	-		1,900
Long-term deposits	36	-		36
Total assets	$ 21,787	$ -		$ 21,787
Liabilities and Shareholders' Equity				
Current liabilities				
Accounts payable	843	-		843
Accrued expenses and other current liabilities	173	-		173
Accrued compensation	518	-		518
Deferred rent, current portion	130	-		
Total current liabilities	1,664	-		1,664
Deferred rent, long-term	423	-		423
Warrant liability	-	32,599	(a)	32,599
Other long-term liabilities	45	-		45
Total liabilities	2,132	32,599		34,731
Commitments and Contingencies				
Shareholders' equity (deficit)				
Preferred stock, $0.001 par value; 1,000,000 shares authorized, Series A, 4,250 shares designated, and 4,250 shares issued and outstanding at June 30, 2018	-	-		-
Common stock, $0.001 par value; 150,000,000 shares authorized, 16,107,505 shares issued and outstanding at June 30, 2018	16	-		16
Additional paid-in capital	92,654	(10,892)	(a)	81,762
Accumulated deficit	(73,015)	(21,707)	(a)	(94,722)
Total shareholders' equity (deficit)	19,655	(32,599)		(12,944)
Total liabilities and shareholders' equity	$ 21,787	$ -		$ 21,787

(In thousands, except share and per share data)	Balance Sheet September 30, 2018 As Previously Reported	Adjustments	As Restated
Assets			
Current assets			
Cash and cash equivalents	$ 32,381	$ -	$ 32,381
Accounts receivable, trade, net of allowance for doubtful accounts of $0 at September 30, 2018	2,699	-	2,699
Inventories	2,911	-	2,911
Prepaid expenses and other current assets	298	-	298
Total current assets	38,289	-	38,289
Property and equipment, net		-	
Leasehold improvements	1,284	-	1,284
Furniture and computer equipment	706	-	706
Manufacturing and other equipment	1,511	-	1,511
Subtotal	3,501	-	3,501
Less: Accumulated depreciation	(2,234)	-	(2,234)
Net property and equipment	1,267	-	1,267
Investment in SAVSU	6,857	-	6,857
Long-term deposits	36	-	36
Total assets	$ 46,449	$ -	$ 46,449
Liabilities and Shareholders' Equity			
Current liabilities			
Accounts payable	1,090	-	1,090
Accrued expenses and other current liabilities	162	-	162
Accrued compensation	713	-	713
Deferred rent, current portion	130	-	
Total current liabilities	2,095	-	2,095
Deferred rent, long-term	386	-	386
Warrant liability	-	50,425 (a)	50,425
Other long-term liabilities	38	-	38
Total liabilities	2,519	50,425	52,944
Commitments and Contingencies			
Shareholders' equity (deficit)			
Preferred stock, $0.001 par value; 1,000,000 shares authorized, Series A, 4,250 shares designated, and 4,250 shares issued and outstanding at September 30, 2018	-	-	-
Common stock, $0.001 par value; 150,000,000 shares authorized, 18,237,425 shares issued and outstanding at September 30, 2018	18	-	18
Additional paid-in capital	115,776	(3,021) (a)	112,755
Accumulated deficit	(71,864)	(47,404) (a)	(119,268)
Total shareholders' equity (deficit)	43,930	(50,425)	(6,495)
Total liabilities and shareholders' equity	$ 46,449	$ -	$ 46,449

(In thousands, except share and per share data)	Balance Sheet March 31, 2019 As Previously Reported	Adjustments	As Restated
Assets			
Current assets			
Cash and cash equivalents	$ 31,824	$ -	$ 31,824
Accounts receivable, trade, net of allowance for doubtful accounts of $0 at March 31, 2019	2,927	-	2,927
Inventories	4,060	-	4,060
Prepaid expenses and other current assets	346	-	346
Total current assets	39,157	-	39,157
Property and equipment, net			
Leasehold improvements	1,284	-	1,284
Furniture and computer equipment	704	-	704
Manufacturing and other equipment	1,803	-	1,803
Subtotal	3,791	-	3,791
Less: Accumulated depreciation	(2,424)	-	(2,424)
Net property and equipment	1,367	-	1,367
Operating lease right-of-use assets	1,196	-	1,196
Investment in SAVSU	6,317	-	6,317
Long-term deposits	36	-	36
Total assets	$ 48,073	$ -	$ 48,073
Liabilities and Shareholders' Equity			
Current liabilities			
Accounts payable	1,264	-	1,264
Accrued expenses and other current liabilities	142	-	142
Accrued compensation	630	-	630
Lease liability - operating, current position	651	-	651
Lease liability - financing, current position	14	-	14
Total current liabilities	2,701	-	2,701
Long-term lease liability - operating	980	-	980
Long-term lease liability - financing	13	-	13
Warrant liability	-	48,106 (a)	48,106
Other long-term liabilities	13	-	13
Total liabilities	3,707	48,106	51,813
Commitments and Contingencies			
Shareholders' equity (deficit)			
Preferred stock, $0.001 par value; 1,000,000 shares authorized, Series A, 4,250 shares designated, and 0 shares issued and outstanding at March 31, 2019	-	-	-
Common stock, $0.001 par value; 150,000,000 shares authorized, 18,717,095 shares issued and outstanding at March 31, 2019	19	-	19
Additional paid-in capital	114,951	(1,154) (a)	113,797
Accumulated deficit	(70,604)	(46,952) (a)	(117,556)
Total shareholders' equity (deficit)	44,366	(48,106)	(3,740)
Total liabilities and shareholders' equity	$ 48,073	$ -	$ 48,073

(In thousands, except share and per share data)	Balance Sheet June 30, 2019 As Previously Reported	Adjustments	As Restated
Assets			
Current assets			
Cash and cash equivalents	$ 19,617	$ -	$ 19,617
Accounts receivable, trade, net of allowance for doubtful accounts of $26 at June 30, 2019	3,832	-	3,832
Inventories	5,306	-	5,306
Prepaid expenses and other current assets	384	-	384
Total current assets	29,139	-	29,139
Property and equipment, net			
Leasehold improvements	1,284	-	1,284
Furniture and computer equipment	577	-	577
Manufacturing and other equipment	1,733	-	1,733
Subtotal	3,594	-	3,594
Less: Accumulated depreciation	(2,276)	-	(2,276)
Net property and equipment	1,318	-	1,318
Operating lease right-of-use assets	1,079	-	1,079
Investment in SAVSU	6,100	-	6,100
Intangible assets, net	4,446	(430) (c)	4,016
Goodwill	9,524	(9) (b),(c)	9,515
Long-term deposits	136	-	136
Total assets	$ 51,742	$ (439)	$ 51,303
Liabilities and Shareholders' Equity			
Current liabilities			
Accounts payable	876	-	876
Accrued expenses and other current liabilities	204	-	204
Accrued compensation	963	-	963
Lease liability - operating, current position	665	-	665
Lease liability - financing, current position	14	-	14
Contingent consideration - current	371	70 (b)	441
Total current liabilities	3,093	70	3,163
Long-term lease liability - operating	806	-	806
Long-term lease liability - financing	10	-	10
Warrant liability	-	44,194 (a)	44,194
Other long-term liabilities	7	-	7
Contingent consideration - long-term	1,560	(509) (b)	1,051
Total liabilities	5,476	43,755	49,231
Commitments and Contingencies			
Shareholders' equity (deficit)			
Preferred stock, $0.001 par value; 1,000,000 shares authorized, Series A, 4,250 shares designated, and 0 shares issued and outstanding at June 30, 2019	-	-	-
Common stock, $0.001 par value; 150,000,000 shares authorized, 18,898,609 shares issued and outstanding at June 30, 2019	19	-	19
Additional paid-in capital	116,013	(656) (a)	115,357
Accumulated deficit	(69,766)	(43,538) (a),(d)	(113,304)
Total shareholders' equity (deficit)	46,266	(44,194)	2,072
Total liabilities and shareholders' equity	$ 51,742	$ (439)	$ 51,303

(In thousands, except share and per share data)	Balance Sheet September 30, 2019 As Previously Reported	Adjustments	As Restated
Assets			
Current assets			
Cash and cash equivalents	$ 21,205	$ -	$ 21,205
Accounts receivable, trade, net of allowance for doubtful accounts of $68 at September 30, 2019	4,313	-	4,313
Inventories	5,694	-	5,694
Prepaid expenses and other current assets	855	-	855
Total current assets	32,067	-	32,067
Property and equipment, net		-	
Leasehold improvements	1,599	-	1,599
Furniture and computer equipment	588	-	588
Manufacturing and other equipment	2,247	-	2,247
Subtotal	4,434	-	4,434
Less: Accumulated depreciation	(2,298)	-	(2,298)
Net property and equipment	2,136	-	2,136
Assets held for rent, net	2,976		2,976
Operating lease right-of-use assets	1,177	-	1,177
Investment in SAVSU	1,000	-	1,000
Intangible assets, net	16,485	(430) (c)	16,055
Goodwill	28,351	(9) (b),(c)	28,342
Long-term deposits	36	-	36
Total assets	$ 84,228	$ (439)	$ 83,789
Liabilities and Shareholders' Equity			
Current liabilities			
Accounts payable	1,570	-	1,570
Accrued expenses and other current liabilities	642	-	642
Accrued compensation	1,576	-	1,576
Lease liability - operating, current position	771	-	771
Lease liability - financing, current position	14	-	14
Contingent consideration - current	371	70 (b)	441
Total current liabilities	4,944	70	5,014
Long-term lease liability - operating	753	-	753
Long-term lease liability - financing	6	-	6
Warrant liability	-	41,771 (a)	41,771
Other long-term liabilities	3	-	3
Contingent consideration - long-term	1,560	(509) (b)	1,051
Total liabilities	7,266	41,332	48,598
Commitments and Contingencies			
Shareholders' equity (deficit)			
Preferred stock, $0.001 par value; 1,000,000 shares authorized, Series A, 4,250 shares designated, and 0 shares issued and outstanding at September 30, 2019		-	-
Common stock, $0.001 par value; 150,000,000 shares authorized, 20,344,825 shares issued and outstanding at June 30, 2019	20	-	20
Additional paid-in capital	137,392	814 (a)	138,206
Accumulated deficit	(60,450)	(42,585) (a),(d)	(103,035)
Total shareholders' equity (deficit)	76,962	(41,771)	35,191
Total liabilities and shareholders' equity	$ 84,228	$ (439)	$ 83,789

Consolidated Statements of Operations
(unaudited)

(In thousands, except per share and share data)	Statement of Operations Three Months Ending March 31, 2018		
	As Previously Reported	Adjustments	As Restated
Revenue	$ 3,815	$ -	$ 3,815
Operating expenses			
Cost of revenue	1,364	-	1,364
Research and development	346	-	346
Sales and marketing	612	-	612
General and administrative	1,353	-	1,353
Total operating expenses	3,675	-	3,675
Operating income (loss)	140	-	140
Other income (expenses)			
Change in fair value of warrant liability	-	4,870 (a)	4,870
Interest income	8	-	8
Interest expense	(1)	-	(1)
Loss from equity-method investment in SAVSU	(144)	-	(144)
Total other income (expenses)	(137)	4,870	4,733
Net income (loss)	3	4,870	4,873
Less: Preferred stock dividends	(106)	-	(106)
Net income (loss) attributable to common stockholders	$ (103)	$ 4,870	$ 4,767
Net income (loss) attributable to common stockholders:			
Basic	$ (103)	$ 3,250	$ 3,147
Diluted	$ (103)	$ (179)	$ (282)
Earnings per share attributable to common stockholders:			
Basic	$ (0.01)	$ 0.23	$ 0.22
Diluted	$ (0.01)	$ (0.01)	$ (0.02)
Weighted average shares used to compute earnings per share attributable to common stockholders:			
Basic	14,098,610	-	14,098,610
Diluted	14,098,610	-	14,098,610

(In thousands, except per share and share data)	Statement of Operations Three Months Ending June 30, 2018			Statement of Operations Six Months Ending June 30, 2018		
	As Previously Reported	Adjustments	As Restated	As Previously Reported	Adjustments	As Restated
Revenue	$ 5,178	$ -	$ 5,178	$ 8,993	$ -	$ 8,993
Operating expenses						
Cost of revenue	1,537	-	1,537	2,901	-	2,901
Research and development	325	-	325	671	-	671
Sales and marketing	641	-	641	1,253	-	1,253
General and administrative	1,390	-	1,390	2,744	-	2,744
Total operating expenses	3,893	-	3,893	7,569	-	7,569
Operating income (loss)	1,285	-	1,285	1,424	-	1,424
Other income (expenses)						
Change in fair value of warrant liability	-	(27,485) (a)	(27,485)	-	(22,615) (a)	(22,615)
Interest income	32	-	32	41	-	41
Interest expense	(1)	-	(1)	(1)	-	(1)
Loss from equity-method investment in SAVSU	(177)	-	(177)	(321)	-	(321)
Total other income (expenses)	(146)	(27,485)	(27,631)	(281)	(22,615)	(22,896)
Net income (loss)	1,139	(27,485)	(26,346)	1,143	(22,615)	(21,472)
Less: Preferred stock dividends	(93)	-	(93)	(200)	-	(200)
Net income (loss) attributable to common stockholders	1,046	(27,485)	(26,439)	943	(22,615)	(21,672)
Net income (loss) attributable to common stockholders:						
Basic	$ 1,046	$ (27,485)	$ (26,439)	$ 943	$ (22,614)	$ (21,672)
Diluted	$ 1,046	$ (27,485)	$ (26,439)	$ 943	$ (22,614)	$ (21,672)
Earnings per share attributable to common stockholders:						
Basic	$ 0.07	$ (1.81)	$ (1.74)	$ 0.06	$ (1.54)	$ (1.48)
Diluted	$ 0.05	$ (1.79)	$ (1.74)	$ 0.05	$ (1.53)	$ (1.48)
Weighted average shares used to compute earnings per share attributable to common stockholders:						
Basic	15,180,169	-	15,180,169	14,642,378	-	14,642,378
Diluted	20,374,358	(5,194,189)	15,180,169	19,063,595	(4,421,217)	14,642,378

(In thousands, except per share and share data)	Statement of Operations Three Months Ending September 30, 2018			Statement of Operations Nine Months Ending September 30, 2018		
	As Previously Reported	Adjustments	As Restated	As Previously Reported	Adjustments	As Restated
Revenue	$ 5,293	$ -	$ 5,293	$ 14,286	$ -	$ 14,286
Operating expenses						
Cost of revenue	1,606	-	1,606	4,507	-	4,507
Research and development	312	-	312	983	-	983
Sales and marketing	725	-	725	1,978	-	1,978
General and administrative	1,455	-	1,455	4,199	-	4,199
Total operating expenses	4,098	-	4,098	11,667	-	11,667
Operating income (loss)	1,195	-	1,195	2,619	-	2,619
Other income (expenses)						
Change in fair value of warrant liability	-	(25,696) (a)	(25,696)	-	(48,311) (a)	(48,311)
Interest income	80	-	80	121	-	121
Interest expense	(1)	-	(1)	(4)	-	(4)
Loss from equity-method investment in SAVSU	(43)	-	(43)	(363)	-	(363)
Total other income (expenses)	36	(25,696)	(25,660)	(246)	(48,311)	(48,557)
Net income (loss)	1,231	(25,696)	(24,465)	2,373	(48,311)	(45,938)
Less: Preferred stock dividends	(80)	-	(80)	(279)	-	(279)
Net income (loss) attributable to common stockholders	1,151	(25,696)	(24,545)	2,094	(48,311)	(46,217)
Net income (loss) attributable to common stockholders:						
Basic	$ 1,151	$ (25,696)	$ (24,545)	$ 2,094	$ (48,311)	$ (46,217)
Diluted	$ 1,151	$ (25,696)	$ (24,545)	$ 2,094	$ (48,311)	$ (46,217)
Earnings per share attributable to common stockholders:						
Basic	$ 0.07	$ (1.49)	$ (1.42)	$ 0.13	$ (3.11)	$ (2.98)
Diluted	$ 0.05	$ (1.47)	$ (1.42)	$ 0.10	$ (3.08)	$ (2.98)
Weighted average shares used to compute earnings per share attributable to common stockholders:						
Basic	17,273,412	-	17,273,412	15,529,026	-	15,529,026
Diluted	23,656,633	(6,383,221)	17,273,412	21,051,219	(5,522,193)	15,529,026

(In thousands, except per share and share data)	Statement of Operations Three Months Ending March 31, 2019		
	As Previously Reported	Adjustments	As Restated
Revenue	$ 5,770	$ -	$ 5,770
Operating expenses			
Cost of revenue	1,647	- (e)	1,647
Research and development	372	(13) (d),(e)	359
Sales and marketing	848	(11) (d),(e)	837
General and administrative	2,204	(51) (d)	2,153
Acquisition Costs	208	-	208
Total operating expenses	5,279	(75)	5,204
Operating income (loss)	491	75	566
Other income (expenses)			
Change in fair value of warrant liability	-	(19,663) (a)	(19,663)
Interest income	171	-	171
Interest expense	(3)	-	(3)
Loss from equity-method investment in SAVSU	(232)	-	(232)
Total other income (expenses)	(64)	(19,663)	(19,727)
Income (loss) before provision for income taxes	427	(19,588)	(19,161)
Income taxes	-	-	-
Net income (loss)	427	(19,588)	(19,161)
Net income (loss) attributable to common stockholders:			
Basic	$ 427	$ (19,588)	$ (19,161)
Diluted	$ 427	$ (19,588)	$ (19,161)
Earnings per share attributable to common stockholders:			
Basic	$ 0.02	$ (1.05)	$ (1.03)
Diluted	$ 0.02	$ (1.05)	$ (1.03)
Weighted average shares used to compute earnings per share attributable to common stockholders:			
Basic	18,648,397	-	18,648,397
Diluted	24,358,475	(5,710,078)	18,648,397

(In thousands, except per share and share data)	Statement of Operation Three Months Ending June 30, 2019			Statement of Operations Six Months Ending June 30, 2019		
	As Previously Reported	Adjustments	As Restated	As Previously Reported	Adjustments	As Restated
Revenue	$ 6,701	$ -	$ 6,701	$ 12,471	$ -	$ 12,471
Operating expenses						
Cost of product revenue (exclusive of intangible assets amortization)	1,958	10 (d),(e)	1,968	3,606	10 (d),(e)	3,616
Research and development	739	(48) (d),(e)	691	1,111	(61) (d),(e)	1,050
Sales and marketing	928	17 (d),(e)	945	1,776	6 (d),(e)	1,782
General and administrative	2,118	89 (d)	2,207	4,321	38 (d)	4,359
Amort of Intangibles	-	104 (e)	104	-	104 (e)	104
Acquisition Costs	39	-	39	247	-	247
Total operating expenses	5,782	172	5,954	11,061	97	11,158
Operating income (loss)	919	(172)	747	1,410	(97)	1,313
Other income (expenses)						
Change in fair value of warrant liability	-	3,586 (a)	3,586	-	(16,077) (a)	(16,077)
Interest income	137	-	137	307	-	307
Interest expense	(1)	-	(1)	(4)	-	(4)
Other Expense	-	-	-	-	-	-
Loss from equity-method investment in SAVSU	(217)	-	(217)	(448)	-	(448)
Gain on Acquisition of SAVSU	-	-	-	-	-	-
Total other income (expenses)	(81)	3,586	3,505	(145)	(16,077)	(16,222)
Income (loss) before provision for income taxes	838	3,414	4,252	1,265	(16,174)	(14,909)
Income taxes	-	-	-	-	-	-
Net income (loss)	838	3,414	4,252	1,265	(16,174)	(14,909)
Net income (loss) attributable to common stockholders:						
Basic	$ 838	$ 2,587	$ 3,425	$ 1,265	$ (16,174)	$ (14,909)
Diluted	$ 838	$ (293)	$ 545	$ 1,265	$ (16,174)	$ (14,909)
Earnings per share attributable to common stockholders:						
Basic	$ 0.04	$ 0.14	$ 0.18	$ 0.07	$ (0.87)	$ (0.80)
Diluted	$ 0.03	$ (0.01)	$ 0.02	$ 0.05	$ (0.85)	$ (0.80)
Weighted average shares used to compute earnings per share attributable to common stockholders:						
Basic	18,819,459	-	18,819,459	18,734,401	-	18,734,401
Diluted	24,539,299	-	24,539,299	24,439,959	(5,705,558)	18,734,401

(In thousands, except per share and share data)	Statement of Operations Three Months Ending September 30, 2019			Statement of Operations Nine Months Ending September 30, 2019		
	As Previously Reported	Adjustments	As Restated	As Previously Reported	Adjustments	As Restated
Revenue	$ 6,604	$ -	$ 6,604	$ 19,075	$ -	$ 19,075
Operating expenses						
Cost of product and rental revenue (exclusive of intangible assets amortization)	2,084	10 (d),(e)	2,094	5,690	20 (d),(e)	5,710
Research and development	1,309	(277) (d),(e)	1,032	2,420	(338) (d),(e)	2,082
Sales and marketing	1,259	(9) (d),(e)	1,250	3,035	(3) (d),(e)	3,032
General and administrative	2,258	90 (d)	2,348	6,579	128 (d)	6,707
Amort of Intangibles	-	361 (e)	361	-	465 (e)	465
Acquisition Costs	291	-	291	538	-	538
Total operating expenses	7,201	175	7,376	18,262	272	18,534
Operating income (loss)	(597)	(175)	(772)	813	(272)	541
Other income (expenses)						
Change in fair value of warrant liability	-	1,128 (a)	1,128	-	(14,949) (a)	(14,949)
Interest income	110	-	110	417	-	417
Interest expense	(1)	-	(1)	(5)	-	(5)
Other Expense	(13)	-	(13)	(13)	-	(13)
Loss from equity-method investment in SAVSU	(291)	-	(291)	(739)	-	(739)
Gain on Acquisition of SAVSU	10,108	-	10,108	10,108	-	10,108
Total other income (expenses)	9,913	1,128	11,041	9,768	(14,949)	(5,181)
Income (loss) before provision for income taxes	9,316	953	10,269	10,581	(15,221)	(4,640)
Income taxes	-	-	-	-	-	-
Net income (loss)	9,316	953	10,269	10,581	(15,221)	(4,640)
Net income (loss) attributable to common stockholders:						
Basic	$ 9,316	$ (936)	$ 8,380	$ 10,581	$ (15,221)	$ (4,640)
Diluted	9,316	(454)	8,862	10,581	(15,221)	(4,640)
Earnings per share attributable to common stockholders:						
Basic	$ 0.47	$ (0.05)	$ 0.42	$ 0.55	$ (0.79)	$ (0.24)
Diluted	$ 0.37	$ (0.02)	$ 0.35	$ 0.43	$ (0.67)	$ (0.24)
Weighted average shares used to compute earnings per share attributable to common stockholders:						
Basic	19,735,364	-	19,735,364	19,071,722	-	19,071,722
Diluted	25,343,112	-	25,343,112	24,705,424	(5,633,702)	19,071,722

Consolidated Statements of Cash Flows
(unaudited)

(In thousands)	Three Months Ended March 30, 2018		
	As Previously Reported	Adjustments	Restated
Cash flows from operating activities			
Net income	$ 3	$ 4,870 (a)	$ 4,873
Adjustments to reconcile net income to net cash provided by operating activities			
Depreciation	78	-	78
Stock-based compensation	373	-	373
Amortization of deferred rent related to lease incentives	(32)	-	(32)
Amortization of debt discount	-	-	-
Loss from equity method investment in SAVSU	144	-	144
Change in fair value of warrant liability	-	(4,870) (a)	(4,870)
Change in operating assets and liabilities			
(Increase) Decrease in			
Accounts receivable, trade, net	(23)	-	(23)
Inventories	10	-	10
Prepaid expenses and other current assets	12	-	12
(Increase) Decrease in			
Accounts payable	(69)	-	(69)
Accrued compensation and other current liabilities	(101)	-	(101)
Deferred rent	(3)	-	(3)
Net cash provided by operating activities	392	-	392
Cash flows from investing activities			
Purchase of property and equipment	(41)	-	(41)
Net cash used in investing activities	(41)	-	(41)
Cash flows from financing activities			
Payments on equipment loan	(2)	-	(2)
Payments on capital lease obligation	(3)	-	(3)
Proceeds from exercise of common stock options and warrants	130	-	130
Payments of preferred stock dividends	(106)	-	(106)
Net cash provided by financing activities	19	-	19
Net increase (decrease) in cash and cash equivalents	370	-	370
			-
Cash and cash equivalents – beginning of period	6,663	-	6,663
Cash and cash equivalents – end of year	$ 7,033	$ -	$ 7,033
Non-cash investing and financing activities			
Stock issued for services provided in prior period included in liabilities at year-end	$ 36	$ -	$ 36
Purchase of equipment with debt	18	-	18
Series A preferred stock dividends accrued not yet paid	106	-	106
Reclassification of warrant liabilities to equity upon exercise	$ -	$ 29	$ 29

(In thousands)	Six Months Ended June 30, 2018 As Previously Reported	Adjustments	Restated
Cash flows from operating activities			
Net income (loss)	$ 1,143	$ (22,615) (a)	$ (21,472)
Adjustments to reconcile net income (loss) to net cash provided by operating activities			
Depreciation	161	-	161
Stock-based compensation	748	-	748
Stock issued for services			
Amortization of deferred rent related to lease incentives	(63)	-	(63)
Loss from equity method investment in SAVSU	321	-	321
Change in fair value of warrant liability	-	22,615 (a)	22,615
Change in operating assets and liabilities			
(Increase) Decrease in			
Accounts receivable, trade, net	(1,145)	-	(1,145)
Inventories	(275)	-	(275)
Prepaid expenses and other current assets	(103)	-	(103)
Accounts payable	168	-	168
Accrued compensation and other current liabilities	6	-	6
Deferred rent	(6)	-	(6)
Net cash provided by operating activities	955	-	955
Cash flows from investing activities			
Investment in equity investment SAVSU	(1,000)	-	(1,000)
Purchase of property and equipment	(61)	-	(61)
Net cash used in investing activities	(1,061)	-	(1,061)
Cash flows from financing activities			
Payments on equipment loan	(5)	-	(5)
Payments on capital lease obligation	(7)	-	(7)
Proceeds from exercise of common stock options and warrants	8,899	-	8,899
Payments of preferred stock dividends	(213)	-	(213)
Payments for redemption of preferred stock	(1,063)	-	(1,063)
Net cash provided by financing activities	7,611	-	7,611
Net increase (decrease) in cash and cash equivalents	7,505	-	7,505
			-
Cash and cash equivalents – beginning of period	6,663	-	6,663
Cash and cash equivalents – end of year	$ 14,168	$ -	$ 14,168
Non-cash investing and financing activities			
Series A preferred stock dividends accrued not yet paid	$ 93	$ -	$ 93
Stock issued for services provided in prior period included in liabilities at year-end	36	-	36
Receivables converted to equity investment in SAVSU	150	-	150
Purchase of equipment with debt	18	-	18
Purchase of property and equipment not yet paid	20	-	20
Reclassification of warrant liabilities to equity upon exercise	$ -	$ 9,639	$ 9,639

(In thousands)	Nine Months Ended September 30, 2018 As Previously Reported	Adjustments	Restated
Cash flows from operating activities			
Net income (loss)	$ 2,373	$ (48,311) (a)	$ (45,938)
Adjustments to reconcile net income (loss) to net cash provided by operating activities			
Depreciation	245	-	245
Stock-based compensation	1,131	-	1,131
Stock issued for services			
Write off of deferred financing costs			
Amortization of deferred rent related to lease incentives	(95)	-	(95)
Loss from equity method investment in SAVSU	363	-	363
Change in fair value of warrant liability	-	48,311 (a)	48,311
Change in operating assets and liabilities			
(Increase) Decrease in			
Accounts receivable, trade, net	(1,678)	-	(1,678)
Inventories	(1,064)	-	(1,064)
Prepaid expenses and other current assets	(49)	-	(49)
Accounts payable	343	-	343
Accrued compensation and other current liabilities	205	-	205
Deferred rent	(11)	-	(11)
Net cash provided by operating activities	1,763	-	1,763
Cash flows from investing activities			
Investment in equity investment SAVSU	(6,000)	-	(6,000)
Purchase of property and equipment	(339)	-	(339)
Net cash used in investing activities	(6,339)	-	(6,339)
Cash flows from financing activities			
Proceeds from private equity transaction	20,000	-	20,000
Payments on equipment loan	(9)	-	(9)
Payments on capital lease obligation	(10)	-	(10)
Proceeds from exercise of common stock options and warrants	11,725	-	11,725
Payments of preferred stock dividends	(306)	-	(306)
Payments for redemption of preferred stock	(1,063)	-	(1,063)
Deferred costs related to security issuance	(43)	-	(43)
Net cash provided by financing activities	30,294	-	30,294
Net increase (decrease) in cash and cash equivalents	25,718	-	25,718
			-
Cash and cash equivalents – beginning of period	6,663	-	6,663
Cash and cash equivalents – end of year	$ 32,381	$ -	$ 32,381
Non-cash investing and financing activities			
Series A preferred stock dividends accrued not yet paid	$ 80	$ -	$ 80
Stock issued for services provided in prior period included in liabilities at year-end	36	-	36
Receivables converted to equity investment in SAVSU	150	-	150
Purchase of equipment with debt	18	-	18
Legal fees for private equity transaction not yet paid	43	-	43
Purchase of property and equipment not yet paid	49	-	49
Reclassification of warrant liabilities to equity upon exercise	$ -	$ 17,509	$ 17,509

(In thousands)	Three Months Ended March 30, 2019 As Previously Reported	Adjustments	Restated
Cash flows from operating activities			
Net income (loss)	$ 427	$ (19,588) (a)	$ (19,161)
Adjustments to reconcile net income (loss) to net cash provided by operating activities			
Depreciation	98	-	98
Stock-based compensation	606	(75) (d)	531
Amortization of operating lease liability	(43)	-	(43)
Interest expense - finance type lease	2	-	2
Loss from equity method investment in SAVSU	232	-	232
Change in fair value of warrant liability	-	19,663 (a)	19,663
Change in operating assets and liabilities			
(Increase) Decrease in			
Accounts receivable, trade, net	118	-	118
Inventories	(551)	-	(551)
Prepaid expenses and other current assets	6	-	6
(Increase) Decrease in			
Accounts payable	553	-	553
Accrued compensation and other current liabilities	(302)	-	(302)
Net cash provided by operating activities	1,146	-	1,146
Cash flows from investing activities			
Purchase of property and equipment	(156)	-	(156)
Net cash used in investing activities	(156)	-	(156)
Cash flows from financing activities			
Payments on equipment loan	(4)	-	(4)
Payments on capital lease obligation	(4)	-	(4)
Proceeds from exercise of common stock options and warrants	185	-	185
Net cash provided by financing activities	177	-	177
Net increase (decrease) in cash and cash equivalents	1,167	-	1,167
Cash and cash equivalents – beginning of period	30,657	-	30,657
Cash and cash equivalents – end of year	$ 31,824	$ -	$ 31,824
Non-cash investing and financing activities			
Stock issued for services provided in prior period included in liabilities at year-end	$ -	$ -	$ -
Purchase of equipment with debt	-	-	-
Series A preferred stock dividends accrued not yet paid	-	-	-
Purchase of property and equipment not yet paid	46	-	46
Reclassification of warrant liabilities to equity upon exercise	$ -	$ 73	$ 73

(In thousands)	Six Months Ended June 30, 2019 As Previously Reported	Adjustments	Restated
Cash flows from operating activities			
Net income (loss)	$ 1,265	$ (16,174) (a)	$ (14,909)
Adjustments to reconcile net income (loss) to net cash provided by operating activities			
Depreciation	209	-	209
Stock-based compensation	1,252	97 (d)	1,349
Amortization of deferred rent related to lease incentives	-	-	-
Amortization of operating lease liability	(87)	-	(87)
Interest expense - finance type lease	2	-	2
Loss from equity method investment in SAVSU	448	-	448
Amortization of intangible assets	104	-	104
Change in fair value of warrant liability	-	16,077 (a)	16,077
Change in operating assets and liabilities			
(Increase) Decrease in			
Accounts receivable, trade, net	(632)	-	(632)
Inventories	(1,341)	-	(1,341)
Prepaid expenses and other current assets	(32)	-	(32)
(Increase) Decrease in			-
Accounts payable	(36)	-	(36)
Accrued compensation and other current liabilities	(20)	-	(20)
Deferred rent	-	-	-
Other liabilities	(53)	-	(53)
Net cash provided by operating activities	1,079	-	1,079
Cash flows from investing activities			
Payments related to the Astero Bio Acquisition, net of cash acquired	(12,438)	-	(12,438)
Investment in equity investment SAVSU	-	-	-
Purchase of property and equipment	(267)	-	(267)
Net cash used in investing activities	(12,705)	-	(12,705)
Cash flows from financing activities			
Payments on equipment loan	(8)	-	(8)
Payments on capital lease obligation	(7)	-	(7)
Proceeds from exercise of common stock options and warrants	600	-	600
Net cash provided by financing activities	585	-	585
Net increase (decrease) in cash and cash equivalents	(11,041)	-	(11,041)
Cash and cash equivalents – beginning of period	30,657	-	30,657
Cash and cash equivalents – end of year	$ 19,616	$ -	$ 19,616
Non-cash investing and financing activities			
Series A preferred stock dividends accrued not yet paid	$ -	$ -	$ -
Stock issued for services provided in prior period included in liabilities at year-end	-	-	-
Receivables converted to equity investment in SAVSU	-	-	-
Purchase of equipment with debt	-	-	-
Purchase of property and equipment not yet paid	4	-	4
Reclassification of warrant liabilities to equity upon exercise	$ -	$ 400	$ 400

(In thousands)	Nine Months Ended September 30, 2019 As Previously Reported	Adjustments	Restated
Cash flows from operating activities			
Net income (loss)	$ 10,581	$ (15,221) (a)	$ (4,640)
Adjustments to reconcile net income (loss) to net cash provided by operating activities			
Depreciation	373	-	373
Loss on disposal of property and equipment	13	-	13
Stock-based compensation	1,907	272 (d)	2,179
Amortization of operating lease liability	(132)	-	(132)
Interest expense - finance type lease	2	-	2
Loss from equity method investment in SAVSU	739	-	739
Gain on acquisition of SAVSU	(10,108)	-	(10,108)
Amortization of intangible assets	465	-	465
Change in fair value of warrant liability	-	14,949 (a)	14,949
Change in operating assets and liabilities			
(Increase) Decrease in			
Accounts receivable, trade, net	(372)	-	(372)
Inventories	(1,730)	-	(1,730)
Prepaid expenses and other current assets	(272)	-	(272)
Other assets, net	(87)	-	(87)
(Increase) Decrease in			
Accounts payable	377	-	377
Accrued compensation and other current liabilities	558	-	558
Other liabilities	(98)	-	(98)
Net cash provided by operating activities	2,216	-	2,216
Cash flows from investing activities			
Cash acquired on acquisition of SAVSU	1,251	-	1,251
Payments related to the Astero Bio Acquisition, net of cash acquired	(12,439)	-	(12,439)
Investment in iVexSol	(1,000)	-	(1,000)
Purchase of property and equipment	(356)	-	(356)
Purchase of assets held for rent	(453)	-	(453)
Net cash used in investing activities	(12,997)	-	(12,997)
Cash flows from financing activities			
Proceeds from private equity transaction		-	-
Payments of costs related to Stock Issuances	(44)	-	(44)
Payments on equipment loan	(12)	-	(12)
Payments on finance lease obligation	(9)	-	(9)
Proceeds from exercise of common stock options and warrants	1,394	-	1,394
Net cash provided by financing activities	1,329	-	1,329
Net increase (decrease) in cash and cash equivalents	(9,452)	-	(9,452)
			-
Cash and cash equivalents – beginning of period	30,657	-	30,657
Cash and cash equivalents – end of year	$ 21,205	$ -	$ 21,205
Non-cash investing and financing activities			
Purchase of equipment with debt	$ 146	$ -	$ 146
Purchase of property and equipment not yet paid	53	-	53
Stock issued as consideration to acquire SAVSU	19,932	-	19,932
Reclassification of warrant liabilities to equity upon exercise	$ -	$ 1,695	$ 1,695

a. Adjustments related to recording certain warrants as liabilities, see Note 2: "*Restatement of Consolidated Financial Statements*".
b. Adjustments related to change in fair value of Astero contingent consideration at acquisition.
c. Adjustments related to change in valuation of in-process research and development acquired technology from the Astero acquisition
d. Adjustments related to change in valuation method of market-based restricted stock awards.
e. Adjustments related to cost of revenue and intangible amortization were reclassified from research and development and sales and marketing to conform to the presentation of those operating expenses in the statement of operations for the year ended December 31, 2019

17. Subsequent Events

COVID-19

On March 10, 2020, the World Health Organization declared the COVID-19 outbreak a pandemic. The virus and actions taken to mitigate its spread have had and are expected to continue to have a broad adverse impact on the economies and financial markets of many countries, including the geographical areas in which the Company operates and conducts its business. In particular, the Seattle area, including the location of our corporate headquarters and our media production facility and warehouse, is at one of the epicenters of the coronavirus outbreak in the U.S. We are currently following the recommendations of local health authorities to minimize exposure risk for our team members and visitors. However, the scale and scope of this pandemic is unknown and the duration of the business disruption and related financial impact cannot be reasonably estimated at this time. While we have implemented specific business continuity plans to reduce the potential impact of COVID-19 and believe that we have sufficient biopreservation media inventory to meet previously forecasted demand for the next six to nine months, there is no guarantee that our continuity plan, once in place, will be successful or that our inventory will meet forecasted or actual demand.

We have already experienced certain disruptions to our business such as temporary closure of our offices and similar disruptions may occur for our customers or suppliers that may materially affect our ability to obtain supplies or other components for our products, produce our products or deliver inventory in a timely manner. This would result in lost product revenue, additional costs, or penalties, or damage our reputation. Similarly, COVID-19 could impact our customers and/or suppliers as a result of a health epidemic or other outbreak occurring in other locations which could reduce their demand for our products or their ability to deliver needed supplies for the production of our products. The extent to which COVID-19 or any other health epidemic may impact our results will depend on future developments, which are highly uncertain and cannot be predicted, including new information which may emerge concerning the severity of COVID-19 and the actions to contain COVID-19 or treat its impact, among others. Accordingly, COVID-19 could have a material adverse effect on our business, results of operations, financial condition and prospects.

On March 27, 2020, President Trump signed into law the “Coronavirus Aid, Relief, and Economic Security (CARES) Act.” The CARES Act, among other things, includes provisions relating to refundable payroll tax credits, deferment of employer side social security payments, net operating loss carryback periods, alternative minimum tax credit refunds, modifications to the net interest deduction limitations, increased limitations on qualified charitable contributions, and technical corrections to tax depreciation methods for qualified improvement property.

As of March 30, 2020, the company started deferring the employer side of social security payments. We will pay back 50% of our total deferred payments in 2021 and the remaining 50% in 2022.

We determined that we met the original eligibility requirements per the guidelines original established by the U.S. federal government as part of the CARES Act for the Pursuant to the Paycheck Protection Program (the “PPP”). As such, on April 20, 2020, the Company received $2,175,320 in support from the PPP. Because the U.S. government subsequently changed its position and guidelines related to the PPP and publicly traded companies, the Company repaid the load on April 29, 2020.

Casdin Financing

On May 14, 2020, the Company entered into a share purchase agreement with Casdin Capital LLC, a current stockholder of the Company (“Casdin”), pursuant to which Casdin agreed to invest $20 million in the Company at a price per share of $10.50. The transaction is expected to close on or before May 26, 2020, subject to ordinary closing conditions. Pursuant to the terms of the share purchase agreement, at closing, the Company will issue to Casdin 1,904,762 shares of Company common stock. The Company has also granted Casdin certain registration rights requiring the Company to file a registration statement with the Securities and Exchange Commission covering the resale by the Casdin of the shares issued in the transaction.

Cashless warrant exercises

On May 14, 2020, the Company entered into separate warrant exercise agreements with WAVI Holding AG and Taurus4757 GmbH pursuant to which the warrant holders immediately exercised their respective warrants via a “cashless” exercise as agreed to by the Company. As a result of the cashless exercise, the Company issued an aggregate of 2,747,970 shares of Company common stock upon cashless exercise of an aggregate of 3,871,405 warrants.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

ITEM 9A. CONTROLS AND PROCEDURES

(a) Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act) as of the end of the period covered by this Form 10-K. Based on that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures as of the end of the period covered by this Form 10-K were not effective, due to the material weakness in our internal controls over financial reporting described below.

Our management, including our Chief Executive Officer and Chief Financial Officer, does not expect that our disclosure controls and procedures or our internal controls will prevent all error and all fraud. A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Further, the design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, within BioLife Solutions have been detected.

(b) Management's Annual Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rule 13a-15(f) of the Exchange Act). Our management assessed the effectiveness of our internal control over financial reporting as of December 31, 2019. In making this assessment, our management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") in Internal Control—Integrated Framework (2013 framework). Based on our assessment under the framework in Internal Control—Integrated Framework (2013 framework), our management concluded that our internal control over financial reporting was not effective as of December 31, 2019 due to the existence of a material weakness in our internal controls over complex equity transactions. A material weakness in internal control is a deficiency in internal control, or combination of control deficiencies, that adversely affects the Company's ability to initiate, authorize, record, process, or report external financial data reliably in accordance with GAAP such that there is more than a remote likelihood that a material misstatement of the Company's annual or interim financial statements will not be prevented or detected. In the course of making our assessment of the effectiveness of internal control over financial reporting, we identified a material weakness in our internal control over financial reporting. The material weakness related to having insufficient technical resources to appropriately analyze and account for complex financial instruments, specifically with regard to our prior interpretation of ASC 480, "Distinguishing Liabilities from Equity", as it related to the initial classification and subsequent accounting of our Warrants as equity instruments dating back to March 2014, and ASC 718, "Stock Compensation" as it related to the accounting for stock awards with market-based vesting conditions. Errors in the accounting for these transactions resulted in the restatement of previously issued financial statements.

The Company's independent registered public accounting firm, BDO USA, LLP, who audited the consolidated financial statements included in this annual report, has issued an adverse audit report on the effectiveness of the Company's internal control over financial reporting as of December 31, 2019, as shown below, BDO USA, LLP's report on the consolidated financial statements appears under Part II, item 8 of this Annual Report on Form 10-K.

In accordance with guidance issued by the Securities and Exchange Commission, companies are permitted to exclude acquisitions from their final assessment of internal control over financial reporting for the first fiscal year in which the acquisition occurred. Our management's evaluation of internal control over financial reporting excluded the internal control activities of SAVSU Technologies, Inc. ("SAVSU," acquired on August 8, 2019), and Custom Biogenic Systems, Inc. ("CBS," acquired on November 12, 2019) as discussed in Note 12, "*Acquisitions*," of the Notes to the Consolidated Financial Statements. We have included the financial results of these in the consolidated financial statements from the date of acquisition. These acquired businesses constituted approximately 44% of our total consolidated assets (excluding goodwill and intangible assets related to the transactions, which were integrated into our systems and control environment) and 10% of the total consolidated revenue included in our consolidated financial statements as of and for the year ended December 31, 2019.

(c) Changes in Internal Control Over Financial Reporting

There was no change in our internal control over financial reporting that occurred during the quarter ended December 31, 2019 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

(d) Remediation

We plan to devote resources to the remediation and improvement of our internal control over financial reporting, in particular over handling of complex financial accounting issues. As the Company enters into transactions that involve complex accounting issues, it will consult with third party professionals with expertise in these matters as necessary to ensure appropriate accounting treatment for such transactions.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Shareholders and Board of Directors
BioLife Solutions, Inc.
Bothell, Washington

Opinion on Internal Control over Financial Reporting

We have audited BioLife Solutions, Inc. (the "Company's") internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (the "COSO criteria"). In our opinion, the Company did not maintain, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on the COSO criteria.

We do not express an opinion or any form of assurance on management's statements referring to any corrective actions taken by the Company after the date of management's assessment.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the consolidated balance sheet of the Company as of December 31, 2019, the related consolidated statements of operations, shareholders' equity, and cash flows for the year ended December 31, 2019, and the related notes (collectively referred to as the "consolidated financial statements" and our report dated May 15, 2020 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying "Item 9A, Management's Annual Report on Internal Control over Financial Reporting". Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit of internal control over financial reporting in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of the company's annual or interim financial statements will not be prevented or detected on a timely basis. A material weakness related to the Company's failure to design and maintain effective controls surrounding reviews of complex equity transactions has been identified and described in management's assessment.

This material weakness was considered in determining the nature, timing, and extent of audit tests applied in our audit of the 2019 consolidated financial statements, and this report does not affect our report dated May 15, 2020, on those consolidated financial statements.

As indicated in the accompanying Item 9A, Management's Annual Report on Internal Control over Financial Reporting, management's assessment of and conclusion on the effectiveness of internal control over financial reporting did not include the internal controls of SAVSU Technologies, Inc. ("SAVSU"), which was acquired on August 8, 2019, and Custom Biogenic Systems, Inc. ("CBS"), which was acquired on November 12, 2019, and which are included in the consolidated balance sheets of the Company as of December 31, 2019, and the related consolidated statements of operations, shareholders' equity, and cash flows for the year then ended. Together, these acquisitions constituted 44% of assets (excluding goodwill and intangible assets related to the transaction, which were integrated into the Company's systems and control environment) as of December 31, 2019, and approximately 10% of revenues for the year ended December 31, 2019. Management did not assess the effectiveness of internal control over financial reporting of SAVSU and CBS because of the timing of the acquisitions. Our audit of internal control over financial reporting of the Company also did not include an evaluation of the internal control over financial reporting of SAVSU and CBS.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed 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. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/S/ BDO USA, LLP

Seattle, Washington

May 15, 2020

ITEM 9B. OTHER INFORMATION

On May 14, 2020, the Company entered into a share purchase agreement with Casdin Capital LLC, a current stockholder of the Company ("Casdin"), pursuant to which Casdin agreed to invest $20 million in the Company at a price per share of $10.50. The transaction is expected to close on or before May 26, 2020, subject to ordinary closing conditions. Pursuant to the terms of the share purchase agreement, at closing, the Company will issue to Casdin 1,904,762 shares of Company common stock. The Company has also granted Casdin certain registration rights requiring the Company to file a registration statement with the Securities and Exchange Commission covering the resale by the Casdin of the shares issued in the transaction.

On May 14, 2020, the Company entered into separate warrant exercise agreements with WAVI Holding AG and Taurus4757 GmbH pursuant to which the warrant holders immediately exercised their respective warrants via a "cashless" exercise as agreed to by the Company. As a result of the cashless exercise, the Company issued an aggregate of 2,747,970 shares of Company common stock upon cashless exercise of an aggregate of 3,871,405 warrants.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS, AND CORPORATE GOVERNANCE

The following table and text set forth the names and ages of our directors and executive officers as of May 1, 2020. The Board is comprised of only one class. Also provided herein are brief descriptions of the business experience of each director and executive officer during the past five years (based on information supplied by them) and an indication of directorships held by each director in other public companies subject to the reporting requirements under the Federal securities laws. During the past ten years, none of our directors or executive officers has been involved in any legal proceedings that are material to an evaluation of the ability or integrity of such person, including any of the legal proceedings identified in Item 401(f) of Regulation S-K.

Name	Age	Position and Offices With the Company
Todd Berard	51	Chief Marketing Officer
Roderick de Greef	59	Chief Operating Officer and Chief Financial Officer
Karen Foster	60	Chief Quality Officer
James Mathers	61	Chief Revenue Officer
Aby J. Mathew, Ph.D.	48	Executive Vice President and Chief Scientific Officer
Michael Rice	57	Chief Executive Officer, President, and Director
Raymond Cohen	61	Chairman of the Board
Thomas Girschweiler	62	Director
Andrew Hinson	56	Director
Joseph Schick	58	Director

Todd Berard has been Chief Marketing Officer since December 2019. Before his appointment as Chief Marketing Officer, Mr. Berard had served as Vice President of Marketing since February 2015 and Senior Director of Marketing since July 2014. Previous to BioLife, Mr. Berard served as Director of Marketing at Verathon Medical; a division of Roper Inc., from September 2010 until July 2014, overseeing the global marketing, product development, and product launch strategies for a portfolio of six medical device brands. He also managed all strategic partnerships for product development and helped guide the organization through several key product launches and the corporate acquisition. At Verathon, Mr. Berard oversaw a creative and product management team of 12. Responsibilities included all global marketing initiatives and campaigns, strategy, product portfolio management, and strategic planning. He has over twenty years of experience in life sciences, health care, medical devices, and technology; working for both global leaders and small technology startups, including the University of Washington School of Medicine, DuPont, and Medtronic. He has a Bachelor of Science Degree in Biochemistry from the University of Vermont and an MBA from the University of Washington Foster School of Business.

Roderick de Greef has been Chief Financial Officer since May 2016. In December 2019, Mr. de Greef was additionally appointed Chief Operating Officer. He was appointed interim Chief Financial Officer and interim Secretary in March 2016. Previously, Mr. de Greef served as a director of the Company from June 2000 through November 2013, and provided the Company with strategic and financial consulting services from July 2007 through August 2011. Since February 2019, Mr. de Greef has served as a director, chairman of the Audit Committee of the board of directors of Indonesia Energy Corporation Limited, an oil and gas exploration and production company. Mr. de Greef served Pareteum Corporation., a mobile communications company, as a director, chair of the Audit Committee and member of the Nominating and Corporate Governance Committee and Compensation Committee from September 2015 to September 2017, and also from January 2008 to October 2011. From November 2013 to October 2014, Mr. de Greef served as the president and sole director of Cambridge Cardiac Technologies, Inc. a privately held successor to Cambridge Heart, Inc. From November 2008 to October 2013, Mr. de Greef was the chairman of the board of Cambridge Heart, Inc., a manufacturer of non-invasive diagnostic cardiology products. From November 2003 to May 2013, Mr. de Greef served as a director, member of the Audit Committee and chairman of the Compensation Committee of Endologix, Inc. From 2001 to 2006, Mr. de Greef served as Executive Vice President and Chief Financial Officer of NASDAQ listed Cardiac Science, Inc., which in 2004 was ranked as the 4th fastest growing technology company in North America on Deloitte & Touche's Fast 500 listing. Mr. de Greef received his MBA degree from the University of Oregon, and a B.A in Economics and International Relations from San Francisco State University. Mr. de Greef has extensive experience in corporate finance and the business world in general as well as serving as an officer and director of public companies.

Karen Foster has been Chief Quality Officer since December 2019. Before her appointment as Chief Quality Officer, Ms. Foster had served as Vice President, Operations since April 2016. From 2003 to early 2016, Ms. Foster was Vice President of Laboratory Operations and Site Leader at ViaCord, LLC, a family cord blood bank, and subsidiary of PerkinElmer Inc. Over a 25-year career, Ms. Foster has managed manufacturing and quality operations in several capacities for companies including ViaCord, Pfizer, Inc. (formerly Pharmacia Corporation) and Amersham Pharmacia Biotech, Inc. (formerly Phamacia Biotech, Inc.). She holds an MBA from the University of Wisconsin-Milwaukee (specialization in Operations Management), an M.S. in Zoology from University of Wisconsin-Milwaukee (specialization in Microbiology) and a B.S. in Biological Sciences from Michigan Technological University.

James Mathers has been Chief Revenue Officer since December 2019. Before his appointment as Chief Revenue Officer, Mr. Mathers had served as the Vice President, Global Sales, since May 2016. Mr. Mathers has more than 30 years of successful sales leadership and entrepreneurial experience in high growth medical and applied technology organizations. Mr. Mathers' expertise lies in the building of scalable sales organizations in support of rapid market adoption of disruptive technologies. From October 2009 to December 2016, Mr. Mathers was Principal/Founder of the Mathers Group, a business consulting services firm for operational consultancy for physician owned specialty cancer centers and brokerage services for the acquisition and/or sale of radiation oncology capital equipment. From April 2013 to July 2014, Mr. Mathers was the Area Sales Director for MAKO Surgery/Stryker Orthopedics where he was responsible for the sales of RIO orthopedic robotics capital equipment for knee and hip replacement. From December 2011 to April 2013, Mr. Mathers was Director, Business Development for AMAMARK Healthcare responsible for sales revenue for outsourced clinical engineering functions. Previously, Mr. Mathers served in various global sales, marketing and business development leadership positions at Mako Surgical/Stryker Orthopedics, BrainLAB, Cardiac Science, Johnson & Johnson and Baxter Healthcare. Mr. Mathers has a Bachelor of Arts in Biology and Pre-Medicine from the University of Pennsylvania and an MBA from Pepperdine University.

Aby J. Mathew, Ph.D. has been Executive Vice President and Chief Scientific Officer since December 2019. Before his appointment as Executive Vice President and Chief Scientific Officer, Mr. Mathew had served as Chief Technical Officer. Dr. Mathew was part of the founding team of BioLife Solutions, Inc., and has been employed by BioLife since 2000. Dr. Mathew is a co-developer of BioLife's biopreservation media solutions and co-inventor on issued and pending patents related to methods, devices, and formulations for the preservation of cells, tissues, and organs. He holds a Ph.D. in Biological Sciences from Binghamton University and a B.S. in Microbiology from Cornell University. Dr. Mathew has been researching low temperature biopreservation since 1994, and his studies contributed to the development of BioLife's current commercial HypoThermosol® and CryoStor® product platforms and intellectual property foundation. Dr. Mathew is currently active in, or previously a member of, AABB (formerly the American Association of Blood Banks), BEST (the Biomedical Excellence for Safer Transfusion collaborative), the International Society for Cell Therapy (ISCT), the Alliance for Regenerative Medicine (ARM), Tissue Engineering & Regenerative Medicine International Society (TERMIS), Society for Cryobiology, International Society for Biological and Environmental Repositories (ISBER), American Society for Cell Biology, and the Society for In Vitro Biology. Dr. Mathew is a member of, the Board of Directors, and Advisory Panel, of the Parent's Guide to Cord Blood Foundation, the Scientific Advisory Board of HemaCare Corporation, the founding Board of Directors of the Cord Blood Association, the NIST-AMTech National Cell Manufacturing Consortium, the California Institute for Regenerative Medicine (CIRM) Clinical Advisory Panel, the Business Advisory Board of RoosterBio Inc., and the Scientific Advisory Board of SAVSU Technologies. Dr. Mathew has obtained UCLA Corporate Governance Program Certification.

Michael Rice has been President and Chief Executive Officer and a director of the Company since August 2006, and was chairman of the Board from August 2007 to November 2013. Mr. Rice has more than 30 years of leadership and entrepreneurial experience in the medical and high-tech industries. He was most recently the senior business development manager for medical and wireless products at AMI Semiconductor, from October 2004 to August 2006. From October 2000 to August 2006, Mr. Rice also served as the director of marketing and business development at Cardiac Science, Inc., a manufacturer of automated external defibrillators. Prior to that, from May 1998 to October 2000, he was the Vice President, Sales and Marketing for TEGRIS Corporation, a privately held network services provider. Mr. Rice also spent 12 years, from May 1986 to May 1998 at Physio Control Corporation in several sales and marketing management roles prior to its acquisition by Medtronic Inc. The Board has determined that Mr. Rice is qualified to serve as a director because it values management's insight.

Raymond W. Cohen joined the Board in May 2006 and has served as Chairman of the Board since November 2013. Mr. Cohen is an accredited public company director with extensive operating and corporate governance experience holding positions on the boards of publicly listed life science companies. Mr. Cohen currently serves as the Chief Executive Officer and member of the board of directors of Axonics Modulation Technologies, Inc., (NASDAQ: AXNX), a manufacturer of neuromodulation devices. From mid-2010 to late 2012, Mr. Cohen served as Chief Executive Officer of Vessix Vascular, Inc. until Vessix was acquired by Boston Scientific Corporation. Previously, from 1997 to 2006, Mr. Cohen served as Chairman and Chief Executive Officer of NASDAQ listed Cardiac Science, Inc., which in 2004 was ranked as the 4th fastest growing technology company in North America on Deloitte & Touche's Fast 500 listing. In 2008, Mr. Cohen was named by AeA as the Private Company Life Science CEO of the Year. Mr. Cohen was named Entrepreneur of the Year in 2002 by the Orange County Business Journal and was a finalist for Ernst & Young's Entrepreneur of the Year in the medical company category in 2004. Mr. Cohen holds a B.S. in Business Management from Binghamton University. The board has determined that Mr. Cohen is qualified to serve as a director because of his extensive experience with public companies.

Thomas Girschweiler was a member of our Board from 2003 to March 2014 and joined the Board again in May 2015. Mr. Girschweiler has been engaged in corporate financing activities on his own behalf since 1996. From 1981 to 1996, he was an investment banker with Union Bank of Switzerland. Mr. Girschweiler is a graduate of the Swiss Banking School. The Board has determined that Mr. Girschweiler is qualified to serve as a director because of his experience in corporate financing activities and his status as a significant shareholder.

Andrew Hinson joined the Board in February 2007. Mr. Hinson currently serves as a consultant to the biotechnology industry specializing in matters of clinical and regulatory affairs. Mr. Hinson served as Vice President of Clinical and Regulatory Affairs for LoneStar Heart, Inc. from 2004 to 2016. Mr. Hinson previously served as the Senior Director of research and clinical development at AnGes MG, Inc. (TSE: 4563) a biotechnology firm engaged in the development and commercialization of novel gene and cell therapies for the treatment of cardiovascular disease. Prior to that Mr. Hinson had a long career with Procter & Gamble Pharmaceutical (NYSE:PG) holding multiple technical and management positions in research, clinical development and medical affairs. Mr. Hinson has diverse experience in the cell and gene therapy markets and extensive experience with regulatory affairs and clinical development of new therapies for cardiac, neurologic, and gastrointestinal diseases. The Board has determined that Mr. Hinson is qualified to serve as a director because of his experience and knowledge of companies in the biotechnology space.

Joseph Schick joined the Board in November 2013. He has 13 years of experience as a Chief Financial Officer spanning four different mid-sized companies in various industries. Prior to his experience as a Chief Financial Officer, Mr. Schick worked in various roles for seven years at Expedia (NASDAQ: EXPE), including Senior Vice President of Finance. From this background, Mr. Schick has significant experience with SEC reporting, strategic planning, and mergers and acquisitions. Mr. Schick started his career with Arthur Andersen and is a CPA who received his B.S. in Accounting from the University of Illinois. He is also on various non-profit boards and completed the Director Certification program at UCLA. The Board has determined that Mr. Schick is qualified to serve as a director because of his financial experience with public companies.

Except as otherwise provided by law, each director shall hold office until either their successor is elected and qualified, or until he or she sooner dies, resigns, is removed or becomes disqualified. Officers serve at the discretion of the Board.

There are no family relationships between any of our directors or executive officers and any other of our directors or executive officers.

Delinquent Section 16(a) Reports

Section 16(a) of the Exchange Act requires the Company's directors and executive officers, and persons who own more than 10% of a registered class of the Company's equity securities, to file with the SEC reports of beneficial ownership and reports of changes in beneficial ownership in the Company's securities. Based solely upon a review of Forms 3, 4 and 5, and amendments thereto, filed electronically with the SEC during the year ended December 31, 2019, the Company believes that all Section 16(a) filings applicable to its directors, officers, and 10% stockholders were filed on a timely basis during the year ended December 31, 2019, except that each of Raymond Cohen and Walter Villiger filed one late Form 4 with Mr. Cohen's Form 4 reporting two transactions and Mr. Villiger's Form 4 reporting two transactions.

BOARD OF DIRECTORS

Overview

Our Bylaws provide that the size of our Board is to be determined from time to time by resolution of the Board but shall consist of at least three members. Our Board presently consists of five members. Our Board has determined three of our directors– Messrs. Cohen, Hinson, and Schick – to be independent under the rules of the NASDAQ Stock Market, after taking into consideration, among other things, those transactions described under "Certain Transactions". Mr. Cohen serves as Chairman of the Board and is an independent director. The Board does not have a lead director; however, recognizing that the Board is composed almost entirely of outside directors, in addition to the Board's strong committee system (as described more fully below), we believe this leadership structure is appropriate for the Company and allows the Board to maintain effective oversight of management.

At each annual meeting of stockholders, members of our Board are elected to serve until the next annual meeting and until their successors are duly elected and qualified.

Committees of the Board of Directors

The Board has established an Audit Committee, a Compensation Committee, and a Nominating and Governance Committee. Each committee operates pursuant to a written charter that may be viewed on our website at *www.biolifesolutions.com*. The inclusion of our web site address in this Annual Report does not include or incorporate by reference the information on our web site into this Annual Report.

The following table sets forth the current composition of the three standing committees of our Board:

Name	Board	Audit	Compensation	Nominating and Governance
Mr. Rice	X			
Mr. Cohen	Chair	X	Chair	X
Mr. Hinson	X	X	X	Chair
Mr. Schick (financial expert)	X	Chair	X	X
Mr. Girschweiler	X			

Audit Committee. Our Audit Committee's role includes the oversight of our financial, accounting and reporting processes; our system of internal accounting and financial controls; and our compliance with related legal, regulatory and ethical requirements. The Audit Committee oversees the appointment, compensation, engagement, retention, termination and services of our independent registered public accounting firm, including conducting a review of its independence; reviewing and approving the planned scope of our annual audit; overseeing our independent registered public accounting firm's audit work; reviewing and pre-approving any audit and non-audit services that may be performed by our independent registered public accounting firm; reviewing with management and our independent registered public accounting firm the adequacy of our internal financial and disclosure controls; reviewing our critical accounting policies and the application of accounting principles; and monitoring the rotation of partners of our independent registered public accounting firm on our audit engagement team as required by regulation.

In addition, the Audit Committee's role includes meeting to review our annual audited financial statements and quarterly financial statements with management and our independent registered public accounting firm. The Audit Committee has the authority to obtain independent advice and assistance from internal or external legal, accounting and other advisors, at the Company's expense.

The Board has determined that all members of our Audit Committee meet the independence and financial literacy standards of the NASDAQ Stock Market and applicable SEC rules. The Board of Directors has determined that Mr. Schick is an "audit committee financial expert" as defined by the rules of the SEC.

Compensation Committee. The purpose of the Compensation Committee is to discharge its fiduciary responsibilities relating to the compensation of executive officers, the organizational structure, succession, retention and training policies and review and oversight of benefit programs. Our Compensation Committee is responsible for reviewing the recommendations of our Chief Executive Officer and Chief Financial Officer, making recommendations to the Board regarding the compensation of our executive officers, and ensuring that the total compensation paid to the executive officers is reasonable and competitive, and does not promote excessive risk taking. In making its recommendation to the Board, the Compensation Committee considers the results of the most recent stockholder advisory vote on executive compensation. The Chief Executive Officer may not be present during voting or deliberation on his compensation. The Compensation Committee is also responsible for reviewing and making recommendations to the Board regarding director and committee member compensation. In addition, the Compensation Committee approves and has oversight over our bonus plans for executive officers and/or stock-based compensation plans and oversight of our overall compensation plans and benefit programs, including approval and oversight of grants.

In discharge of its duties related to administration of executive bonus plans, the Compensation Committee may, subject to the terms of each plan, delegate authority to management for the day-to-day non-material administration of such plans. Further, the Compensation Committee may, subject to the terms of each plan, delegate authority to management to make grants to non-executive officers under stock-based compensation plans.

The Compensation Committee has the authority to obtain independent advice and assistance from internal or external legal, accounting and other advisors, at the Company's expense. The Compensation Committee may select, or receive advice from, a compensation consultant, legal counsel or other adviser to the Committee, other than in-house legal counsel, only after taking into consideration the six factors outlined in Rule 10C-1 of the Exchange Act. In considering and determining compensation levels, the Compensation Committee reviews independent and externally generated compensation data, in accordance with Rule 10C-1 of the Exchange Act.

The members of the Compensation Committee are independent directors within the meaning of the listing standards of the NASDAQ Stock Market.

***Nominating and Governance Committee*.** Our Nominating and Governance Committee's primary purpose is to evaluate candidates for membership on our Board and make recommendations to our Board regarding candidates; make recommendations with respect to the composition of our Board and its committees; provide guidance to our human resources, legal, and finance departments relating to director orientation programs; recommend corporate governance principles applicable to the Company; manage periodic review, discussion and evaluation of the performance of our Board, its committees and its members and oversee and monitor compliance with our Code of Business Conduct and Ethics. The Nominating and Governance Committee has the authority to obtain independent advice and assistance from internal or external legal, accounting and other advisors, at the Company's expense.

All members of our Nominating and Governance Committee are independent under the listing standards of the NASDAQ Stock Market.

The Nominating and Governance Committee will consider candidates recommended by stockholders in accordance with the procedures set forth in our Bylaws, and prior to the date it recommends a slate of director nominees to the Board. Pursuant to the Nominating and Governance Committee Charter, there is no difference in the manner in which a nominee recommended by a stockholder or otherwise is evaluated.

In carrying out its function to nominate candidates for election to our Board, the Nominating and Governance Committee considers the Board's mix of skills, experience, character, commitment and diversity—diversity being broadly construed to mean a variety of opinions, perspectives and backgrounds, such as gender, race and ethnicity differences, as well as other differentiating characteristics, all in the context of the requirements and needs of our Board at that point in time. In reviewing potential candidates, the Committee will also consider all relationships between any proposed nominee and any of our stockholders, competitors, customers, suppliers or other persons with a relationship to the Company. The Nominating and Governance Committee believes that each candidate should be an individual who has demonstrated exceptional ability and judgment, who are willing and able to make a sufficient time commitment to the Company, and who shall be most effective, in conjunction with the other nominees to the Board, in collectively serving the long-term interests of the stockholders.

The Nominating and Governance Committee's methods for identifying candidates for election to our Board include the solicitation of ideas for possible candidates from a number of sources, including from members of our Board, our executive officers, individuals who our executive officers or Board members believe would be aware of candidates who would add value to our Board and through other research. The Nominating and Governance Committee may, from time to time, retain, for a fee, one or more third-party search firms to identify suitable candidates. The Nominating and Governance Committee will consider all candidates identified through the processes described above, and will evaluate each candidate, including incumbents, based on the same criteria.

The Nominating and Governance Committee does not have a formal policy with respect to diversity; however, the Board and the Nominating and Governance Committee believe that it is essential that the Board members represent diverse viewpoints.

Codes of Business Conduct and Ethics

We believe in sound corporate governance practices and have always encouraged our employees, including officers and directors to conduct business in an honest and ethical manner. Additionally, it has always been our policy to comply with all applicable laws and provide accurate and timely disclosure.

Accordingly, the Board has adopted a formal written code of ethics for all employees. The Board has adopted an additional corporate code of ethics for its Chief Executive Officer, Chief Financial Officer and other senior financial officers, which is intended to be a "code of ethics" as defined by applicable SEC rules. The Code of Ethics is publicly available on our website at http://investors.biolifesolutions.com/corporate-governance. The Company undertakes to provide to any person without charge, upon written request, a copy of our code of ethics by writing to Secretary, BioLife Solutions Inc., 3303 Monte Villa Parkway, Suite 310, Bothell, Washington, 98021. The code of ethics is designed to deter wrongdoing and promote honest and ethical conduct and compliance with applicable laws and regulations. These codes also incorporate what we expect from our executives so as to enable us to provide accurate and timely disclosure in our filings with the SEC and other public communications. Any amendments made to the Code of Ethics will be available on our website.

ITEM 11. EXECUTIVE COMPENSATION

Summary Compensation Table

The following Summary Compensation Table sets forth certain information regarding the compensation, for services rendered in all capacities to us during 2019 and 2018, of our current principal executive officer and our two other most highly compensated executive officers at the end of 2019 (together, the "named executive officers").

Name and Principal Positions (a)	Year (b)	Salary ($) (c)(1)	Bonus ($) (d)	Stock Awards ($) (e)	All Other Compensation ($) (f)	Total ($) (g)
Michael Rice	2019	530,000	119,250(2)	1,592,520(3)	—	2,241,770
President, Chief Executive Officer and Director	2018	450,000	67,500	112,500(4)	61,937(5)	691,397
Aby J. Mathew	2019	419,750	47,222(6)	744,644(7)	—	1,211,616
Executive Vice President and Chief Scientific Officer	2018	365,000	54,750	91,248(8)	—	510,998
Roderick de Greef	2019	402,500	45,281(9)	707,767(10)	—	1,155,548
Chief Operating Officer and Chief Financial Officer	2018	350,000	52,500	87,498(11)	—	489,998

(1) Reflects base salary earned in each applicable period.
(2) Performance bonus earned in 2019 was paid out in 12,991 restricted stock awards in lieu of cash, which will fully vest on September 25, 2020.
(3) Represents fair value of 35,497 shares of time-vested restricted stock and 35,497 market-based restricted stock granted on February 25, 2019. The time-vested stock award vested 1/4 of the shares on February 25, 2020 with the remainder vesting quarterly over 3 years. The market-based restricted stock awards will vest as to between 0% and 200% of the number of restricted shares granted to each recipient based on our total shareholder return during the period beginning on January 1, 2019 through December 31, 2020 as compared to the total shareholder return of 20 of our peers.
(4) Represents 18,750 shares of time-vested stock granted on January 1, 2018. This award vested 1/4 of the shares on January 1, 2019 with the remainder vesting quarterly over 3 years.
(5) Amounts represent vacation payout to cover taxes on stock awards for vesting periods in 2018
(6) Performance bonus earned in 2019 was paid out in 5,144 restricted stock awards in lieu of cash, which will fully vest on September 25, 2020.
(7) Represents fair value of 16,598 shares of time-vested restricted stock and 16,598 market-based restricted stock granted on February 25, 2019. The time-vested stock award vested 1/4 of the shares on February 25, 2020 with the remainder vesting quarterly over 3 years. The market-based restricted stock awards will vest as to between 0% and 200% of the number of restricted shares granted to each recipient based on our total shareholder return during the period beginning on January 1, 2019 through December 31, 2020 as compared to the total shareholder return of 20 of our peers.
(8) Represents 15,208 shares of time-vested stock granted on January 1, 2018. This award vested 1/4 of the shares on January 1, 2019 with the remainder vesting quarterly over 3 years.
(9) Performance bonus earned in 2019 was paid out in 4,933 restricted stock awards in lieu of cash, which will fully vest on September 25, 2020.
(10) Represents fair value of 15,776 shares of time-vested restricted stock and 15,776 performance-based restricted stock granted on February 25, 2019. The time-vested stock award vested 1/4 of the shares on February 25, 2020 with the remainder vesting quarterly over 3 years. The market-based restricted stock awards will vest as to between 0% and 200% of the number of restricted shares granted to each recipient based on our total shareholder return during the period beginning on January 1, 2019 through December 31, 2020 as compared to the total shareholder return of 20 of our peers.
(11) Represents 14,583 shares of time-vested stock granted on January 1, 2018. This award vested 1/4 of the shares on January 1, 2019 with the remainder vesting quarterly over 3 years.

Narrative Disclosure to Summary Compensation Table

Employment Agreements

The Company entered into an employment agreement with Michael Rice, Chief Executive Officer, effective January 1, 2018 for a salary of $450,000 per year. Subsequently, on November 19, 2018, the Compensation Committee approved a salary increase to $517,500 effective January 1, 2019. With consideration to the recommendations of FW Cook described above, on February 23, 2019, the Compensation Committee approved a salary increase to $530,000 effective February 15, 2019. The agreement provides that if Mr. Rice's employment is terminated without "Cause" (other than by reason of death or disability) or if he resigns for "Good Reason," he is entitled to a lump sum payment equal to 12 months' salary, an amount equal to the cost of 12 months' medical insurance premiums at a monthly amount equal to the amount of COBRA coverage in effect as of the termination date, plus a tax gross-up amount with respect to such premiums and unvested stock options, awards, or other equity grants shall immediately fully vest; If Mr. Rice's employment is terminated upon or within 90 days following a "Change in Control", Mr. Rice is entitled to a lump sum payment equal to 24 months' salary and an amount equal to the cost of 24 months' medical insurance premiums at a monthly amount equal to the amount of COBRA coverage in effect as of the termination date, plus a tax gross-up amount with respect to such premiums.

The Company entered into an employment agreement with Aby Mathew, Ph.D., Chief Technology Officer, effective January 1, 2018 for a salary of $365,000 per year. Subsequently, on November 19, 2018, the Compensation Committee approved a salary increase to $419,750 effective January 1, 2019. The agreement provides that if Mr. Mathew's employment is terminated without "Cause" (other than by reason of death or disability) or if he resigns for "Good Reason," he is entitled to a lump sum payment equal to 12 months' salary, an amount equal to the cost of 12 months' medical insurance premiums at a monthly amount equal to the amount of COBRA coverage in effect as of the termination date, plus a tax gross-up amount with respect to such premiums and unvested stock options, awards, or other equity grants shall immediately fully vest; If Mr. Mathew's employment is terminated upon or within 90 days following a "Change in Control", Mr. Mathew is entitled to a lump sum payment equal to 12 months' salary and an amount equal to the cost of 12 months' medical insurance premiums at a monthly amount equal to the amount of COBRA coverage in effect as of the termination date, plus a tax gross-up amount with respect to such premiums.

The Company entered into an employment agreement with Roderick de Greef, Chief Financial Officer, effective January 1, 2018 for a salary of $350,000 per year. Subsequently, on November 19, 2018, the Compensation Committee approved a salary increase to $402,500 effective January 1, 2019. The agreement provides that if Mr. de Greef's employment is terminated without "Cause" (other than by reason of death or disability) or if he resigns for "Good Reason," he is entitled to a lump sum payment equal to 12 months' salary, an amount equal to the cost of 12 months' medical insurance premiums at a monthly amount equal to the amount of COBRA coverage in effect as of the termination date, plus a tax gross-up amount with respect to such premiums and unvested stock options, awards, or other equity grants shall immediately fully vest; If Mr. de Greef's employment is terminated upon or within 90 days following a "Change in Control", Mr. de Greef is entitled to a lump sum payment equal to 18 months' salary and an amount equal to the cost of 18 months' medical insurance premiums at a monthly amount equal to the amount of COBRA coverage in effect as of the termination date, plus a tax gross-up amount with respect to such premiums.

For purposes of each of these employment agreements, a "Change in Control" means (i) the consummation of a merger or consolidation of the Company with or into another entity, (ii) the dissolution, liquidation or winding up of the Company or (iii) the sale of all or substantially all of the Company's assets. The foregoing notwithstanding, a merger or consolidation of the Company shall not constitute a "Change in Control" if immediately after such merger or consolidation a majority of the voting power of the capital stock of the continuing or surviving entity, or any direct or indirect parent corporation of such continuing or surviving entity, will be owned by the persons who were the Company's stockholders immediately prior to such merger or consolidation in substantially the same proportions as their ownership of the voting power of the Company's capital stock immediately prior to such merger or consolidation.

Under each employment agreement, "Cause" means the Company's belief that any of the following has occurred: (i) any breach of the employment agreement by the executive officer; (ii) any failure to perform assigned job responsibilities that continues unremedied for a period of 10 days after written notice to the executive officer by the Company; (iii) the executive officer's malfeasance or misconduct in connection with the executive officer's duties under the employment agreement or any act or omission of the executive officer which is materially injurious to the financial condition or business reputation of the Company or any of its subsidiaries or affiliates, (iv) commission of a felony or misdemeanor or failure to contest prosecution for a felony or misdemeanor; (v) the Company's reasonable belief that the executive officer engaged in a violation of any statute, rule or regulation, any of which in the judgment of the Company is harmful to the business or to Company's reputation; (vi) the Company's reasonable belief that the executive officer engaged in unethical practices, dishonesty or disloyalty; or (vii) any reason that would constitute "cause" under the laws the State of Washington.

Under each employment agreement, "Good Reason" for the executive officer to terminate his or her employment means the following: (i) the Company's material breach of the terms of the employment agreement or any other written agreement between the executive officer and Company; (ii) the assignment to the executive officer of any duties that are substantially inconsistent with or materially diminish the executive officer's position prior to execution of the employment agreement; (iii) a material reduction of the executive officer's salary, other than as a result of a general salary reduction affecting substantially all Company employees; (iv) any failure by the Company to obtain the assumption of the employment agreement by any successor or assign of the Company; or (v) a requirement that the executive officer be based at any office or location more than 50 miles from the executive officer's primary work location prior to the effective date of the employment agreement.

Outstanding Equity Awards at December 31, 2019

The following table sets forth information concerning the outstanding equity awards as of December 31, 2019 granted to the named executive officers.

	OPTION AWARDS				
Name (a)	Number of Securities Underlying Unexercised Options (#) Exercisable (b)	Number of Securities Underlying Unexercised Options (#) Unexercisable (c)	Equity Incentive Plan Awards: Number of Securities Underlying Unexercised Unearned Options (#) (d)	Option Exercise Price ($) (e)	Option Expiration Date (f)
Michael Rice	229,226	—	—	1.64	12/20/2021(2)
Michael Rice	375,000	—	—	2.06	5/4/2025(3)
Michael Rice	93,750	6,250	—	1.90	3/15/2026(4)
Michael Rice	70,833	29,167	—	1.78	2/7/2022(5)
Aby J. Mathew	37,966	—	—	1.40	2/5/2020(1)
Aby J. Mathew	55,451	—	—	1.12	2/11/2021(1)
Aby J. Mathew	197,707	—	—	1.64	12/20/2021(2)
Aby J. Mathew	17,857	—	—	1.40	2/15/2022(1)
Aby J. Mathew	10,000	—	—	3.70	4/21/2024(1)
Aby J. Mathew	229,837	—	—	2.06	5/4/2025(6)
Roderick de Greef	6,919	—	—	1.64	12/20/2021(2)
Roderick de Greef	43,750	6,250	—	1.76	3/4/2026(7)
Roderick de Greef	79,625	24,375	—	1.81	5/3/2026(8)

(1) This award is fully vested.
(2) This award is fully vested.
(3) This award is fully vested.
(4) This award vested 1/4 of the total shares on March 15, 2017 and, thereafter, vested and continues to vest in 36 equal monthly increments.
(5) This award vested 1/4 of the total shares on February 7, 2018 and, thereafter, has vested and continues to vest in 36 equal monthly increments.

(6) This award vested 1/4 of the total shares on May 4, 2016 and, thereafter, has vested and will continue to vest in 36 equal monthly increments.
(7) This award vested 1/4 of the total shares on March 4, 2017 and, thereafter, has vested and will continue to vest in 36 equal monthly increments.
(8) This award vested 1/4 of the total shares on May 3, 2017 and, thereafter, has vested and will continue to vest in 36 equal monthly increments.

Name (a)	Grant Date (b)	Number of shares or units of stock that have not vested (#) (c)	Market value of shares of units of stock that have not vested(1) ($) (d)	Equity incentive plan awards: Number of unearned shares, units or other rights that have not vested (#) (e)	Equity incentive plan awards: Market or payout value of unearned shares, units or other rights that have not vested ($) (f)
Michael Rice	1/1/2018	10,547(2)	170,650	—	—
Michael Rice	2/25/2019	35,497(3)	574,341	35,497(4)	574,341
Aby J. Mathew	1/1/2018	8,555(5)	138,420	—	—
Aby J. Mathew	2/25/2019	16,598(6)	268,556	16,598(4)	268,556
Roderick de Greef	1/1/2018	8,203(7)	132,725	—	—
Roderick de Greef	2/25/2019	15,776(8)	255,256	15,776(4)	255,256

(1) The dollar amounts shown in columns (d) and (f) are determined by multiplying the number of shares or units shown in column (c) or (e), as applicable, by $16.18, the closing price of BioLife's common stock on December 31, 2019.
(2) 10,547 unvested time-based RSAs subject to this award are scheduled to vest in 9 equal quarterly increments, provided that Mr. Rice continues to be employed with BioLife through the vesting dates.
(3) 35,497 time-based RSAs subject to this award are schedule to vest 1/4 on 2/25/2020 and, thereafter, will vest in 12 equal quarterly increments, provided that Mr. Rice continues to be employed with BioLife through the vesting dates.
(4) The target number of market-based RSAs is shown. Between 0% and 200% of the target number of market-based RSAs vest depending on BioLife's Relative Total Shareholder Return ("TSR") compared to a group of 20 peers over the relevant two-year performance period.
(5) 8,555 unvested time-based RSAs subject to this award are scheduled to vest in 9 equal quarterly increments, provided that Mr. Mathew continues to be employed with BioLife through the vesting dates.
(6) 16,598 time-based RSAs subject to this award are schedule to vest 1/4 on 2/25/2020 and, thereafter, will vest in 12 equal quarterly increments, provided that Mr. Mathew continues to be employed with BioLife through the vesting dates.
(7) 8,203 time-based RSAs subject to this award are scheduled to vest in 9 equal quarterly increments, provided that Mr. de Greef continues to be employed with BioLife through the vesting dates.
(8) 15,776 time-based RSAs subject to this award are schedule to vest 1/4 on 2/25/2020 and, thereafter, will vest in 12 equal quarterly increments, provided that Mr. de Greef continues to be employed with BioLife through the vesting dates.

Director Compensation

Each of our non-employee directors, during the year ended December 31, 2019, non-employee directors were compensated with an annual retainer fee of $50,000. In addition, the Board Chairman was compensated an additional $100,000 for the year. Committee chairpersons were compensated with additional annual retainers as follows:

	Annual Retainer
Audit Committee Chairman	$ 10,000
Nominating and Governance Committee Chairman	$ 5,000

A total of $315,000 in cash director compensation was recorded during the year ended December 31, 2019. The following table sets forth information regarding compensation earned by our non-employee directors for the year ended December 31, 2019.

Name(1)	Annual Cash Retainer ($)	Board and Committee Chair Fees ($)	Total Compensation ($)
Raymond Cohen	50,000	100,000	150,000
Thomas Girschweiler	50,000	—	50,000
Andrew Hinson	50,000	5,000	55,000
Joseph Schick	50,000	10,000	60,000

(1) Michael Rice did not receive any additional compensation for his services as a director.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The following table sets forth, as of May 1, 2020, certain information regarding the beneficial ownership of Common Stock by (i) each stockholder known by the Company to be the beneficial owner of more than 5% of the outstanding shares thereof; (ii) each director of the Company; (iii) each named executive officer of the Company; and (iv) all of the Company's current directors and executive officers (including executive officers that are not named executive officers) as a group. This table is based upon information supplied by officers, directors, and principal stockholders and Schedule 13D(s) and Schedule 13G(s) filed with the SEC.

Name and Address of Beneficial Owner	Common Stock	Percentage of Class
Directors and Executive Officers		
Thomas Girschweiler(1)	3,115,299	13.7%
Michael Rice (Officer and Director)(2)	852,298	3.9%
Aby J. Mathew (Officer) (3)	724,009	3.3%
Roderick de Greef (Officer)(4)	128,993	0.6%
Andrew Hinson (Director)(5)	50,175	0.2%
Raymond Cohen (Director) (6)	23,388	0.1%
Joseph Schick (Director) (7)	11,875	0.1%
Total shares owned by Executive Officers and Directors (10 persons) (8)	5,600,466	22.5%
5% Stockholders		
Walter Villiger(9)	5,642,797	24.0%
WAVI Holding AG(10)	5,092,797	22.2%
Taurus4757 GmbH(11)	3,064,496	13.5%
Casdin Capital, LLC (12)	2,468,571	11.6%

Shares of Common Stock subject to options and warrants that are exercisable or will be exercisable within 60 days of May 1, 2020 are deemed outstanding for computing the number of shares beneficially owned. The percentage of the outstanding shares held by a person holding such options or warrants includes those currently exercisable or exercisable within 60 days of May 1, 2020, but such options and warrants are not deemed outstanding for computing the percentage of any other person. Except as indicated by footnote, and subject to community property laws where applicable, we believe that the persons named in the table have sole voting and investment power with respect to all shares shown as beneficially owned by them. Unless otherwise indicated, the business address of each person listed is in care of 3303 Monte Villa Parkway, #310, Bothell, WA 98021.

(1) Includes options to purchase 46,428 shares of Common Stock issuable upon exercise of stock options exercisable within 60 days from May 1, 2020, 4,375 share of Common Stock to be issued pursuant to a restricted stock award, 1,520,302 shares of Common Stock held indirectly through Mr. Girschweiler's wholly-owned entity named Taurus4757 GmbH and 1,544,194 shares of Common Stock issuable upon exercise of warrants held by Taurus4757 GmbH.

(2) Includes options to purchase 637,559 shares of Common Stock issuable under stock options exercisable within 60 days from May 1, 2020 and 81,524 shares of Common Stock to be issued pursuant to restricted stock awards.

(3) Includes options to purchase 510,852 shares of Common Stock issuable under stock options exercisable within 60 days from May 1, 2020 and 51,661 shares of Common Stock to be issued pursuant to restricted stock awards.
(4) Includes options to purchase 70,919 shares of Common Stock issuable under stock options exercisable within 60 days from May 1, 2020 and 49,442 shares of Common Stock to be issued pursuant to restricted stock awards.
(5) Includes options to purchase 35,714 shares of Common Stock issuable under stock options exercisable within 60 days from May 1, 2020 and 4,375 shares of Common Stock to be issued pursuant to a restricted stock award.
(6) Includes 6,563 shares of Common Stock to be issued pursuant to a restricted stock award.
(7) Includes options to purchase 5,000 shares of Common Stock issuable under stock options exercisable within 60 days from May 1, 2020 and 4,375 shares of Common Stock to be issued pursuant to a restricted stock award.
(8) Includes the securities listed in footnotes 1-7, in addition to 49,660 shares of Common Stock, options to purchase 557,532 shares of Common Stock issuable under stock options exercisable within 60 days from May 1, 2020 and 87,237 shares of Common Stock to be issued pursuant to restricted stock awards held by executive officers of the Company that are not named executive officers.
(9) Includes 3,315,586 shares of Common Stock held indirectly through Mr. Villiger's wholly-owned entity named WAVI Holding AG, 550,000 shares of Common Stock issuable upon exercise of warrants held by Mr. Villiger and 1,777,211 shares of Common Stock issuable upon exercise of warrants held by WAVI Holding AG. The business address of Mr. Villiger is Hurdnerstrasse 10 Postfach 8640 Hurden Switzerland V8.
(10) Includes 1,777,211 shares of Common Stock issuable upon exercise of warrants. The business address of WAVI Holding AG is Paradiesstrasse 25 Jona V8 CH 8645.
(11) Includes 1,544,194 shares of Common Stock issuable upon exercise of warrants. The business address of Taurus4757 GmbH is Wissmannstrasse 15, CH-8057 Zurich, Switzerland.
(12) Based on a Schedule 13G/A filed on February 6, 2020. Consists of 2,468,571 shares of Common Stock. The business address of Casdin Capital, LLC is 1350 Avenue of the Americas, Suite 2405, New York, New York 10019.

Equity Compensation Plan Information

The following table sets forth information as of December 31, 2019 relating to all our equity compensation plans:

Plan category	Number of securities to be issued upon exercise of outstanding options (in thousands)	Weighted Average exercise price of outstanding options	Number of granted restricted stock awards outstanding (in thousands)	Number of securities remaining available for future issuance (in thousands)
Equity compensation plans not approved by security holders (1)	188	$ 1.41	—	—
Second amended and restated 2013 performance incentive plan	2,120	$ 1.90	937	464

(1) Represents shares of common stock issuable pursuant to non-plan stock option agreements entered into prior to the adoption of our 2013 Performance Incentive Plan. Prior to the adoption of our 2013 Performance Incentive Plan, we granted certain individuals stock options pursuant to stock option agreements that were not issued under a stockholder-approved plan. Each agreement entitles the holder to purchase from us a fixed number of shares of common stock at a fixed purchase price per share for a fixed period of time, which may not exceed ten (10) years. The specific terms and conditions of each option, including when the right to exercise the option vests, the number of shares subject to the option, the exercise price per share, the method of exercise, exercisability following termination, disability and death, and adjustments upon stock splits, combinations, mergers, consolidation and like events are specified in each agreement. In the event of a liquidation of the Company, or a merger, reorganization, or consolidation of the Company with any other corporation in which we are not the surviving corporation or we become a wholly-owned subsidiary of another corporation, any unexercised options shall be deemed canceled unless the surviving corporation elects to assume the options or to issue substitute options in place thereof. In the event of the forgoing, the holder will have the right to exercise the option during a ten-day period immediately prior to such liquidation, merger, or consolidation.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS AND DIRECTOR INDEPENDENCE

Certain Relationships and Related Transactions

Since January 1, 2018, there has not been, nor has there been proposed, any transaction, arrangement or relationship or series of similar transactions, arrangements or relationships, including those involving indebtedness not in the ordinary course of business, to which we or our subsidiaries were or are a party, or in which we or our subsidiaries were or are a participant, in which the amount involved exceeded or exceeds the lesser of $120,000 or 1% of the average of our total assets at year-end for the last two completed fiscal years and in which any of our directors, nominees for director, executive officers, beneficial owners of more than 5% of any class of our voting securities, or any member of the immediate family of any of the foregoing persons, had or will have a direct or indirect material interest, other than as described above under the headings "Executive Compensation" and "Board of Directors—Director Compensation" and other than the transactions described below. Each of the transactions described below was reviewed and approved or ratified by the Audit Committee of the Board. It is anticipated that any future transactions between us and our officers, directors, principal stockholders and affiliates will be on terms no less favorable to us than could be obtained from unaffiliated third parties. In accordance with our Audit Committee's charter, all such transactions will be reviewed and approved by our Audit Committee and a majority of the independent and disinterested members of the Board.

On May 17, 2018 we redeemed from WAVI 25%, or 1,063 shares of Series A Redeemable Preferred stock outstanding for $1,063,000. On November 27, 2018 we redeemed the remaining 3,187 shares of Series A Redeemable Preferred stock outstanding for $3,187,000. There are no Series A shares outstanding and no accrued preferred dividends as of December 31, 2018.

Director Independence

Our board of directors is responsible for determining the independence of our directors. For purposes of determining director independence, our board of directors has applied the definitions set forth in NASDAQ Rule 5605(a)(2) and the related rules of the SEC. Based upon its evaluation, our board of directors has affirmatively determined that the following directors meet the standards of independence: Mr. Cohen, Mr. Schick, and Mr. Hinson.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

Independent Registered Public Accounting Firm Fees

The following table sets forth the aggregate fees billed by our current independent accountants, BDO, for professional services rendered in the fiscal year ended December 31, 2019. BDO did not provide any services in 2018.

	2019
Audit fees(1)	$ 214,645
Audit related fees(2)	—
Tax fees(3)	—
All other fees(4)	—
Total	$ 214,645

The following table sets forth the aggregate fees billed by our previous independent accountants, Peterson Sullivan, for professional services rendered in the fiscal years ended December 31, 2019 and 2018.

	2019	2018
Audit fees(5)	$ 84,224	$ 177,000
Audit related fees(2)	76,022	6,350
Tax fees(3)	—	—
All other fees(4)	—	—
Total	$ 160,246	$ 183,350

(1) Audit fees consist of professional services for the audit of our annual financial statements, audit of our internal controls over financial reporting under Section 404 of the Sarbanes-Oxley Act or services that are normally provided by the accountant in connection with statutory and regulatory filings or engagement for those fiscal years.

(2) Audit-related fees consist of assurance and related services reasonably related to the performance of the audit or review of our financial statements that are not reported under the heading Audit fees above. In the years ended December 31, 2019 and 2018, we incurred Audit-related fees in connection with audits and reviews of companies we acquired.

(3) There were no fees paid that would be considered “Tax fees” in 2019 or 2018. Fees to be disclosed under this category would be for professional services for tax compliance, tax advice, and tax planning.

(4) There were no fees paid that would be considered “All Other fees” in 2019 or 2018. Fees to be disclosed under this category would be for products and services other than those described under the headings Audit fees, Audit-related fees and Tax fees above.

(5) Audit fees consist of professional services for the audit of our annual financial statements, audit of our internal controls over financial reporting under Section 404 of the Sarbanes-Oxley Act, and review of financial statements included in our Form 10-Q or services that are normally provided by the accountant in connection with statutory and regulatory filings or engagement for those fiscal years.

Audit Committee Pre-Approval Policies and Procedures

The Audit Committee must pre-approve all services to be performed for us by our independent auditors. Pre-approval is granted usually at regularly scheduled meetings of the Audit Committee. If unanticipated items arise between regularly scheduled meetings of the Audit Committee, the Audit Committee has delegated authority to the chairman of the Audit Committee to pre-approve services, in which case the chairman communicates such pre-approval to the full Audit Committee at its next meeting. The Audit Committee also may approve the additional unanticipated services by either convening a special meeting or acting by unanimous written consent. During the years ended December 31, 2019 and 2018, all services billed by BDO and PS were pre-approved by the Audit Committee in accordance with this policy.

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

(a) The following documents are filed as part of this Annual Report on Form 10-K:

(1) Financial Statements (Included Under Item 8): The Index to the Financial Statements is included on page 28 of this Annual Report on Form 10-K and is incorporated herein by reference.

(2) Financial Statement Schedules:

None.

(b) Exhibits

Exhibit Number	Document
2.1†*	Stock Purchase Agreement, dated March 13, 2019, by and among the Company, Astero Bio Corporation, the stockholders of Astero Bio Corporation and the representative of the sellers (included as Exhibit 2.1 to the current report on Form 8-K filed on April 5, 2019)
2.2†	Share Exchange Agreement, dated August 7, 2019, by and among the Company, SAVSU Technologies, Inc. and SAVSU Origin LLC (included as Exhibit 2.1 to the current report on Form 8-K filed on August 13, 2019)
2.3†*	Asset Purchase Agreement, dated November 10, 2019, by and among the Company, Arctic Solutions, Inc., a Delaware corporation and wholly-owned subsidiary of the Company, and Custom Biogenic Systems, Inc. (included as Exhibit 2.1 to the current report on Form 8-K filed on November 15, 2019)
3.1	Amended and Restated Certificate of Incorporation of BioLife Solutions, Inc. (included as Exhibit 4.1 to the Registration Statement on Form S-8 filed on June 24, 2013)
3.2	Certificate of Amendment to the Amended and Restated Certificate of Incorporation of BioLife Solutions, Inc. (included as Exhibit 3.1 to the Current Report on Form 8-K filed on January 30, 2014)
3.3	Amended and Restated Bylaws of BioLife Solutions, Inc., effective April 25, 2013 (included as Exhibit A to the Registrant's Definitive Information Statement on Schedule 14C filed March 27, 2013)
3.4	Certificate of Designations, Preferences, and Rights of Series A Preferred Stock (included as Exhibit 3.1 to the current report on Form 8-K filed on July 6, 2017)
4.1	Description of the Company's Securities Registered under Section 12 of the Exchange Act (incorporated by reference to the Company's registration statement on Form 8-A, as filed on March 19, 2014)
10.1**	Second Amended and Restated 2013 Performance Incentive Plan (included as Appendix A to the Registrant's Definitive Proxy Statement filed on April 14, 2017)
10.2**	BioLife Solutions, Inc. Form of Non-Plan Stock Option Agreement (included as Exhibit 4.4 to the Registration Statement on Form S-8 filed on June 24, 2013)
10.3	Lease Agreement dated August 1, 2007 for facility space 3303 Monte Villa Parkway, Bothell, WA 98021 (included as Exhibit 10.27 and Exhibit 10.29 to the Annual Report on Form 10-KSB for the fiscal year ended December 31, 2007 filed April 1, 2008)
10.4	First Amendment to the Lease, dated November 4, 2008, between the Company and Monte Villa Farms, LLC (included as Exhibit 10.16 to the Annual Report on Form 10-K for the fiscal year ended December 31, 2008 filed March 31, 2009)
10.5	Second Amendment to the Lease, dated March 2, 2012, between the Company and Monte Villa Farms, LLC (included as Exhibit 10.30 to the Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2012 filed May 14, 2012)
10.6	Third Amendment to the Lease, dated June 15, 2012, between the Company and Monte Villa Farms, LLC (included as Exhibit 10.37 to the Annual Report on Form 10-K for the fiscal year ended December 31, 2012 filed March 29, 2013)
10.7	Fourth Amendment to the Lease, dated November 26, 2012, between the Company and Monte Villa Farms, LLC (included as Exhibit 10.41 to the Annual Report on Form 10-K for the fiscal year ended December 31, 2012 filed March 29, 2013)
10.8	Fifth Amendment to Lease, dated August 19, 2014, by and between the Company and Monte Villa Farms LLC (included as Exhibit 10.1 Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2014 filed on November 6, 2014)
10.9	Form of Warrant issued to purchasers in the March 25, 2014 public offering (incorporated by reference to Exhibit 4.1 to the Company's report on Form 8-K filed March 20, 2014)
10.10**	Employment Agreement dated December 13, 2017 between the Company and Michael Rice (incorporated by reference to Exhibit 10.11 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2017 filed March 9, 2018)
10.11**	Employment Agreement dated December 13, 2017 between the Company and Aby Mathew (incorporated by reference to Exhibit 10.12 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2017 filed March 9, 2018)
10.12**	Employment Agreement dated December 13, 2017 between the Company and Todd Berard (incorporated by reference to Exhibit 10.13 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2017 filed March 9, 2018)
10.13	Board of Directors Services Agreement entered into May 4, 2015 by and between the Company and Raymond Cohen (included as Exhibit 10.1 to the Current Report on Form 8-K filed on May 5, 2015)
10.14	Board of Directors Services Agreement entered into May 4, 2015 by and between the Company and Thomas Girschweiler (included as Exhibit 10.2 to the Current Report on Form 8-K filed on May 5, 2015)
10.15	Board of Directors Services Agreement entered into May 4, 2015 by and between the Company and Other Non-Employee Directors (included as Exhibit 10.3 to the Current Report on Form 8-K filed on May 5, 2015)
10.16	Employment Agreement effective December 13, 2017 between the Company and Karen Foster (incorporated by reference to Exhibit 10.17 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2017 filed March 9, 2018)
10.17	Employment Agreement dated December 13, 2017 between the Company and Roderick de Greef (incorporated by reference to Exhibit 10.18 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2017 filed March 9, 2018)
10.18	Form of Restricted Stock Purchase Agreement pursuant to the Second Amended & Restated 2013 Performance Incentive Plan (included as Exhibit 10.4 to the Quarterly Report on Form 10-Q for the quarter ended March 31, 2016 filed on May 16, 2016)
10.19	Form of Stock Option Agreement pursuant to the Second Amended & Restated 2013 Performance Incentive Plan (included as Exhibit 10.5 to the Quarterly Report on Form 10-Q for the quarter ended March 31, 2016 filed on May 16, 2016)
10.20	Common Stock Purchase Warrant issued to WAVI Holding AG (included as Exhibit 10.7 to the Quarterly Report on Form 10-Q for the quarter ended March 31, 2016 filed on May 16, 2016)
10.21	Employment Agreement dated December 13, 2017 between the Company and James Mathers (incorporated by reference to Exhibit 10.23 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2017 filed March 9, 2018)

23.1	Consent of Peterson Sullivan, LLP (filed herewith)
23.2	Consent of BDO USA, LLP (filed herewith)
31.1	Certification pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (filed herewith)
31.2	Certification pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (filed herewith)
32.1	Certification pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (filed herewith)
32.2	Certification pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (filed herewith)
101.INS	XBRL Instance Document (filed herewith)
101.SCH	XBRL Taxonomy Extension Schema (filed herewith)
101.CAL	XBRL Taxonomy Extension Calculation Linkbase (filed herewith)
101.DEF	XBRL Taxonomy Extension Definition Linkbase (filed herewith)
101.LAB	XBRL Taxonomy Extension Label Linkbase (filed herewith)
101.PRE	XBRL Taxonomy Extension Presentation Linkbase (filed herewith)

* Certain sensitive financial, commercial and strategic information relating to the Company has been redacted in the marked portions of the exhibit.

** Management contract or compensatory plan or arrangement.

† The exhibits and schedules to this Exhibit have been omitted in accordance with Regulation S-K Item 601(b)(2). The Registrant agrees to furnish supplementally a copy of all omitted exhibits and schedules to the Securities and Exchange Commission upon its request.

(c) Excluded financial statements:

None.

ITEM 16. FORM 10-K Summary

The Company has elected not to include a summary pursuant to this Item 16.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

Date: May 15, 2020

BIOLIFE SOLUTIONS, INC.

/s/ MICHAEL RICE
Michael Rice
Chief Executive Officer and President
(principal executive officer) and Director

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Date: May 15, 2020

/s/ MICHAEL RICE
Michael Rice
Chief Executive Officer and President
(principal executive officer) and Director

Date: May 15, 2020

/s/ RODERICK DE GREEF
Roderick de Greef
Chief Financial Officer (principal financial
officer and principal accounting officer)

Date: May 15, 2020

/s/ RAYMOND COHEN
Raymond Cohen
Chairman of the Board of Directors

Date: May 15, 2020

/s/ THOMAS GIRSCHWEILER
Thomas Girschweiler
Director

Date: May 15, 2020

/s/ ANDREW HINSON
Andrew Hinson
Director

Date: May 15, 2020

/s/ JOSEPH SCHICK
Joseph Schick
Director

EXHIBIT 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference into Registration Statement Nos. 333-222433, 333-208912, and 333-233912 on Form S-3, and Registration Statement Nos. 333-222437, 333-205101, and 333-189551 on Form S-8 of our report dated March 15, 2019, except for the effects of the restatement discussed in Note 2 to the financial statements, as to which the date is May 15, 2020, relating to our audit of the 2018 financial statements of BioLife Solutions, Inc. ("the Company"), appearing in the Annual Report on Form 10-K of BioLife Solutions, Inc. for the year ended December 31, 2019.

/S/ PETERSON SULLIVAN LLP

Seattle, Washington
May 15, 2020

EXHIBIT 23.2

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-3 (Nos. 333-233912, 333-222433 and 333-208912) and Form S-8 (Nos. 333-222437, 333-205101, and 333-189551) of our reports dated May 15, 2020, relating to the 2019 consolidated financial statements and the effectiveness of BioLife Solutions, Inc.'s internal control over financial reporting, which appear in this Form 10-K. Our report on the effectiveness of internal control over financial reporting expresses an adverse opinion on the effectiveness of the Company's internal control over financial reporting as of December 31, 2019.

/S/ BDO USA, LLP

Seattle, Washington
May 15, 2020

EXHIBIT 31.1

CERTIFICATION PURSUANT TO
RULE 13a-14(a) or RULE 13d-14(a) OF THE
SECURITIES EXCHANGE ACT OF 1934

I, Michael Rice, certify that:

1. I have reviewed this annual report on Form 10-K of BioLife Solutions, Inc.;

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

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

4. The registrant's other certifying officer 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 controls 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 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: May 15, 2020

/s/ Michael Rice
Michael Rice

EXHIBIT 31.2

CERTIFICATION PURSUANT TO
RULE 13a-14(a) or RULE 13d-14(a) OF THE
SECURITIES EXCHANGE ACT OF 1934

I, Roderick de Greef, certify that:

1. I have reviewed this annual report on Form 10-K of BioLife Solutions, Inc.;

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

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

4. The registrant's other certifying officer 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 controls 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 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: May 15, 2020

/s/ Roderick de Greef
Roderick de Greef

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 Annual Report of BioLife Solutions, Inc. (the "Company") on Form 10-K for the fiscal year ended December 31, 2019, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Michael Rice, Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

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

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

Dated: May 15, 2020

/s/ Michael Rice
Michael Rice
Chief 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 Annual Report of BioLife Solutions, Inc. (the "Company") on Form 10-K for the fiscal year ended December 31, 2019, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Roderick de Greef, Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

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

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

Dated: May 15, 2020

/s/ Roderick de Greef
Roderick de Greef
Chief Financial Officer