UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

(Mark One)

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

For the fiscal year ended December 31, 2023
OR

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

For the transition period from ________ to________
Commission file number: 001-39815

908 DEVICES INC.

(Exact name of registrant as specified in its charter)

Delaware	**45-4524096**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
645 Summer Street, Boston, MA	**02210**
(Address of principal executive offices)	(Zip Code)

Registrant's telephone number, including area code: (857) 254-1500

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value $0.001 per share	MASS	The Nasdaq Global Market

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

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

Indicate by check mark if 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 (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, 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 has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☐

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements. ☐

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b). ☐

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

The aggregate market value of common stock held by non-affiliates of the registrant as of June 30, 2023, the last business day of the most recently completed second fiscal quarter, was $165.5 million. This calculation does not reflect a determination that certain persons are affiliates of the registrant for any other purpose.

As of March 5, 2024, the registrant had 32,909,929 shares of common stock, par value $0.001 per share, outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement for its 2024 Annual Meeting of Stockholders, which the registrant intends to file with the Securities and Exchange Commission not later than 120 days after the registrant's fiscal year ended December 31, 2023, are incorporated by reference into Part II and Part III of this Annual Report on Form 10-K.

908 Devices Inc.
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We own various trademark registrations and applications, and unregistered trademarks, including MX908, Rebel, ZipChip, Maverick, Maven, 908 Devices and our corporate logo. All other trade names, trademarks and service marks of other companies appearing in this Annual Report on Form 10-K are the property of their respective holders. Solely for convenience, the trademarks and trade names in this Annual Report on Form 10-K may be referred to without the ®,™ or RTM symbols, but such references should not be construed as any indicator that their respective owners will not assert, to the fullest extent under applicable law, their rights thereto. We do not intend to use or display other companies' trademarks and trade names to imply a relationship with, or endorsement or sponsorship of us, by any other companies.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K contains forward-looking statements, which reflect our current views with respect to, among other things, our operations and financial performance. All statements other than statements of historical facts contained in this Annual Report on Form 10-K, including statements regarding our future results of operations and financial position, business strategy and plans and our objectives for future operations, are forward-looking statements, and are made under 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 words “believe,” “may,” “will,” “estimate,” “continue,” “anticipate,” “intend,” “expect,” “should,” “could,” “target,” “predict,” “seek” and similar expressions are intended to identify forward-looking statements. We have based these forward-looking statements largely on our current expectations and projections about future events and financial trends that we believe may affect our financial condition, results of operations, business strategy, short- and long-term business operations and objectives, and financial needs. These forward-looking statements are subject to a number of risks, uncertainties and assumptions, including those described in the “Summary of Risk Factors”, Part I, Item 1A “Risk Factors” and elsewhere in this Annual Report on Form 10-K. Moreover, we operate in a very competitive and rapidly changing environment and new risks emerge from time to time. It is not possible for our management to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make. In light of these risks, uncertainties and assumptions, the forward-looking events and circumstances discussed in this Annual Report on Form 10-K may not occur and actual results could differ materially and adversely from those anticipated or implied in the forward-looking statements.

The forward-looking statements included in this Annual Report on Form 10-K are made only as of the date of this report. You should not rely upon forward-looking statements as predictions of future events. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee that the future results, levels of activity, performance or events and circumstances reflected in the forward-looking statements will be achieved or occur. Moreover, neither we nor any other person assumes responsibility for the accuracy and completeness of the forward-looking statements. We undertake no obligation to update publicly any forward-looking statements for any reason after the date of this Annual Report on Form 10-K to conform these statements to actual results or to changes in our expectations.

The market data and certain other statistical information used throughout this Annual Report on Form 10-K are based on independent industry publications, governmental publications, reports by market research firms or other independent sources that we believe to be reliable sources. Some data are also based on our good faith estimates. Industry publications and third party research, surveys and studies generally indicate that their information has been obtained from sources believed to be reliable, although they do not guarantee the accuracy or completeness of such information. We are responsible for all of the disclosure contained in this Annual Report on Form 10-K, and we believe these industry publications and third party research, surveys and studies are reliable. While we are not aware of any misstatements regarding any third party information presented in this Annual Report on Form 10-K, their estimates, in particular, as they relate to projections, involve numerous assumptions, are subject to risks and uncertainties and are subject to change based on various factors, including those described in Part I, Item 1A “Risk Factors” in this Annual Report on Form 10-K.

Investors and others should note that we may announce material business and financial information to our investors using our investor relations website (ir.908devices.com), our filings with the Securities and Exchange Commission, or SEC, webcasts, press releases, and conference calls. We use these mediums, including our website, to communicate with investors and the general public about our company, our products, and other issues. It is possible that the information that we make available on our website may be deemed to be material information. We therefore encourage investors and others interested in our company to review the information that we make available on our website.

SUMMARY OF RISK FACTORS

The following is a summary of the principal risks described below in Part I, Item 1A "Risk Factors" in this Annual Report on Form 10-K. We believe that the risks described in the "Risk Factors" section are material to investors, but other factors not presently known to us or that we currently believe are immaterial may also adversely affect us. The following summary should not be considered an exhaustive summary of the material risks facing us, and it should be read in conjunction with the "Risk Factors" section and the other information contained in this Annual Report on Form 10-K.

Risks related to macroeconomic conditions

- Uncertainties in global economic conditions or a decline in economic conditions, such as recession, economic downturn, and/or inflationary conditions in the U.S. and other regions of the world in which we do business could impact customer spending patterns and materially and adversely affect our financial condition and operating results.
- A pandemic, epidemic or outbreak of an infectious disease in the United States such as the COVID 19 pandemic may adversely affect our business.

Risks related to our business and industry

- We have a history of net losses and may not be able to achieve profitability for any period in the future or sustain cash flow from operating activities.
- Our operating results may fluctuate significantly from period-to-period and may fall below expectations in any particular period, which could adversely affect the market price of our common stock.
- We have experienced growth of our business in recent years, and our inability to manage this growth could have a material adverse effect on our business, the quality of our products and services and our ability to retain key personnel.
- We must develop new products, as well as enhancements to existing products, and adapt to rapid and significant technological change to remain competitive.
- We need to continue to build and develop our sales, marketing and customer service organization, and to engage with domestic and international channel partners to support our planned growth.
- We face intense and growing competition from leading technology companies as well as from emerging companies. Our inability to compete effectively with any or all of these competitors could affect our ability to achieve our anticipated market penetration and achieve or sustain profitability.
- Currently, we derive the majority of our revenue from our handheld products in the field forensics market, and are seeking to grow the revenue we derive from our desktop products in the life science market. If we fail to maintain significant market acceptance in existing markets or fail to successfully increase our penetration in new and expanding markets, we will not generate expected revenue growth and our prospects may be harmed.
- Our sales cycles can be long and unpredictable, and our sales efforts require considerable time and expense, which contribute to the unpredictability and variability of our financial performance and may adversely affect our profitability.
- We may need additional capital in the future, which may not be available to us, and if it is available, may dilute your ownership of our common stock and have a material adverse effect on our business, operating results and financial condition.
- If we experience a significant disruption in our information technology systems or breaches of data security, our business could be adversely affected.

Risks related to sales of products to the U.S. Government

- A significant portion of our business depends on sales to the public sector, and our failure to receive and maintain government contracts or changes in the contracting or fiscal policies of the public sector could have a material adverse effect on our business.
- U.S. government programs are limited by budgetary constraints and political considerations and are subject to uncertain future funding levels that could result in the termination of programs.

Risks related to litigation and our intellectual property

- We rely on in-bound licenses granted to us from third parties. If we lose these rights, our business may be materially adversely affected, our ability to develop improvements to our existing products and to develop new products may be negatively and substantially impacted, and if disputes arise, we may be subjected to future litigation as well as the potential loss of or limitations on our ability to develop and commercialize products and technology covered by these license agreements.

Risks related to ownership of our common stock

- If securities or industry analysts do not publish research or reports about our business or if they issue unfavorable commentary or downgrade our common stock, the price of our common stock could decline.
- The market price of our common stock has been volatile and could continue to be volatile.
- Our actual operating results may differ significantly from any operating guidance we may provide.
- Sales of a significant number of shares of our common stock in the public markets, or the perception that such sales could occur, could depress the market price of our common stock.

PART I

Except where the context otherwise requires or where otherwise indicated, the terms "908 Devices," "we," "us," "our," "our company," "the company," and "our business" refer to 908 Devices Inc. and its consolidated subsidiaries.

Item 1. Business.

Analysis at the Speed of Life

We are making revolutionizing chemical and biochemical analysis simple, smart and speedy with our purpose-built handheld and desktop devices that empower people to take swift action in life-altering applications.

Company Overview

We have developed an innovative suite of purpose-built handheld and desktop devices for the point-of-need chemical and biochemical analysis. Leveraging our proprietary mass spectrometry, or Mass Spec, microfluidics, and analytics and machine learning technologies, we make devices that are significantly smaller and more accessible than conventional laboratory instruments. Our devices are used at the point-of-need to interrogate unknown and invisible materials and provide quick, actionable answers to directly address some of the most critical problems in life sciences research, bioprocessing, pharma/biopharma, forensics and adjacent markets. The term "products" or "devices" used in this "Business" section each refer to the MX908, Rebel, ZipChip Interface, Maverick, and Maven and related sampling devices.

We create simplified measurement devices that our customers can use as accurate tools where-and-when their work needs to be done, rather than overly complex and centralized analytical instrumentation. We believe the insights and answers our devices provide accelerate workflows, reduce costs, and offer transformational opportunities for our end users.

Since the launch of our first device, we have sold more than 2,800 handheld and desktop devices to over 700 customers in 56 countries, including all 20 of the top 20 pharmaceutical companies by revenue, as well as numerous domestic and foreign government agencies and leading academic institutions.

Our current products are available for both battery-powered handheld and desktop applications.

Front-line workers rely upon our handheld devices to combat the opioid crisis and detect counterfeit pharmaceuticals and illicit materials in the air or on surfaces at levels 1,000 times below their lethal dose. Our desktop devices are accelerating development and production of biotherapeutics by identifying and quantifying extracellular species in bioprocessing critical to cell health and productivity. They sit alongside or are directly connected to bioreactors and fermenters producing drug candidates, functional proteins, cell and gene therapies, and synthetic biology derived products. We believe the insights and answers our devices provide accelerate workflows, reduce costs, and offer transformational opportunities for our end users.

Mass Spec is the gold-standard analytical technology for laboratory-based molecular analysis and can identify and quantify sample components via molecular weight measurements. Mass Spec is highly regarded for its ability to provide an extraordinarily detailed analysis of a wide variety of samples -- from small molecules to large complex proteins. While Mass Spec is an extremely powerful analytical tool, conventional Mass Spec instruments are very large, expensive, and highly complex, which has profoundly bottlenecked market opportunities and relegated them to the equivalent of mainframe computers in central facilities. We are reimagining where Mass Spec technology can be used if it is sufficiently small in size, low in cost, and simple to operate.

Our proprietary Mass Spec platform relies on extreme miniaturization of the core of Mass Spec -- the ion trap and its vacuum system. Using semiconductor microfabrication techniques, we design and produce components that are more than a thousand-fold smaller in volume when compared with most laboratory Mass Spec instruments and costs only dollars to manufacture. The vacuum system alone in a typical laboratory instrument weighs hundreds of pounds and requires several hundred watts of power, 24 hours per day, 365 days per year. Our miniaturized vacuum system weighs less than a pound, and our Mass Spec in total requires less power than a 20-watt LED light bulb. These landmark proprietary advances have enabled the first truly handheld Mass Spec devices and compact desktops.

Sample preparation and separation can be a painfully slow hours-long process, and we have invested heavily in the development of microfluidic sample preparation and microscale separation technologies to reduce preparation and separation time from hours to minutes. The size of a business card, our microfluidic capillary-electrophoresis, or CE, chip has demonstrated world-class performance and speed in separating everything from small molecules such as metabolites and drugs, to biopharmaceutical proteins, antibodies, and oligonucleotides.

With our acquisition of Trace Analytics GmbH, renamed 908 Devices GmbH, in August 2022, we obtained microfluidic aseptic sampling technology that enables on-line automated monitoring and control in bioprocess applications. This validated technology provides cell-free and sterile bioreactor sampling with no volume or prep required. We expect this technology to serve as the interface for future on-line devices, those directly connected to a bioreactor.

Lastly, it is imperative that a point-of-need solution is operable by the widest possible user base. We have an industry-leading software automation and machine learning team comprised of eleven members, each with advanced scientific degrees, who have collective experience working on 30 commercial product launches and have won numerous research and innovation awards. They have applied advanced software automation and machine learning techniques to both control the hardware in our devices and interpret the incredibly rich and complex data streaming off of them. Our team can provide answers immediately to maximize value to the customer in critical-to-life applications where minutes matter.

Our team applied its deep expertise in data analytics, machine learning and optical spectroscopy to develop a proprietary modeling approach that automatically processes Raman spectra from a wide variety of mammalian cell culture media types and cell lines. This proprietary modeling approach powers our Maverick desktop device. Introduced in 2023, Maverick offers bioprocess scientists easy-to-integrate in-line analysis and control without the need for substantial expert configuration or setup.

We fundamentally believe that the technology platform we have built and the investments we are making will allow people to answer chemical and biochemical questions in times and places that were previously inconceivable. Given the market opportunity, we expect to face substantial competition from large established manufacturers of laboratory-based instruments and from new entrants; however, our proprietary advances have enabled us to manufacture the first truly handheld Mass Spec devices and compact desktops and we believe we are well-positioned to face future competition.

We believe our technology platform can expand in future opportunities far beyond the conventional central laboratory market for Mass Spec and associated front-end separations. We estimate our total addressable market, or TAM, for our devices was $5.7 billion in 2022 and is growing to an estimated $27 billion by 2027. The TAM for our handhelds was estimated to be $1.3 billion in 2022 with expansion to over $3.9 billion with software application extensions for GxP cleaning validation, and other related quality control assays by 2027. Our desktop devices supporting bioprocess development represented an estimated TAM of $0.8 billion in 2022 expanding significantly to approximately $15 billion with execution of our roadmap and the rapid growth of cell therapy by 2027. We see additional opportunity to service the estimated TAM of $3.6 billion in 2022 across the research chromatography market space growing to more than $8.1 billion with further market growth and roadmap expansion into complex metabolomics and proteomics by 2027. Our estimates of our TAM are based on potential customer research and development spending, addressable aspects of potential customers' end product development process, and potential platform usage. We also utilize estimated penetration and placement rates for our platform with potential customers in our target markets and historical patterns for consumables usage.

Our Strengths

We believe the following competitive strengths provide us the ability to address point-of-need applications in forensics, life sciences research, bioprocessing, quality assurance/quality control, and synthetic biology:

- ***Our proprietary microscale Mass Spec platform leverages well established, gold-standard technology.*** Mass Spec is already ubiquitous in the laboratory. Users do not need to take a risk on a completely unknown technology. We bring laboratory-grade capability to handhelds and desktops. We have developed a proprietary Mass Spec platform and approach that allow us to move the capabilities of conventional Mass Spec beyond the central laboratory. Our proprietary High-Pressure Mass Spec, or HPMS, technology enables us to produce significantly smaller, purpose-built Mass Spec devices that are better suited for use in point-of-need settings, in contrast to conventional mainframe Mass Spec solutions. The combination of HPMS, our proprietary microfluidic sampling and separation technology, and our data analytics, and machine-learning technology provides the foundations of an adaptable platform that can serve a growing number of new and adjacent applications and markets.

- ***Point-of-need technologies disrupting Mass Spec and creating new product categories***. Leveraging our Mass Spec platform, we have developed a portfolio of desktop and handheld devices that are reinventing the Mass Spec industry by accessing a variety of point-of-need market segments that were historically considered impossible for conventional Mass Spec manufacturers. Our products are small, purpose-built devices that avoid the typical size and complexity issues related to conventional Mass Spec while also offering real-time, actionable answers to new classes of users. As we continue to expand the capabilities of our Mass Spec platform, we believe our devices will continue to penetrate new and adjacent opportunities in life sciences, quality assurance and control, diagnostics and applied markets.

- ***Highly attractive business model validated by rapidly growing installed base of devices.*** We have over 700 customers, including all 20 of the top 20 pharmaceutical companies by revenue, academic and major government institutions, including the Department of Homeland Security, the U.S. Army and the U.S. Air Force and other international, federal and state agencies. These customers have validated our platform through the collective purchase of more than 2,800 devices, with more than 14,000 users trained on our devices. As we continue to grow our installed base, we expect to increase our recurring revenue derived from the sale of consumables and support services.

- ***Talented team with significant domain expertise.*** We are a technology driven company that has built vertically integrated capabilities to design, manufacture, and commercialize our products. We are led by a dedicated and highly experienced senior management team with significant industry experience and proven ability to deliver novel products. Each member of our senior management team has more than 20 years of relevant experience. Members of our technical team have been collectively responsible for numerous commercial product launches prior to joining the company, in varying markets such as point-of-care clinical diagnostics, handheld pharmaceutical inspection devices, high-throughput cell culture control systems, autonomous warehouse logistics, motion capture animation, high-volume telecom transmitters and receivers, and consumer wearables. The team possesses deep expertise in Mass Spec, system design and engineering, usability and ergonomics, thermal and mechanical engineering, software development, artificial intelligence, and optical spectroscopy, as well as microfluidics and separations science. We had 71 full-time employees dedicated to research and development as of December 31, 2023. Of these, approximately 40% have advanced degrees in science and engineering.

Our Growth Strategy

We are making chemical and biochemical analysis simple, smart and speedy by incorporating our microscale Mass Spec, microfluidics, and analytics and machine learning technology platform into handheld and desktop devices that provide users with robust answers at the point of need. Our growth strategy includes the following key elements:

- ***A continued focus on simplicity, speed, convenience and cost increases measurement consumption.*** We are a technology-driven company with significant core expertise in engineering, hard sciences and data analytics and a proven track record of delivering products that delight our customers by making things easy. We believe a relentless focus on these fundamentals drives consumption of consumables.

- ***Drive enterprise adoption in our seeded accounts.*** We intend to continue to aggressively invest in and support our field applications team to accelerate the development of post-sale partnerships with customers and to drive broader adoption across the organization. We will focus on building upon our track record of leveraging our customers' success in trials and pilots into enterprise-wide adoption of both devices and consumables. As an example, for our handheld device, it is typical for government organizations to conduct a one week or longer trial prior to purchase to test our technology in their real-world setting. A trial generally results in budgeting for a pilot that can range in size from ten to more than 50 units. During the pilot, we support our customers closely to ensure their success. Data is compiled throughout to assist our customer in making a larger enterprise-wide justification, purchase and deployment. It is our belief that investment pre- and post-sale with prospects that have the potential for enterprise adoption creates a predictable pipeline of opportunity for our devices and their entrenchment as they become the organizational standard for our customers. Enterprise customers range from large government organizations with full fielding potential of more than 1,000 handheld devices to leading biopharma companies with capacity for ten or more desktop devices per site.

- ***Grow the installed base through expansion of commercial channels***. Since the commercial launch of our first handheld, the installed base of our handheld and desktop devices has grown to more than 2,800 devices in 56 countries. With our handheld and desktop device installations now taking root in the United States, we will focus on expanding our commercial channels to better serve the forensics, life sciences research, bioprocessing, quality assurance/quality control, and synthetic biology markets. We look to expand both our direct channel in the United States and our international reach. We anticipate growing our network of international channel partners focused in regions with a concentrated and rapidly expanding life sciences presence, specifically, Europe, China, Japan, India, and South Korea. We look to have local application and support specialists and sales managers supporting our channel partners.

- ***Deepen our footprint in the bioprocessing market.*** Our desktop devices are designed to accelerate development and enhance production by identifying and quantifying extracellular species critical to cell health and productivity. They sit alongside or are directly connected to bioreactors and fermenters producing drug candidates, functional proteins, cell and gene therapies, and synthetic biology derived products. We look to expand our product line with additional panels, for example focused extracellular panels, and intracellular analysis, such as cellular flux, and pathway analysis. We believe our technology platform can serve as the cornerstone of an integrated "bioprocess brain" by monitoring and managing the comprehensive extracellular environment.

- ***Expand our customer-driven pipeline of new point-of-need applications.*** We will continue to leverage our integrated sample preparation and microfluidic separations platform to expand our pipeline of new, customer-driven point-of-need applications that can be addressed by both our handheld and desktop devices. As our customers continue to prove out new applications in areas such as diagnostics, metabolomics, and proteomics, we will look to incorporate select assays investigated by these customers into our handheld and desktop devices where those form factors can accelerate usage. We have already incorporated a number of customer-driven assays into both MX908 and Rebel and will continue to do so as we believe this will provide us with an expanding list of new point-of-need applications and market opportunities within forensics, life sciences research, bioprocessing, quality assurance/quality control and synthetic biology. In addition, we continue to make advancements in our core technologies to drive the evolution of our product portfolio beyond current applications and needs to enter new markets.

Our Technology

Our Technology Platform

We have developed a core technology platform designed to bring Mass Spec out of the confines of central laboratories and to the point-of-need with high-fidelity handheld and desktop devices. We believe that providing simple, smart, and speedy devices that provide robust answers when and where people need them gives rise to:

- an expanded and more diverse set of users;
- more frequent measurements; and
- new use cases that were previously untenable.

These results are possible as our handheld and desktop devices are designed for extreme convenience and speed, requiring minimal training and maintenance. Our platform is centered around using proprietary microscale Mass Spec and microfluidic technologies to prepare, separate, and characterize species at the molecular level, with integrated machine learning and analytics to automatically provide answers regarding identity, purity, and quantity. The core elements of our technology platform include:

- Our High-Pressure Mass Spec, or HPMS, approach, which enables Mass Spec at the point-of-need;
- microfluidics enable convenient sample preparations, fast separations, and aseptic sampling; and
- analytics and machine learning technology, which provides actionable answers versus raw data.

HPMS Approach Enables Mass Spec at the Point-of-Need

Mass Spec is the gold-standard analytical technique for molecular analysis. This technology is highly regarded for its ability to provide an extraordinarily detailed analysis of a wide variety of molecular samples -- from small molecule chemicals to large complex proteins. Mass Spec instruments identify the components of samples via highly detailed mass-to-charge (m/z) measurements, and in some cases, can quantify those components. Together with its associated front-end separation technologies, Mass Spec can resolve and analyze the most complex of samples with high fidelity.

However, while Mass Spec is an extremely powerful analytical technique, the capabilities of conventional Mass Spec instruments are largely relegated to centralized laboratory settings due to their size, complexity, and high price. Given the inherent limitations of conventional mainframe Mass Spec instruments, we believe there is a compelling opportunity for handheld and compact desktop Mass Spec devices.

A key component of our technology is our proprietary microscale ion trap, which we estimate is 1,000 times smaller than those in conventional laboratory Mass Spec instruments. These microfabricated traps are able to operate a million times closer to atmospheric pressures than conventional Mass Spec instruments. This HPMS approach results in devices with dramatically smaller size and lower cost-of-goods through a reduction of vacuum pump requirements and power consumption, and an overall simplification of the hardware topology.

Conventional laboratory Mass Spec

Our Mass Spec

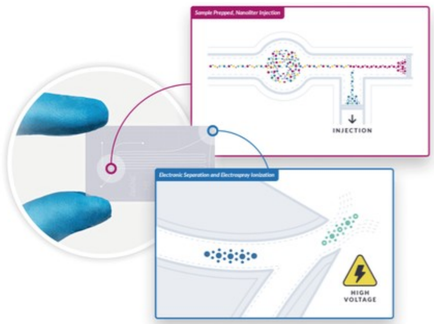
HPMS allows us to build ultracompact, high-fidelity measurement devices that are purpose-built for specific applications and deployable at the point-of-need. HPMS allows us to circumvent the complexities associated with the conventional and much larger, general-purpose, central laboratory Mass Spec instruments.

Our technology operates at size and cost scales that are multiple orders of magnitude smaller than conventional mainframe laboratory instruments. And while large, expensive, high maintenance vacuum systems have been a historical requirement for Mass Spec, our HPMS approach is capable of running with extreme efficiency on very small, robust, low-cost scroll pumps of our own proprietary designs. Our technology requires significantly less power than a 20-watt light bulb, allowing for up to 100x lower power consumption when compared to a competing product. The flexibility afforded by our approach provides access to existing and new market segments that were previously inconceivable for conventional Mass Spec instruments. We believe the insights and answers our devices provide will accelerate workflows, reduce costs and offer transformational opportunities for our end users.

Microfluidics Enable Convenient Sampling and Fast Separations

Today, most central laboratory Mass Spec instruments are paired with large, complex solid and liquid handling systems for sample preparation and separation. Common examples include liquid chromatography stacks and robotic sample preparation systems. These systems are engineered for general applications and require large quantities of solvents, high level of maintenance, and expertly trained users, leading to higher operating costs.

Our approach integrates proprietary microfluidic sample preparation, separation, and ionization technologies on a single chip that can be produced efficiently at scale using semiconductor microfabrication techniques. These microfluidic chips can be paired with our microscale Mass Spec technology to create devices with extraordinary performance that are accessible and usable at the point-of-need by non-experts.



Our integrated microfluidics—sample injection, preparation, separation and electrospray simplified

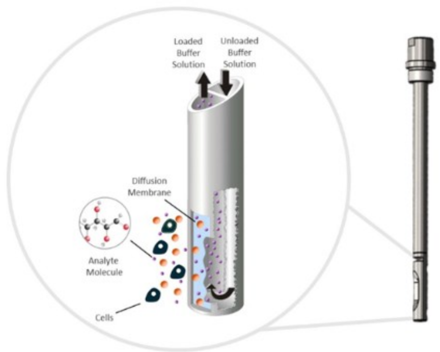
Our integrated microfluidic chip brings the benefits of:

- highly controlled small sample injections at the nanoliter, or nL, scale;
- integrated preparation such as desalting;
- extractions and preconcentration by physical and chemical properties;
- capillary electrophoresis, or CE, for extremely high-resolution separations of complex samples; and
- integrated nanoscale electrospray ionization.

The integrated microfluidic CE can perform extremely high-performance separations of a wide range of molecular species from small molecule metabolites, amino acids, and vitamins, to intact antibodies and other proteins. Importantly for our platform, microfluidic CE is electrically driven and requires no bulky liquid pumping and valving systems. The microfluidic chip consumes only 100-200 nL of electrolyte per minute making it remarkably efficient with source and waste fluids. Microfluidic CE separations can be an order of magnitude or faster than similar chromatography separations. This allows for highly complex separations with high resolution to be completed in minutes.

In 2022, we strengthened our core microfluidic technology with the acquisition of Trace Analytics GmbH, which enables us to provide on-line aseptic sampling technology used in bioprocess monitoring and control. Aseptic sampling allows for highly precise, on-line monitoring without any loss of bioreactor volume. A reusable or single-use probe that incorporates a diffusion membrane is inserted in the bioreactor, preserving precious media and product in cell culture and fermentation processes.

Complementing our mass spec analysis, Trace Analytics GmbH also brings to us an enzyme-based electrochemical biosensor technology that generates an electrical signal proportional to concentration of targeted analytes enabling real-time monitoring and control of additional analytes, some of which are difficult to measure with mass spec (e.g., glucose and lactate).

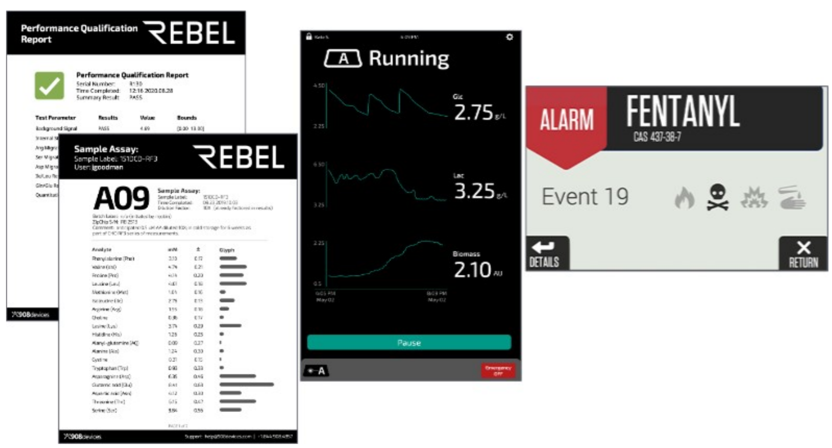


Aseptic sampling enables on-line automated monitoring and control of bioprocesses.

Aseptic sampling provides many benefits, including cell-free, sterile and safe sampling with no loss of volume or prep required, thereby saving operator time and reducing lab costs. We expect our microfluidic aseptic sampling to serve as the interface for future on-line mass spec based devices.

Analytics and Machine Learning Technology Provide Actionable Answers, Not Just Raw Data

The third crucial element of our technology platform is holistic device design with embedded analytics and machine learning. Our development team designs devices for a specific purpose, rather than for a wide scope of often disparate needs. Conventional Mass Spec manufacturers focus their attention on canonical analytical specifications such as “instrument resolution” or “detection limit” or “data rate” in the hopes of appealing to a wide range of laboratory specialist needs. Our devices are designed to do a job quickly, easily, and cost effectively. Achieving that aim requires very sophisticated autonomous and adaptive control systems and the machine learning engine to interpret the data and produce a clear, accurate result.



Our devices are designed to provide fast, statistically rigorous answers by providing autonomous control systems and applying rigorous machine learning methods.

Control/optimization: Conventional Mass Spec configuration and tuning is highly complex. Our devices need to manage themselves autonomously for maximum value to the customer. They can manage themselves by adapting to environmental factors like elevation, humidity, temperature, and vibration, and by optimizing themselves for the analytical objectives of the user, such as looking for traces of potent drug substances or sniffing for airborne hazards. This ability to automatically control the system reduces or eliminates the user's responsibility and opportunity for error in set up, optimization, and troubleshooting. Our product's screen shown above right looks very simple, but the embedded analytics and machine learning system controls and optimizes more than a hundred parameters continuously in real-time.

Machine learning/embedded analytics: The integrated analysis of our platform's data is also critical to our customers' success. Conventional platforms may give the user basic tools to view data, and some limited analysis functionality, but they fall far short of completing the analysis loop. "Out of the box" machine and statistical learning methods are not really applicable to complex analytical sensor data and real-life molecular systems. Our data team has a commercial track record of embedding a "scientist in the box" with highly customized statistical and machine learning methods for our platforms to complete the customer experience. Several examples of these elements are highlighted below in the "Our Products" section.

Our Products

We were founded on a vision to deliver high quality Mass Spec to a broad set of users at the point-of-need. We offer handheld and desktop devices, each of which are capable of providing quick, high-fidelity and actionable results. These aspects are important to our customers, who previously have had to choose between a slow and thorough analysis by Mass Spec in a laboratory or a point-of-need result that may have been more timely, but provided only a partial measurement picture prone to false-positives. For instance, forensics customers who do not have access to laboratory-based Mass Spec instruments have at best had access to the field techniques of Ion-mobility spectrometry and Raman/FTIR spectroscopy, each with its own limitation of specificity (ability to distinguish one chemical from another) and sensitivity (ability to detect minute amounts), respectively. Our bioprocess customers have likewise only had access to a cropped measurement picture by largely relying on simple enzymatic and electrochemical sensors that can measure just a few simple gases and other analytes with poor accuracy. Our devices are changing this paradigm and providing laboratory-like results at the point-of-need.

The 908 Devices suite of devices includes (from left to right): MX908, ZipChip, Rebel, Maven and Maverick.

MX908

Launched in June 2017, MX908 is a handheld, battery-powered, Mass Spec device designed for rapid analysis of solid, liquid, vapor and aerosol materials of unknown identity. It is an agile, multi-purpose device utilized by a wide spectrum of user segments for a variety of forensic field applications such as chemical, explosive, priority drug and HazMat operations, detecting materials at the trace level.

We have sold 2,422 MX908s into every U.S. state, in 56 countries and across five continents. More than 10,000 operators, including in numerous domestic and foreign government agencies, have been trained to use the MX908.

When a civilian or military first responder, customs agent, or front-line worker is presented with residue on a package, a powder in the emergency room, pills at a border crossing, an apparent overdosing individual, or a mass casualty event, immediate actionable information is needed. The U.S. opioid crisis in particular is driving demand for broadly capable point-of-need measurement devices that can detect a multitude of hazards at trace quantities.

The MX908 detects trace quantities of more than 160 named dangerous materials, including fentanyl and its many derivatives, explosives, and hazardous chemical agents with sensitivity comparable to existing field-based technologies, but with much higher specificity. This allows users to conduct rapid field analysis for a broad range of unknown substances at trace levels that would typically lead to confusion and false positives in other instruments. The device is also able to identify a far greater number of substances than other trace technologies and with one million times the dynamic range of those other handheld or mobile technologies. Compared to a leading transportable Mass Spec product, the MX908 is up to 15x faster, up to 10x smaller and up to 2x cheaper. The MX908 is able to start up in less than a minute, completing analysis of gas and vapor materials in less than ten seconds, and solids, liquids, and aerosols in less than a minute.

The MX908 was designed to operate in harsh outdoor environments such as pervasive rain and dust, and scorching to freezing temperatures in a nimble 4.3 kg (approximately 10 lb) handheld form factor. Our systems also undergo extensive mechanical shock, drop, vibration, and environmental testing as part of the development and certification process.

Designed with the non-technical user in mind, the user interface on the MX908 requires no Mass Spec knowledge for navigation, operation or interpretation of results. The MX908 user interface is very mission driven. These mission modes provide a categorization of functionality, allow the device to guide operators through proper procedures with visual cues, and present results in a manner most relevant for that operational intent. The mission modes also allow the software to optimize the hardware operation of the MX908 to maximize sensitivity and specificity for a given class of chemicals, much as a laboratory chemist would do by changing the settings on their conventional Mass Spec.

The MX908's machine-learning software, enabled by our proprietary technology platform, serves as a critical element of the device. For example, one of the challenges associated with analyzing fentanyl derivatives is that there are potentially thousands of pharmacologically-active variants for this same compound. However, MX908 is pre-programmed to evaluate against the dozen most common fentanyl variants and is then able to utilize a machine learning classifier to look for characteristic mass fragment loss patterns that are suggestive of the more than 2,000 fentanyl analogs.

Since introducing the MX908, we have continued to expand the device's capability through mission add-ons such as offering an Aerosol Module accessory to detect and identify aerosolized chemical hazards, adding targets to allow responders to identify additional priority drug substances, and providing a Bluetooth capability that enables seamless data transfer and accelerates support in the field. We recently added the MX908 Beacon accessory, which is a remote area monitoring system secured in a rugged case that can detect and identify aerosolized and vapor threats. The MX908 Beacon accessory leverages the MX908 and Aerosol Module combined with a cloud-based solution to enable remote identification of toxic chemical hazards. All these added capabilities are aimed to address gaps in responders' workflows, increase engagement, and drive utilization.

We have a roadmap to continue to expand the MX908's mission add-ons to support the detection of adulterated and counterfeit pharmaceuticals and to develop applications in quality control and quality assurance, including GxP cleaning validation.

Rebel

The Rebel is a small desktop analyzer providing real-time information on the extracellular environment in bioprocesses. Compared to a traditional central laboratory high-performance liquid chromatography, or HPLC, Mass Spec assay, Rebel's price per sample is up to 10 times lower, at approximately one-third of the capital cost, and delivers answers up to 2,000 times faster. Rebel provides results within seven minutes, enabling critical on-the-spot decisions regarding bioprocess media optimization, accelerating process-development cycles and maximizing bioreactor efficiency. Customers are using Rebel in environments subject to U.S. Food and Drug Administration, or FDA, and other regulatory guidelines regarding biological and pharmaceutical product quality, or GxP environments, to evaluate fresh media for conformity to standards, track the extracellular environment and metabolic flux during growth cycles, monitor performance during stress experiments, and characterize spent media.

Since the launch of the Rebel in November 2019, we have sold 165 units and 52 of those units have been placed with the top-20 pharmaceutical companies by revenue and 25 organizations have purchased multiple units. Our focus has been on increasing U.S. placements, but we also have a meaningful international opportunity and have sold Rebels in China, Japan, South Korea and Europe.

Cells have been harnessed to serve as microscopic factories producing myriad molecular species large and small. The markets for cellular-derived products include therapeutics, including cell therapy and personalized medicine, new and sustainable foods and beverages, and industrial materials. Many of these products, such as protein-based therapeutics, can only be economically produced by cells in a bioreactor. Making these products in an efficient and reproducible way remains a challenge to our customers in bioprocessing. Cell culture media forms the critical growth environment for the cell. Our customers' measurement of this extracellular environment in bioprocesses is critical to their development and operational efficiency.

However, it is rare that researchers conducting these types of experiments have analytical tools for extracellular media characterization on their local bench, which means samples need to be frozen, packaged, and transported to core laboratories for analysis with large HPLC Mass Spec instruments. This adds substantial delays and cost and typically takes three to six weeks to produce lab reports equivalent to those produced by the Rebel in only 15 minutes.

Rebel is currently configured to report concentrations of 33 critical extracellular metabolites in cell culture media, such as amino acids, vitamins, and biogenic amines, which are known to substantially affect the growth profile and properties of the resulting biological entities and their expressed materials. Incorporating our microfluidic sample handling and CE technology, as well as our microscale Mass Spec technology, Rebel's internal autosampler is capable of queueing approximately 96 such samples for unattended analysis and delivering reported concentrations for each sample.

A fit-for-purpose at-line system, the Rebel is designed to be located within the same laboratory as a bioreactor, enabling more frequent monitoring of key cell media parameters. To run this analysis, the Rebel requires as little as one microliter of cell culture media with little sample preparation. This allows customers to run more tests while preserving precious cell culture media, which is extremely valuable for small batches as used in cell therapy and personalized medicine.

The Rebel, using its onboard algorithms, eliminates the need for manual calibration and delivers processed and actionable results in real-time. As runs are completed, users can access the report either as a PDF print out or a laboratory information system compatible file exported to the network. The Rebel software is compliant for operation in GxP environments.

Maverick

The Maverick, launched in September 2023 to complement our Mass Spec technology, is an optical in-line analyzer that provides real-time monitoring and control of multiple bioprocess parameters, including glucose, lactate and total biomass, in mammalian cell cultures. The device also provides rich process fingerprint data to support large-scale efforts in predictive bioprocess modeling.

The Maverick utilizes Raman spectroscopy, a largely non-invasive and non-destructive technology that provides rich, chemical data. The use of Raman spectroscopy for characterizing critical process parameters, or CPPs, and critical quality attributes, or CQAs, in bioprocessing has grown considerably during the last 10 years.

Unlike conventional spectroscopic methods that utilize a multivariate empirical calibration approach requiring expert configuration, Maverick requires no complex modeling and can be set up in minutes. We have developed a proprietary approach that we refer to as the *de novo* model, which means "from the beginning." Maverick's purpose-built *de novo* model automatically processes Raman spectra from a wide variety of cell culture media types and cell lines, thereby delivering actionable process parameters or direct process control actions. We also provide open access to the raw spectral data enabling spectroscopic experts to extend the device's capabilities for more advanced predictive control of CPPs and CQAs.

The Maverick hub can monitor up to six bioreactor models simultaneously, with independent analog/digital control of feed systems for each. Remote, real-time web access to bioreactor status and settings is also supported through the Maverick hub. As a spectroscopic-based device, Maverick is extensible to other analytes and parameters.

Maverick enables biopharmaceutical process development scientists and manufacturers to enhance understanding of their process and implement dynamic control strategies more quickly and easily, which can accelerate workflows and improve process efficiency.

Maven and Trace C2

The Maven, launched in January 2023, to complement our Mass Spec technology, is our first on-line device for bioprocess monitoring and control. Connecting directly to a single bioreactor, Maven provides real-time continuous monitoring and control of glucose and lactate in cell culture and fermentation processes. Glucose and lactate are critical parameters that biopharmaceutical process development scientists must monitor to ensure optimal cell viability and to improve product yield, quality, efficacy and safety. Taking measurements as frequently as every two minutes, Maven operates without having to manually draw samples out of the bioreactor due to its aseptic sampling probe. This approach preserves precious media and product and reduces the risk of cell culture contamination. Maven precisely monitors nutrient and metabolite concentrations at low levels—0.01 g/L of glucose and 0.05 g/L of lactate. This is especially beneficial in cell therapy applications where tight control of cell culture conditions is vital.

In addition to providing real-time measurements, Maven comes with integrated proportional-integral-derivative, or PID, and on/off controllers that enable out-of-the-box feeding automation. The Maven is Good Manufacturing Practices, or GMP, compliant, takes up a small footprint, and in keeping with our focus on simplicity, is easy to use. Maven can be used in concert with our at-line Rebel device, which quantitates over 30 analytes, to improve and optimize cell culture feeding strategies.

The Trace C2 provides on-line monitoring of methanol or ethanol and control of substrate feeding in fermentation processes. Integrated into the device is an aseptic sampling probe that enables sampling with no loss of bioreactor volume and no increased risk of process contamination. The device includes a dedicated on-board peristaltic pump and an integrated PID controller that can be used for feeding substrates without any additional auxiliary equipment. The Trace C2 and related sampling products were developed by Trace Analytics GmbH, which we acquired in August of 2022.

ZipChip

Our ZipChip solution is a plug-and-play, high-resolution separation platform that optimizes Mass Spec sample analysis. Our ZipChip platform consists of a ZipChip Interface, which is installed into a conventional Mass Spec instrument, and consumable microfluidic chips, or ZipChips. We designed this technology to be compatible with third party Mass Spec instruments. Powered by our integrated microfluidic technology, the ZipChip platform allows researchers to consolidate a host of time-consuming biotherapeutic, metabolomic, and proteomic applications typically run on multiple instruments or configurations onto a single platform. With ZipChip, researchers can switch applications in minutes, instead of hours typical with an alternative such as liquid chromatography.

Since launch of the ZipChip platform in March 2016, we have sold 234 ZipChip Interfaces and have established 28 multi-unit accounts in leading, global pharmaceutical organizations and academic institutions. Our ZipChip platform is compatible with market-leading conventional Mass Spec instruments found in laboratories worldwide.

As an open-access discovery platform that can interface with more than 10,000 conventional Mass Spec instruments, ZipChip provides us the ability to leverage the growing list of newly established applications and publications from customers who have incorporated the device into their projects. By incorporating select assays investigated on the ZipChip by customers into our MX908 and Rebel devices, we can create an evolving pipeline of new customer-driven, point-of-need Mass Spec applications as the scope of analytes our devices can detect and analyze will continue to expand. We have already incorporated a number of the customer-driven assays in our MX908 and Rebel devices, and we are investigating several more for our future product pipeline.

Consumables and Services

Handheld Device

Our MX908 comes with a standard warranty for up to one year from purchase. Our customers also can purchase extended warranty service plans, which include hardware repair and replacement coverage, technical support, and software updates. We designed the MX908 to be intuitive and easy-to-use, as it is critical to our customers to know that the MX908 is operating as intended. The annual and extended warranty service plans provide the customer the ability to contact us to assist in validating their results given the severity and context of the situations in which our devices operate. Our technical support, also known as our Reachback program, allows any participating MX908 user to email, text, or call a 908 Devices Scientific Support Team member to receive support 24 hours per day, 365 days per year to ensure the MX908 is working as intended. The Scientific Support Team is staffed by M.Sc. and Ph.D. chemists and forensic scientists expert in the operation of the MX908 and other field analytical technologies. Our extended warranty service plans are sold with multiyear commitments, which allows us to deepen our relationship with customers and provides us with an upfront payment, a predictable recurring revenue stream, and an opportunity to offer additional future services.

For simplicity and convenience, we also sell single-use swab samplers for the analysis of liquid and solid materials. These swab samplers are most heavily used today by customers who are evaluating drug substances. However, we designed the MX908 so that it does not require swab samplers or any other consumables for a number of other applications. Our customers value the low-logistics tail of our MX908.

Desktop Devices

Annual and extended warranty and service plans are available for the Rebel, Maven, Maverick, ZipChip Interface, and Trace C2 devices.

Rebel's operation requires a consumable kit that includes a microfluidic and separation chip, electrolytes, and performance qualification and calibration standards. Currently, customers of Rebel who are actively utilizing the device are consuming on average approximately half of a 200-sample kit per month. With continuous operation, the Rebel is capable of consuming approximately one 200-sample kit a day.

We also offer an annual certification kit for the Rebel. The certification kit is shipped to the customer, who loads the provided samples, and executes a certification protocol. The system is remotely qualified and certified based on the data acquired meeting factory specifications.

Calibration kits are required for the Maverick.

We offer a variety of kits for the ZipChip Interface that include microfluidic ZipChips and different reagents optimized for a wide scope of applications. These kits include intact antibody, charge variance, metabolomics, peptide and oligonucleotides.

Consumable sets of buffers, probes and biosensors are required for the Maven, Trace C2 and related sampling devices.

Market Opportunities

We have developed ultracompact, high-fidelity Mass Spec devices to interrogate the unknown and invisible and provide actionable results in life-altering point-of-need applications. Our first products are purpose-built handheld and desktop Mass Spec devices that currently address a range of applications and markets. We estimate our TAM for our devices was $5.7 billion in 2022, and is growing to an estimated $27 billion by 2027. The TAM for our handhelds was estimated to be $1.3 billion in 2022 with expansion to over $3.9 billion with software application extensions for GxP cleaning validation, and other related quality control assays by 2027. Our desktop devices supporting bioprocess development represented a TAM of $0.8 billion in 2022 expanding significantly to approximately $15 billion with execution of our roadmap and the rapid growth of cell therapy by 2027. We see additional future opportunity to service an estimated TAM of $3.6 billion in 2022 across the laboratory chromatography market space growing to more than $8.1 billion with further market growth and roadmap expansion into metabolomics and complex proteomics by 2027. Our estimates of our TAM are based on potential customer research and development spending, addressable aspects of potential customers' end product development process, and potential platform usage. We also utilize estimated penetration and placement rates for our platform with potential customers in our target markets and historical patterns for consumables usage.

Our TAM for all device placements in 2022 and expanding in 2027 with product roadmap and market growth

Our Initial Market—Field Forensics

Forensic labs have historically used conventional Mass Spec instruments to chemically analyze a diverse array of submitted samples. Testing for controlled substances is one of the major drivers for the use of Mass Spec in the field forensics setting.

In the field forensics setting, high accuracy and fidelity can be just as important at the point-of-need as it is in the laboratory. Simple and inexpensive colorimetric tests are being abandoned in many jurisdictions due to their extremely narrow and poor performance capabilities, in favor of handheld technologies with broad lab-like capabilities. This is creating an expanded market of individual users that is a multiple of the centralized laboratory Mass Spec instrument market.

The need for such field technologies is acute for controlled substances and identification of other priority chemicals and hazards at trace levels. The toxicity of fentanyl and its analogs is 100 to 10,000 times the potency of morphine, creating an opioid crisis of unprecedented scale and breadth.

Fentanyl is considered to be the deadliest drug threat facing the United States today, according to the U.S. Drug Enforcement Administration, or DEA. The DEA also seized more than 77 million fentanyl-laced fake prescription pills in 2023, up from 50.6 million such pills in 2021. DEA laboratory testing also showed that seven out of ten pills tested contained a potentially deadly dose of fentanyl, an increase from four out of ten pills in 2021 and six out of ten pills in 2022. In addition, in March 2023, the DEA issued its third public safety alert in just three years warning the American public of a sharp increase in pills containing fentanyl mixed with xylazine, a powerful sedative that the U.S. Food and Drug Administration approved for veterinary use. The alert noted that xylazine and fentanyl drug mixtures place users at a higher risk of suffering a fatal drug poisoning.

The potency and diversity of these emerging classes pose a major challenge for point-of-need measurements. Near invisible quantities of opioids can be fatal, and street drugs are often heavily obscured with filler materials, making trace detection with high-fidelity technologies an imperative for success. The diversity of the problem also drives the need for agility with devices that can be rapidly updated in the field with new machine learning updates. There are thousands of variants of these highly potent opioids, and other emerging classes such as cathinones and cannabinoids that will further exacerbate the problem.

In addition to controlled substances, point-of-need Mass Spec instruments can address a wide variety of other use cases, including:

- first responders and local, state, and federal law enforcement;
- U.S. and international defense and homeland security;
- forensic laboratories' case management and triage;
- package inspection for postal services, couriers, customs agencies, and corporate mail rooms;
- facility safety for hotels, local, state and federal government facilities, and private enterprises; and
- quality assurance and control.

We estimate that the TAM for our handhelds was $1.3 billion per year in 2022 for trace detection of drugs, explosives, priority chemicals, and other hazards on surfaces and in the air. Our TAM expands to $3.9 billion with software application extensions for GxP cleaning validation, and other related quality control assays.

Life Sciences

Mass Spec addresses a significant number of applications along the life sciences research and biopharma value chain. It is integral in research and discovery, drug development, product validation and quality control. Biologic therapeutic modalities and all cell-based products more broadly, use bioreactors to manufacture product in two stages – process development and clinical and GxP manufacturing.

Within a cell, thousands of intertwined processes govern the cells ability to produce various proteins, its ability to perform a specific function, and its energy and waste expenditure. But efficient intracellular operations are also highly reliant on the extracellular environment – the cell culture media. In bioreactors, the timely influx of raw materials, environmental controls, and management of waste can be not only essential to efficiency, but literally to the life or death of the cells. The worldwide cell culture media market itself was estimated to be a $6.2 billion business in 2023. Regardless of how carefully the starting cell culture media has been designed and selected, bioprocessing is by definition a dynamic and inhomogeneous process. Cellular biology is complicated and unpredictable.

Due to issues with both the existing point-of-need solutions and alternative laboratory-based workflows, development scientists currently lack an ideal solution to accurately analyze the extracellular environment during or after the growth cycle without having to compromise between timing or completeness.

High-pressure Mass Spec combined with microfluidic sampling and separations will allow for significant efficiencies and new applications for these technologies within life sciences. With real-time access to comprehensive media profiles, bioprocess development scientists can:

- accelerate their product development cycles with feedback in minutes rather than weeks;
- improve process yield and lower costs throughout their value chain;
- enable a broad range of complex therapeutic modalities in biopharmaceuticals; and
- increase the probability of successfully developing cell-based products.

We believe these efficiencies will lead to substantial growth opportunities in biologic-based therapeutics where a better understanding of the extracellular environment is a crucial element of bioprocessing.

For antibody therapeutics, a key requirement is that monoclonal production cell lines not only produce high titers of antibody but with acceptable Critical Quality Attributes, or CQAs. The extracellular media properties can greatly impact both the titer and the CQAs of the produced antibody. Likewise, for cell and gene therapeutics, management of the complex mammalian cell culture system and measurement and control of the extracellular environment is crucial. Historically, bioprocessing has been focused on large-scale batched production of monoclonal antibodies, or mAbs, using genetically stable clones, whose production has largely been optimized over many years of refinement. Today, newer advanced modalities, like cell and gene therapies, are fueling growth in the market while introducing variability of input materials (e.g., patient or donor cells, transient transfected cell lines), higher cost of goods sold, and the necessity for small-batched production – driven by smaller patient populations and the need to scale out. This change is driving manufacturers toward increased monitoring and optimization at a level of intensity beyond what is seen historically.

While mAbs are forecasted to continue to dominate end-product sales over the near term, it is estimated that by 2027 the pipeline of cell and gene therapies will be approximately 7,000 assets, representing more than 50% of the total biologics pipeline. A massive retooling of global bioprocessing capabilities is underway to accommodate the needed small batched production – one per patient in some cases. We estimated our bioprocessing TAM to be $0.8 billion in 2022, across approximately 1,800 sites and 175,000 batches to support process development, and this is expected to expand to approximately $15 billion TAM by 2027 with the execution of our roadmap and the rapid growth of cell therapy.

Our product development roadmap for the Rebel platform includes the extension of current capabilities and move to an on-line and, ultimately, a real-time “bioreactor brain”. In process development today, smaller scale bioreactors are outfitted with a variety of disconnected multi-party simple sensors and controllers. With the increasing trend toward highly parallelized systems with many small-scale bioreactors running simultaneously, manual sampling becomes a significant bottleneck. The roadmap expansion of Rebel’s analyte panel to address core culture kinetics (e.g., glucose, lactate, ammonium, pH, dissolved oxygen) and attributes like cell count, and viable cell density means that this future on-line Rebel+ system could have a uniquely comprehensive assessment of the present state and trajectory of the extracellular environment. Historical data profiles across parallel bioreactors and designed experiments form an excellent basis for machine learning and multivariable predictive control to optimize experimental variables to maximize yield, minimize risk of loss, and improve kinetics – the “bioreactor brain”. An outsize portion of this opportunity is driven by testing in autologous cell therapies and is commensurate with the total expected cell batches produced.

Customers

We sell our products worldwide through an experienced direct sales force as well as through domestic and international channel partners. Our customers are primarily in the pharmaceutical and biotech market, the government market and to a lesser extent, the academic market. Primary users of our handheld device include law enforcement, military and civilian first responders, and customs and border protection personnel. Primary users of our desktop devices include process development scientists, process engineers, and research scientists.

Manufacturing and Supply

Our manufacturing strategy has two components: to outsource subassemblies or assemblies to domestic contract manufacturers where it is cost and capital favorable, and to use our internal manufacturing facilities for the balance of our production needs. Our primary in-house manufacturing facilities are located at our headquarters in Boston, Massachusetts. These facilities are ISO 9001:2015 certified and include approximately 5,100 square feet of configurable production assembly floor, 1,800 square feet of advanced machining space, and 2,000 square feet of configurable cleanroom. Inventory is held in our Boston facilities in a 700 square foot controlled-access cage. As a result of the acquisition of Trace Analytics GmbH, we also have in-house manufacturing facilities in Braunschweig, Germany.

Devices

The MX908, Rebel, Maverick and ZipChip Interface are manufactured, tested and shipped from our Boston facility. The Maven and related sampling devices are manufactured, tested and shipped from our Braunschweig facility. Several custom components are fabricated by third party suppliers, including printed circuit boards and cables, and metal and plastic mechanical components. The assembly of technology-sensitive components such as our proprietary vacuum pumps and ion trap/ionization module is completed in-house.

Currently, our Boston manufacturing facility is capable of supporting the production of approximately 2,000 MX908, Rebel, Maverick and ZipChip Interface units combined per year. When our annual sales exceed 2,000 units, we expect that we would need to either expand our in-house production operations, or transfer some or all aspects of assembly to contract manufacturers, to accommodate larger run-rates. We believe there are numerous domestic and international contract manufacturers that could be qualified to produce the MX908, Rebel, Maverick and/or ZipChip Interface when third party demand for our products outpace our current manufacturing capacity. The autosampler subassembly of the Rebel and ZipChip are supplied by a single supplier. The Raman spectrometer, and optical probe and fiber assemblies, for Maverick are supplied by a single supplier. The Maven device subassembly is supplied by a single supplier under a contract manufacturing arrangement.

We are continuously evaluating and updating our supply chain to ensure our ability to respond to customer demand for our products. For example, we have relationships with a number of machine shops and electronics suppliers that can provide components for our devices, including components currently provided by a single source. We plan to continue the diversification of our supply chain as we scale. We use our annual demand planning to assess initial device needs for each year, and we update and reassess those estimates as needed, including with respect to the levels of inventory that we believe will be required to support anticipated customer demand.

Consumables

The MX908 incorporates a number of non-proprietary consumables that are commercial-off-the-shelf available and sourced from a number of reputable suppliers. Sampling swabs that are used for the analysis of liquid and solid materials in the MX908 are currently single-sourced. While we believe that alternatives are available, it would take time to identify and validate replacement swab samples, which could compromise our ability to supply these to our MX908 customers on a timely basis.

Consumable kits for the Rebel and ZipChip Interface include electrolytes, standards, and microfluidic chips. All assay kits and standards are assembled in our Boston cleanroom facilities. Component reagents and standards are widely available from multiple suppliers. Our microfluidic chips are produced and assembled in our Boston cleanroom facilities. The substrate is supplied by a single supplier. While we believe that alternative suppliers would be available, it would take time to identify and qualify alternate suppliers and transfer design requirements to them, which could negatively affect our ability to supply these chips to our Rebel and ZipChip customers on a timely basis.

Sales and Marketing

We distribute our devices and consumables via direct field sales and support organizations located in North America and through a combination of our own sales force and more than 42 third party channel partners in domestic and international markets which include Australia, Canada, China, Czech Republic, Germany, Japan, Saudi Arabia, Singapore, Turkey, and the United Kingdom, or UK. In North America, we use channel partners to provide our products to end customers where a contract vehicle is required. Since the commercial launch of our first handheld, the installed base of our devices has grown to more than 2,800 devices across more than 56 countries.

Our domestic sales force and international partners inform our current and potential customers of current product offerings, new target applications, and advances in our technologies and products. As our primary point of contact in the marketplace, our sales force focuses on delivering a consistent marketing message and high level of customer service, while also attempting to help us better understand the evolving market and customer needs.

As of December 31, 2023, we had 70 people employed in sales, sales support and marketing. This staff is primarily located in the United States, but we have also hired internationally at our facility in Braunschweig, Germany, and in other countries using a professional employment organization, to support our sales and applications efforts. We intend to expand our sales, support, and marketing efforts in regions with a concentrated life sciences presence, including large pharmaceutical and biopharma companies. For example, in 2023, we established a direct sales footprint in Europe for our desktop products, and have developed a sales, training and support network in China. Additionally, we believe that there is significant opportunity in other Asia-Pacific countries such as India and South Korea as well as other areas such as Australia and South America. We plan to continue to expand into these regions via initial penetration with channel partners and then subsequent support with direct sales and support personnel.

Our business model is focused on driving the adoption of our products and maximizing use across our customers' value chains. This is enabled through customer trials and partnerships that allows us to further understand the critical applications for our technology and inform our future developments and market expansion.

Our MX908 devices often are sold to governmental institutions and other customers that require participation in a tender process that involves preparation of extensive documentation and a lengthy review process. As a result of these factors, and the budget cycles of our customers, our sales cycle can often be six to twelve months, or longer. Our Rebel and Maverick devices are relatively new to the life science marketplace and require a capital investment by our customers. The sales process typically involves numerous interactions and demonstrations with multiple people within an organization. Some potential customers conduct in-depth evaluations of the system, including running experiments at our Boston headquarters and comparing results from alternative systems and technologies.

Service and Support

We offer warranty and extended warranty service plans, as well as on-site training, in order to improve customer adoption of our products. Support under warranty and extended service contracts include the following:

- *Technical support.* Customers can call a hot-line number 24 hours per day, 365 days per year for support on issues ranging from questions on proper usage of the device, to assistance in interpretation of chemical spectra to ensure the device is working as intended. We refer to this support as our Reachback program.

- *Software updates and library updates.* We periodically release updates to the embedded software in our products. These updates will ensure the ongoing functionality of our products and repair defects in the software. We also release updates and additions to our library of spectral images enabling identification of additional chemicals.

- *Warranty.* Our Maven, Maverick, MX908 and ZipChip Interface devices are covered under a return-to-factory warranty model for repairs. Depending on availability, loaner units are made available to minimize downtime with our customers.

We provide training at the customer's location with the initial purchase of our devices. Each training event is between four to six hours and covers device functionality and hands-on training with the device. At the conclusion of the training, certificates are issued for all attendees. Additional training days are available on a per diem basis. For our desktop devices, we offer an advanced training and applications training to assist customers in implementing their required applications with our device.

Research and Development

Investment in research and development is at the core of our business strategy. Our research and development team is responsible for designing, developing and enhancing our products, as well as performing product testing and quality assurance activities. Members of our research and development team specialize in many functional areas including algorithms, machine learning, electrical and mechanical engineering as well as software development.

As of December 31, 2023, we had 71 full-time employees dedicated to research and development. Of these, approximately 40% have advanced degrees in engineering or the sciences. We have made substantial investments in product and technology development since our inception. We expect our research and development expense to be maintained at this level as we balance resources to enhance our existing products, develop new products for our current markets and introduce new products in new markets.

We consider the holistic nature of our internal product development teams critical to our products' success. Accordingly, our research and development team possesses functional expertise in critical areas such as:

- chemistry, biochemistry, physics of Mass Spec and separations and sample processing;

- embedded, desktop and mobile software engineering;

- machine learning, high-speed digital signal processing, multivariate statistical learning, algorithms and decision theory;

- user experience design and user interface design;

- mechanical engineering and industrial design;

- analog, digital and mixed signal electronics engineering;

- ultra-efficient pumping and pneumatics engineering; and
- microfluidic design, and volume fabrication at the micro- and meso-scale.

The majority of our research and development operations are conducted in our Boston facility. We also conduct additional research and development operations out of our facility in Morrisville, North Carolina to support assay development for Rebel, Maverick and ZipChip, and out of our facility in Braunschweig, Germany to support assay development of our Maven and related products and aseptic sampling development.

Our R&D and marketing teams also receive input from two Scientific Advisory Boards, each an SAB, one SAB with deep expertise in bioprocess development, and cell and gene therapy processes and production, and the other SAB board made up of thought leaders in proteomics who will be invaluable to the continued advancement of our platform mass spec and microfluidic technology and its application to contemporary problems in proteomics-oriented life science research.

Competition

We have a range of competitors extending from small, privately held companies with single-point solutions to large, publicly-held corporations, including those with a portfolio of Mass Spec products, such as Agilent, Bruker, Danaher, Inficon, Teledyne, Endress & Hauser, PerkinElmer, Shimadzu, Thermo Fisher Scientific, and Waters Corp. Many of these companies have greater resources and market presence than we do.

We expect the markets for our products to remain highly competitive and dynamic and to reflect rapid technological evolution and continually evolving customer requirements. Our ability to compete successfully will depend on a number of factors including our ability to:

- offer differentiated point-of-need Mass Spec devices;
- translate market requirements into an engineering roadmap of new software and hardware features to remain competitive;
- demonstrate the value of employing our products at the point-of-need through accelerated workflows; and
- provide pro-active support and service that delights our customers.

Intellectual Property

Protection of our intellectual property is fundamental to the long-term success of our business. We believe that our continued success depends in large part on our proprietary technology, the skills of our employees and the ability of our employees to continue to innovate and incorporate advances into our products. We regard our products and the internally developed software embedded in our products as proprietary.

We rely primarily on a combination of trade secret, patent, copyright and trademark laws, as well as contractual provisions with employees and third parties, to establish and protect our intellectual property rights. Our patent strategy is to seek broad protection on fundamental enabling technologies, and layer on additional patents on specific implementations or methods of operation critical to our present and anticipated products, and to prevent competitive operation. While our expertise in signal processing and machine learning is critical to our success, we typically keep these inventions as trade secrets to avoid public disclosure. Some high value consumables have been engineered with clandestine product integrity features to inhibit duplication or counterfeiting efforts of our intellectual property. We provide our products to customers pursuant to terms and conditions that impose restrictions on use and disclosure. We also seek to avoid disclosure of our intellectual property using contractual obligations, by requiring employees, consultants and contractors with access to our proprietary information to execute nondisclosure, non-competition and assignment of intellectual property agreements. In addition, we generally control access to our proprietary and confidential information through the use of internal and external controls.

Our foundational technology in the area of miniature Mass Spec originated as an effort at Oak Ridge National Laboratories led by our Scientific Founder J. Michael Ramsey, Professor Emeritus of Chemistry at the University of North Carolina.

As of December 31, 2023, our owned patent assets included approximately 19 U.S. patents, no pending U.S. patent applications, 45 foreign patents and four pending foreign patent applications in various foreign jurisdictions, including Australia, Austria, Canada, China, France, Germany, the European Union, or EU, Hong Kong, Israel, Japan, South Korea, Singapore, Switzerland and Taiwan. The subject matter covered by our owned patent assets includes core aspects of compact Mass Spec technology, a design for a handheld Mass Spec device, a design for a modular Mass Spec chamber, patents for multiple ionization modes and adaptive pressure operation within survey period, the determination of preferred ionization mode, adaptive resolution control, adaptive operation to reduce power consumption, and the detection of positive and negative ions.

As of December 31, 2023, our in-licensed patent assets included approximately 29 U.S. patents, one pending U.S. patent application, 22 foreign patents, and two pending foreign patent applications. The subject matter covered by our in-licensed patent assets includes a microfabricated ionization source and a microfabricated ionizer chip, microscale Mass Spec systems, devices and related methods, a miniature charged particle trap with an elongated trapping region for Mass Spec, high pressure Mass Spec signal enhancement by means of convective transport, electrospray ionization interface to high pressure Mass Spec, a method of sample injection for chemical separations in microfluidic devices, integrated sample processing for electrospray ionization devices, and microchips with integrated multiple electrospray ionization emitters and related methods, systems and devices. Excluding any patent term extension, the currently issued 908 Devices-owned patents are expected to expire between 2032 to 2038. The currently issued in-licensed patents are expected to expire from 2023 to 2039.

We also seek to protect our brand through procurement of trademark rights. As of December 31, 2023, we owned six registered trademarks in the United States, 17 registered foreign trademarks, three U.S. pending trademark applications, and two pending foreign trademark applications. Our registered trademarks and pending trademark applications include trademarks for 908 Devices, Rebel, MX908, ZipChip, Maven, Maverick, and our logo. In order to supplement protection of our brand, we have also registered several internet domain names.

Licensed IP

University of North Carolina, Chapel Hill

In June 2012, we entered into a license agreement, which was subsequently amended in April 2013 and August 2014, and then amended and restated in May 2015, which we refer to in this Annual Report on Form 10-K as the UNC Agreements, with the University of North Carolina, Chapel Hill, or UNC, pursuant to which UNC granted us an exclusive, sublicensable, worldwide license to develop, manufacture, use, and commercialize products, services and methods, covered by certain patent rights owned by UNC, including patents related to a microfabricated ionization source and a microfabricated ionizer chip.

We issued an aggregate of 110,626 shares of our common stock to UNC, which had an aggregate fair value at the time of issuance of approximately $37,800. Additionally, we must pay UNC a low single digit percentage royalty on our net sales of any products that are covered by a valid claim of the licensed patents, subject to an annual minimum royalty payment of $30,000. We are also obligated to pay UNC a low double-digit percentage of certain royalty income received from our sublicensees. To date, we have not issued any sublicenses under the UNC Agreements.

We are obligated to use commercially reasonable efforts to develop, manufacture and commercialize the Licensed Products and achieve defined milestones within the UNC Agreements. There are no future milestone payments to be made by the Company under the UNC Agreements.

We are responsible for all reasonable, documented patent expenses incurred during the life of the UNC Agreements and associated costs associated with the preparation, filing, prosecuting, issuance and maintenance of all patent applications and patents included within the patent rights covered by the UNC Agreements. In addition, we have the option to exclusively license UNC rights in improvements to the license patents and related portfolio, by paying $10,000 per improvement.

The UNC Agreement will continue until the expiration of the last to expire patent or last to be abandoned patent application that is licensed to us, unless terminated earlier in accordance with the terms of the UNC Agreements. There are current patent applications pending under the UNC Agreements so we expect the UNC Agreements will continue through at least 2039. We may terminate the UNC Agreements by providing advance written notice of 60 days as specified therein. UNC may terminate the UNC Agreements if we violate or fail to perform any terms of the UNC Agreements and we fail to cure such violation or failure within 90 days of notice thereof from UNC.

Regulations

Chemical detection, identification, and authentication technologies are of value to military, governmental, and law enforcement organizations worldwide. As a result, our products and technologies are subject to export control laws and regulations, which are imposed to ensure that sensitive technologies are withheld from unfriendly governments, terrorists or criminal organizations.

Our current products are dual-use items with both military and civilian applications. These products are subject to the U.S. Export Administration Regulations, or EAR. The EAR imposes various documentation, recordkeeping and transaction screening requirements and may impose licensing requirements for certain countries, customers, or end-use applications of our products. Applicable U.S. export regulations will continue to apply to our products and technologies even after they are exported to non-U.S. customers or to any non-U.S. subsidiaries or affiliates.

Articles, services and technologies that have certain military applications or that are designed, developed, modified or adapted specifically for military applications may be subject to the International Traffic in Arms Regulations, or ITAR. When ITAR requirements apply, they apply in place of EAR. ITAR imposes registration requirements and broader, more stringent export licensing requirements than EAR. We must determine whether ITAR or EAR governs each of our products, services, and technologies. We may assume the risk of making these determinations on our own, or we may decide to request formal governmental jurisdictional rulings.

Prior to 2023, none of our products were subject to ITAR registration or other related requirements. With the commencement of the initial production phase of our Aerosol and Vapor Chemical Agent Detector, or AVCAD, program to support safety missions for the U.S. military and Coast Guard, we determined that certain spectral databases, algorithms, libraries and alarm set point levels built into our AVCAD software were subject to ITAR, and we registered as a manufacturer with the Directorate of Defense Trade Controls, or DDTC, of the Department of State.

Under generally applicable U.S. trade regulations administered by the Office of Foreign Assets Control, or OFAC, of the U.S. Department of the Treasury, we are generally prohibited from engaging in transactions involving sanctioned countries, as well as certain persons and entities that have been designated for targeted sanctions by OFAC. EAR and ITAR also impose export restrictions targeted at identified persons and entities, and we are required to comply with these restrictions as well.

Violations of the ITAR, EAR, and OFAC requirements can result in significant fines, penalties, denial of export privileges, and even terms of imprisonment for the individuals involved.

In addition, the U.S. Food and Drug Administration, or FDA, regulates, among other things, the research, development, testing, manufacturing, clearance, approval, labeling, storage, recordkeeping, advertising, promotion, marketing, distribution, post-market monitoring and reporting, and import and export of medical devices. Our products are currently marketed as research use only, or RUO. Products such as ours that are marketed for RUO are not intended for use in a clinical investigation or for clinical diagnostic use outside an investigation and must be labeled “For

Research Use Only. Not for use in diagnostic procedures." Products that are intended for RUO and are properly labeled as RUO are exempt from compliance with the FDA's requirements applicable to medical devices more generally, including the requirements for clearance or approval and compliance with manufacturing requirements known as the Quality System Regulation.

A product labeled RUO but intended to be used diagnostically may be viewed by the FDA as adulterated and misbranded under the Federal Food, Drug, and Cosmetics Act and subject to FDA enforcement activities. RUO products cannot make any claims related to safety, effectiveness or diagnostic utility and they cannot be intended for human clinical diagnostic use. The FDA will also evaluate the totality of the circumstances to determine if the product is intended for diagnostic purposes. If the FDA were to determine, based on the totality of circumstances, that our products labeled and marketed for RUO are intended for diagnostic purposes, they would be considered medical devices that will require clearance or approval prior to commercialization.

Although we currently market our products as RUO, we may in the future make the decision to market them for clinical or diagnostic purposes, or may develop other different products intended for clinical or diagnostic purposes, which would result in the application of a more onerous set of regulatory requirements.

Human Capital

As of December 31, 2023, we had 230 full-time employees, of which 70 work in sales, sales support and marketing, 71 work in engineering and research and development, 56 work in manufacturing, operations and service and 33 work in general and administrative. As of December 31, 2023, a substantial majority of our employees were located in the United States. None of our employees is represented by a labor union or is subject to a collective bargaining agreement. We consider our relationship with our employees to be good. Our human capital resources objectives include, as applicable, identifying, recruiting, retaining, incentivizing and integrating our existing and additional employees. The principal purposes of our equity incentive plans are to attract, retain and motivate selected employees, consultants and directors through the granting of stock-based compensation awards and cash-based performance bonus awards. The health and safety of our employees, customers and communities are of primary concern.

Corporate Information

We were incorporated in Delaware in 2012 as 908 Devices Inc. Our offices are located at 645 Summer Street, Boston, Massachusetts 02210. Our telephone number is (857) 254-1500.

We are an "emerging growth company" as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act. As a result, we are permitted to rely on exemptions from certain disclosure requirements that are applicable to other companies that are not emerging growth companies. For so long as we are an emerging growth company, we will not be required to (i) engage an independent registered public accounting firm to report on our internal controls over financial reporting pursuant to Section 404(b) of the Sarbanes-Oxley Act, (ii) submit certain executive compensation matters to stockholder advisory votes, or (iii) disclose certain executive compensation related items.

We may continue to be an "emerging growth company" until December 31, 2025, though we may cease to be an "emerging growth company" earlier under certain circumstances, including if (i) we have more than $1.235 billion in annual gross revenue in any fiscal year, (ii) we become a "large accelerated filer" as a result of the market value of our common stock that is held by non-affiliates being greater than or equal to $700 million as of any June 30, or (iii) we issue more than $1.0 billion of non-convertible debt over a three-year period.

Section 107 of the JOBS Act also provides that an emerging growth company can take advantage of the extended transition period, provided in Section 13(a) of the Exchange Act, for complying with new or revised accounting standards. In other words, an emerging growth company can delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. We have elected to use this extended transition period for complying with new or revised accounting standards until the earlier of the date we (i) are no longer an emerging growth company or (ii) affirmatively and irrevocably opt out of the extended transition period provided in the JOBS Act. As a result, our financial statements and the reported results of operations contained therein may not be directly comparable to those of other public companies.

We are also a "smaller reporting company," as defined in Regulation S-K. We may continue to be a smaller reporting company if either (i) market value of our stock held by non-affiliates is less than $250 million as of the last business day of our second fiscal quarter or (ii) our annual revenue is less than $100 million during the most recently completed fiscal year and the market value of our stock held by non-affiliates is less than $700 million as of the last business day of our second fiscal quarter. If we are a smaller reporting company at the time, we cease to be an emerging growth company, we may continue to rely on exemptions from certain disclosure requirements that are available to smaller reporting companies. Specifically, as a smaller reporting company we may choose to present only the two most recent fiscal years of audited financial statements in our Annual Report on Form 10-K and, similar to emerging growth companies, smaller reporting companies have reduced disclosure obligations regarding executive compensation.

Available Information

Our Internet address is www.908devices.com. Our website and the information contained on, or that can be accessed through, the website will not be deemed to be incorporated by reference in, and are not considered part of, this Annual Report on Form 10-K. Our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, including exhibits, proxy and information statements and amendments to those reports filed or furnished pursuant to Sections 13(a), 14, and 15(d) of the Securities Exchange Act of 1934, as amended, or the Exchange Act, are available through the "Investors" portion of our website free of charge as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. In addition, our filings with the SEC may be accessed through the SEC's Electronic Data Gathering, Analysis and Retrieval system at http://www.sec.gov. All statements made in any of our securities filings, including all forward-looking statements or information, are made as of the date of the document in which the statement is included, and we do not assume or undertake any obligation to update any of those statements or documents unless we are required to do so by law.

Item 1A. Risk Factors.

An investment in our common stock involves risks. You should carefully consider the following risks and all of the other information contained in this Annual Report on Form 10-K before investing in our common stock. The risks described below are those that we believe are the material risks that we face. If any of the following risks actually occurs, our business, prospects, operating results and financial condition could suffer materially, the trading price of our common stock could decline, and you could lose all or part of your investment. The risks and uncertainties described below are not the only ones we face. Additional risks and uncertainties not presently known to us or that we currently believe to be immaterial may also adversely affect our business. See "Cautionary Note Regarding Forward-Looking Statements" in this Annual Report on Form 10-K.

Risks related to macroeconomic conditions

Uncertainties in global economic conditions or a decline in economic conditions, such as recession, economic downturn, and/or inflationary conditions in the U.S. and other regions of the world in which we do business could impact customer spending patterns and materially and adversely affect our financial condition and operating results.

Uncertainties in global economic conditions that are beyond our control have in the past impacted our business and may in the future materially adversely affect our business, results of operations, financial condition and stock price. These adverse economic conditions include inflation, slower growth or recession, new or increased tariffs and other changes to fiscal and monetary policy, higher interest rates, high unemployment, decreased consumer confidence in the economy, armed hostilities, such as the ongoing military conflict between Russia and Ukraine, the ongoing hostilities in Israel and the Gaza Strip, foreign currency exchange rate fluctuations, and other matters that influence consumer spending and preferences.

As a result of these economic conditions, our customers may face their own financial difficulties and the demand and sale of our products to end users and the quantity of products our customers decide to purchase from us (or the mix of products demanded) could be adversely affected, and it may become more challenging to forecast our operating results and make business decisions. Our results of operations are sensitive to changes in macroeconomic conditions that impact discretionary spending. Some of the factors adversely affecting consumer spending include impacts of inflation and actions taken by central banks to counter inflation, levels of unemployment, consumer debt levels, changes in net worth based on market changes and uncertainty, fluctuating interest rates, credit availability, government actions, fluctuating fuel and other energy costs, fluctuating commodity prices and general uncertainty regarding the overall future economic environment. Adverse economic changes in any of the regions in which we sell our products could reduce consumer confidence and could negatively affect net revenue and have a material adverse effect on our operating results.

Our global supply chain is large and complex. As a result, our operations and performance depend significantly on global and regional economic conditions. In addition to an adverse impact on demand for our products, uncertainty about, or a decline in, global or regional economic conditions can have a significant impact on our suppliers, manufacturers, logistics providers, channel partners, and other partners. Potential effects include financial instability; inability to obtain credit to finance operations; and insolvency.

A downturn in the economic environment can also lead to increased credit and collectability risk on our receivables; the failure of derivative counterparties and other financial institutions; limitations on our ability to issue new debt; reduced liquidity; and declines in the fair value of our financial instruments. These and other economic factors can materially adversely affect our business, results of operations, financial condition and stock price.

A pandemic, epidemic or outbreak of an infectious disease such as the COVID-19 pandemic may adversely affect our business.

Our global operations expose us to risks associated with public health crises and epidemics or pandemics, such as COVID-19. Such risks include significant volatility, uncertainty and worldwide economic disruption which may result in an economic slowdown of potentially extended duration that could impact our operations and supply chain. Future outbreaks of infectious disease, such as COVID 19, and any future variants or subvariants that may emerge, may disrupt operations of our customers and prospective customers including as a result of travel restrictions and/or business shutdowns, uncertainty in the financial markets or other harm to their business and financial results. These disruptions could reduce capital spend by our existing customers and potential new customers, and could result in further reductions to capital expenditure budgets, delayed purchasing decisions, longer sales cycles, extended payment terms or missed payments, and postponed or canceled projects, any of which would negatively impact our business and operating results, including sales and cash flows. Federal customers may divert funds to address their own supply chain or other challenges, which could delay the progression of customer trials and pilots of our products into larger enterprise-wide adoption, and could delay the purchase and deployment of both of our devices and consumables. In addition, the strain on certain domestic and international supply chains from public health crises and epidemics or pandemics, such as COVID-19, could result in production slowdowns, longer lead times and negative impacts on pricing for certain of our critical components, including, among other things, electronic and plastic components necessary to manufacture our products. Our suppliers may have to temporarily close a facility, face staffing shortages, production slowdowns and stoppages, be overwhelmed by unexpected demand or face disruptions in delivery systems which may require suppliers to locate shipping routes that avoid delivery bottlenecks, all of which could cause delays in delivery. If our suppliers are unable to deliver the components and subassemblies we require on a timely basis, we cannot guarantee that we will be able to locate alternative sources of supply for our products on acceptable terms, or at all. The long-term effects to the global economy and to us are difficult to assess or predict and may lead to a decline in the market prices of our products, risks to employee health and safety, risks to our ability to manufacture and distribute our products and services and reduced sales in geographic locations impacted.

Risks related to our business and industry

We have a history of net losses and may not be able to achieve profitability for any period in the future or sustain cash flow from operating activities.

We have had a history of net losses since our inception in 2012, and we may never achieve or maintain profitability. We cannot make any assurances that we will be able to increase our revenue to sustain cash flow from operating activities or reach profitability.

As we continue to expand and develop our business, we expect to incur significant additional expenditures in the areas of sales, marketing, research and development, and customer service and support. Additionally, we may encounter unforeseen issues that require us to incur additional costs. We will have to generate and sustain increased revenue to achieve profitability and positive cash flow as a result of these increased expenditures. Accordingly, if we are not able to achieve or maintain profitability and we incur significant losses in the future, the market price of our common stock may decline, and you could lose part or all of your investment.

Our operating results may fluctuate significantly from period-to-period and may fall below expectations in any particular period, which could adversely affect the market price of our common stock.

Our quarterly results of operations may fluctuate significantly from period-to-period. Accordingly, the results of any one quarter should not be relied upon as an indication of future performance. If our revenue or operating results fall below the expectations of investors or any securities analysts that follow our company in any period, the price of our common stock would likely decline. Each of the risks described in this section, as well as other factors, may affect our operating results. For example, factors that may cause our operating results to fluctuate include:

- our dependence on a limited number of large orders from U.S. government agencies for a substantial portion of our revenue in any quarterly period, whereby the loss of or delay in a customer order, including as a result of delays in Federal budget approval, or any delay in our fulfillment of deliverables under a customer order, could significantly reduce our revenue for that quarter;
- market volatility or downturns caused by outbreaks, epidemics, pandemics, geopolitical tensions or conflicts, or other macroeconomic dynamics;
- the addition of new customers or the loss of existing customers;
- the rates at which customers purchase additional products or consumables from us;
- our ability to enhance our products with new and better functionality that meets customer requirements;
- the length and unpredictability of our product sales cycle;
- the productivity and growth of our sales force and customer service team;
- the effectiveness of our channel partners in securing new orders and fulfilling existing orders;
- service interruptions with any of our single source suppliers or subassembly manufacturers;
- our ability to attain and maintain production volumes and quality levels for our products, and to accurately forecast customer demand for our products and consumables;
- the timing of our product releases or upgrades or related announcements by us or our competitors;
- the possibility of seasonality in demand for our products;
- changes in pricing by us or our competitors;
- the timing of investments in research and development related to new product releases or upgrades;
- our ability to control costs, including operating expenses and the costs of the components used in our products;
- future accounting pronouncements and changes in accounting policies;
- costs related to the acquisition and integration of companies, assets, or technologies; and
- general economic, political, or stock market conditions.

Our operating expenses are heavily based on our anticipated product revenue growth, especially as we continue to invest significant resources in building out our sales and marketing channels and the development of future products. As a result, any shortfall in product revenue in relation to our expectations could cause significant changes in our operating results from period-to-period and could result in negative cash flow from operations and a decrease in the price of our common stock.

We have experienced growth of our business in recent years, and our inability to manage this growth could have a material adverse effect on our business, the quality of our products and services and our ability to retain key personnel.

We have experienced growth of our business in recent years. Our growth has placed increased demands on our management and other resources and will continue to do so in the future. We may not be able to maintain or accelerate our current growth rate, manage our expanding operations effectively or achieve planned growth on a timely or profitable basis. Managing our growth effectively will involve, among other things:

- continuing to retain, motivate, and manage our existing employees and attract and integrate new employees, particularly qualified sales personnel;
- continuing to provide a high level of service to an increasing number of customers;
- maintaining the quality of product and services offerings while controlling our expenses;
- meeting end-user requirements for functional performance and product robustness;
- growing our direct sales force and channel partners; and
- developing, implementing, and improving our operational, financial, accounting, and other internal systems and controls on a timely basis.

If demand for our products increases rapidly, we will need to expand internal production capacity or implement additional outsourcing of components and/or our assembled products. Success in developing, manufacturing and supporting products manufactured in small volumes does not guarantee comparable success in operations conducted on a larger scale. Modifying and reconfiguring our facility to increase production capacity may delay delivery of our products. In addition, component costs as well as additional production, financial, and management control costs may rise. If we are unable to meet the demand of our customers and deliver products quickly and cost effectively, customers may turn to our competitors. The costs associated with implementing new manufacturing technologies, methods and processes, including the purchase of new equipment, and any resulting delays, inefficiencies, and loss of sales, could harm our results of operations.

As we grow, we will also need to make corresponding improvements to other operational functions, such as our customer service and billing systems, compliance programs and our internal quality assurance programs. We will also need additional equipment, manufacturing and warehouse space and trained personnel to process higher volumes of products. We cannot assure you that any increases in scale, related improvements and quality assurance will be successfully implemented or that equipment, manufacturing and warehouse space and appropriate personnel will be available. As we develop additional products, we may need to bring new equipment on-line, implement new systems, technology, controls and procedures and hire personnel with different qualifications.

If we are unable to manage our growth effectively, there could be a material adverse effect on our ability to maintain or increase revenue and profitability, the quality of our products and services and our ability to retain key personnel. These factors could adversely affect our reputation in the market and our ability to generate future sales from new or existing customers.

We must develop new products, as well as enhancements to existing products, and adapt to rapid and significant technological change to remain competitive.

We sell our products in industries that are characterized by significant product enhancements and evolving industry standards. As a result, our customers' needs are rapidly evolving. If we do not appropriately innovate and invest in new technologies, our offerings may become less desirable in the markets we serve, and our customers could move to new technologies offered by our competitors or make products themselves. To achieve market acceptance for our products, we must effectively anticipate customer requirements, and we must offer products that meet changing customer demands in a timely manner. Customers may require product features and capabilities that our current products do not have. Any of the current plans we have for future developments or enhancements are strategic in nature and not commitments to develop such capabilities for our customers. If we fail to develop products that satisfy customer requirements, our ability to create or increase demand for our products will be harmed.

Without the timely introduction of new products, services and enhancements, our offerings will likely become less competitive over time, in which case our competitive position and operating results could suffer. Accordingly, we focus significant efforts and resources on the development and identification of new technologies, products and markets to further broaden our offerings. In addition, the development cycle for our products and technologies can take multiple years and require significant investment, including substantial research and development, development of different engineering and manufacturing workflows, and adjustments to our data and analytics infrastructure. Even if these efforts are successful, the product or enhancement may not perform as expected. The ultimate success of our new products depends, in large part, on the accuracy of our assessments of the long-term needs of the industries and markets we serve, and it is difficult to quickly change the design or function of a planned new product if the market need does not develop as anticipated. As a result, to the extent we fail to accurately forecast the needs of our customers and timely introduce new and innovative products or services, or fail to obtain desired levels of market acceptance, our business may suffer and our operating results could be adversely affected. The challenge of identifying market trends and customer needs is even more demanding for markets that we have recently entered, such as the bioprocessing market, or that we intend to enter in the future, such as the GxP quality assurance market. There is no certainty that we will effectively identify these trends and needs or introduce products that are successful.

We need to continue to build and develop our sales, marketing and customer service organization, and to engage with domestic and international channel partners to support our planned growth.

We may not be able to market, sell or distribute our current and future products effectively enough to support our planned growth. Currently, we sell our products through a combination of direct sales efforts and partnerships with channel partners across all of our key markets. During 2023, our channel partners accounted for a significant portion of our total revenue. We are in the process of broadening and diversifying our sales channels across all markets. In the future, if we fail to maintain good relationships with, or fail to successfully motivate any of our large channel partners, our revenue may decline. If we do not diversify our sales channels and effectively utilize our direct sales force, we will continue to be susceptible to risks associated with having a large percentage of revenue concentrated with a limited number of channel partners.

Competition for employees capable of selling expensive instruments within the pharmaceutical and biotechnology industries is intense. We may not be able to attract and retain personnel or be able to build an efficient and effective sales organization, which could negatively impact sales and market acceptance of our products and limit our revenue growth and potential profitability.

In addition, the time and cost of maintaining a specialized sales, marketing and customer service force for a particular product or service may be difficult to justify in light of the revenue projected to be generated by such additional personnel and resources. We also intend to add additional channel partners in the life science market, and if we are unable to do so successfully, it will adversely impact our ability to increase the revenue from our Maverick, Rebel, ZipChip Interface and Maven and related sampling products.

We rely on channel partners for the sale of our products in certain countries outside of the United States, and to access certain end customers in the United States. We intend to continue to grow our business internationally and to do so we must attract additional channel partners and retain existing channel partners to maximize the commercial opportunity for our products. We exert limited control over existing channel partners under our agreements with them, and if their sales and marketing efforts for our products in their particular region are not successful, our business would be materially and adversely affected. Locating, qualifying and engaging additional channel partners with local industry experience and knowledge will be necessary in at least the short to mid-term to effectively market and sell our platform in certain countries outside the United States. We may not be successful in finding, attracting and retaining channel partners, or we may not be able to enter into such arrangements on favorable terms.

Most of our channel partner relationships are non-exclusive and permit such channel partners to distribute competing products. As such, our channel partners may not commit the necessary resources to market our products to the level of our expectations or may choose to favor marketing the products of our competitors. If current or future channel partners do not perform adequately or we are unable to enter into effective arrangements with channel partners in particular geographic areas, we may not realize long-term international revenue growth.

We face intense and growing competition from leading technology companies as well as from emerging companies. Our inability to compete effectively with any or all of these competitors could affect our ability to achieve our anticipated market penetration and achieve or sustain profitability.

The markets we serve are highly competitive, and we expect competition to intensify in the future. This competition may make it more difficult for us to sell our products, and may result in increased pricing pressure, reduced profit margins, increased sales and marketing expenses and failure to increase, or the loss of, market share, any of which would likely seriously harm our business, operating results and financial condition.

We face substantial competition from very large and experienced enterprises, both public and privately held, including Agilent Technologies, Bruker Corporation, Danaher Corporation, Inficon, Teledyne, Endress & Hauser, PerkinElmer, Shimadzu Corporation, Thermo Fisher Scientific, and Waters Corp. Our competitors also include many smaller companies, including companies established to pursue new and emerging technologies. We also expect additional competition in the future from new and existing companies with whom we do not currently compete directly. As our industry evolves, our current and potential competitors may establish cooperative relationships among themselves or with third parties, including companies with whom we have partnerships and whose products interoperate with our own, that could acquire significant market share, which could adversely affect our business. Any of these competitive threats, alone or in combination with others, could seriously harm our business, operating results and financial condition.

Many of our competitors have greater market presence, longer operating histories, stronger name recognition, larger customer bases and significantly greater financial, technical, sales and marketing, manufacturing, distribution and other resources than we have. In addition, many of our competitors have broader product offerings than we do. These companies may attempt to use their greater resources to better position themselves in the market, including by pricing their products at a discount or bundling them with other products and services in an attempt to rapidly gain market share. Moreover, many of our competitors have more extensive customer and partner relationships than we do, and may therefore be in a better position to identify and respond to market developments or changes in customer demands, including successfully developing technologies that outperform our technologies. Potential customers may also prefer to purchase from their existing suppliers rather than a new supplier regardless of product performance or features. Our larger competitors may be able to better manage large or complex contracts and maintain a broader geographic presence. Our smaller competitors typically focus on one or a few products, and they are often well entrenched in their chosen markets. Any of these competitors may respond more quickly to new technology, market developments or pursue new sales opportunities more effectively than we can. We cannot assure you that we will be able to compete successfully against existing or new competitors. Accordingly, our business may not grow as expected and our business may suffer.

Currently, we derive the majority of our revenue from our handheld products in the field forensics market, and are seeking to grow the revenue we derive from our desktop products in the life science market. If we fail to maintain significant market acceptance in existing markets or fail to successfully increase our penetration in new and expanding markets, we will not generate expected revenue and our prospects may be harmed.

In 2023, a majority of our product and service revenue was derived from sales of our handheld products, mainly the MX908. Today, this market consists primarily of first responders, firefighters, local, state and federal law enforcement, as well as military, customs and homeland security customers. Continued market acceptance of the products we sell to these organizations is critical to our future success, and the adoption of our products by these organizations worldwide is a key part of our growth strategy. If market demand for our MX908 product declines, if our products fail to maintain or achieve greater market acceptance, or if we fail to execute on our sales and customer service efforts in the field forensics market, we will not be able to grow our revenue sufficiently to achieve or maintain profitability.

We also are seeking to grow and derive a significant portion of our revenue from our desktop devices in the life science market, specifically the antibody therapeutics, cell and gene therapy and synthetic biology markets, including sales to biopharmaceutical companies and research institutions. We recently introduced our Maverick and Maven product lines and our future success will partially depend on our ability to successfully commercialize these product lines. The life sciences scientific community is comprised of a small number of early adopters and key opinion leaders who significantly influence the rest of the community. The success of life sciences products is due, in large part, to acceptance by the scientific community and their adoption of certain products as best practice in the applicable field of research.

The sizes of the markets for our solutions may be smaller than estimated and new market opportunities may not develop as quickly as we expect, or at all, limiting our ability to successfully sell our products.

The markets for our innovative new class of products are rapidly evolving, making it difficult to predict with any accuracy the sizes of the markets for our current and future solutions. Our estimates of the annual total addressable market for our current and future solutions are based on a number of internal and third party estimates and assumptions. In addition, our growth strategy involves launching new solutions and expanding sales of existing solutions into new markets in which we have limited or no experience. Sales of new or existing solutions into new market opportunities may take several years to develop and mature, and we cannot be certain that these market opportunities will develop as we expect. For example, new life sciences technology is often not adopted by the relevant market until a sufficient amount of research conducted using such technology has been published in peer-reviewed publications. While we believe our assumptions and the data underlying our estimates of the total annual addressable market for our solutions are reasonable, these assumptions and estimates may not be correct and the conditions supporting our assumptions or estimates, or those underlying the third party data we have used, may change at any time, thereby reducing the accuracy of our estimates. As a result, our estimates of the annual total addressable market for our solutions may be incorrect.

Our sales cycles can be long and unpredictable, and our sales efforts require considerable time and expense, which contribute to the unpredictability and variability of our financial performance and may adversely affect our profitability.

The timing of our revenue is difficult to predict as we experience extended sales cycles, due in part to our need to educate our customers about our products, the significant purchase price of our products, the desire of some of our customers to do extended product testing and evaluations, including pilot studies, and our customers' willingness to replace their existing solutions and supplier relationships. Product purchases by our customers are often subject to a variety of other considerations that may extend the length of our sales cycle, including timing of their budget cycles and approval processes, budget constraints, extended negotiations, user surveys, administrative processing and other delays. In particular, government departments and agencies, both in the U.S. and in other countries, generally evaluate our products for critical, strategic applications. As a result, the piloting, testing and evaluation process can be extensive, and orders are often dependent on the availability of sufficient budgeted funds. The procurement processes for orders by government agencies may involve complex and time-consuming competitive bidding processes. Bid specifications and contract awards are subject to challenge by competitors, which can further extend the sales cycle. Furthermore, U.S. state and local hazardous material, emergency management and police organizations must often apply for grants to obtain the funds needed to procure our products, a process which is lengthy and unpredictable, particularly as to when and whether a grant will be awarded. As a result, our sales cycle ranges from several months to over a year, and it is difficult to predict when or if a sale to a potential customer will occur. All of these factors can contribute to fluctuations in our quarterly financial performance and increase the likelihood that our operating results in a particular quarter will fall below investor expectations. If we are unsuccessful in closing sales after expending significant resources, or if we experience delays for any of the reasons discussed above, our future revenue and operating expenses may be materially adversely affected.

Due to the significant resources required to enable access in new markets, we must make strategic and operational decisions to prioritize certain markets, technology offerings or partnerships and there can be no assurance that we will expend our resources in a way that results in meaningful revenue or capitalizes on potential new markets.

We believe our platform has potential applications across a wide range of markets and we have targeted certain markets in which we believe we have a higher probability of success or revenue opportunity or for which the path to commercialize products and realizing or achieving revenue is shorter. For example, we have entered into agreements regarding a specific government program opportunity to develop an aerosol vapor detector, and several engagements related to the evaluation of our products within the cell therapy and gene therapy markets. We seek to continue to prioritize opportunities and allocate our resources among our programs to maintain a balance between advancing near-term opportunities and exploring additional markets for our technology. However, due to the significant resources required for the development of workflows for new markets, we must make decisions regarding which markets to pursue and the amount of resources to allocate to each. Our decisions concerning the allocation of research, development, collaboration, management and financial resources toward particular markets or workflows may not lead to the development of any viable product and may divert resources away from better opportunities. Similarly, our potential decisions to delay, terminate or collaborate with third parties in respect of certain markets may subsequently also prove to be suboptimal and could cause us to miss valuable opportunities. In particular, if we are unable to develop additional relevant products and applications for markets such as antibody therapeutics, cell therapy or the synthetic biology market, it could slow or stop our business growth and negatively impact our business, financial condition, results of operations, and prospects.

If we market our products for clinical or diagnostic purposes, our products could become subject to onerous regulation by the U.S. Food and Drug Administration, or FDA, or other regulatory agencies in the future, which could increase our costs and delay or prevent commercialization of our products, thereby materially and adversely affecting our business, financial condition, results of operations, and prospects.

We make our platform and devices, including our Maven, Maverick, MX908, Rebel and ZipChip Interface, available to customers as research-use-only, or RUO, products. Products that are labeled as RUO are exempt from compliance with most FDA requirements, including premarket clearance or approval, manufacturing requirements, and others. A product labeled RUO but which is actually intended for clinical diagnostic use may be viewed by the FDA as adulterated and misbranded under the Federal Food, Drug, and Cosmetic Act, or FDCA, and subject to FDA enforcement action. The FDA has indicated that when determining the intended use of a product labeled RUO, the FDA will consider the totality of the circumstances surrounding distribution and use of the product, including how the product is marketed and to whom. The FDA could disagree with our assessment that our products are properly marketed as RUOs, or could conclude that products labeled as RUO are actually intended for clinical diagnostic use, and could take enforcement action against us, including requiring us to stop distribution of our products until we are in compliance with applicable regulations, which would reduce our revenue, increase our costs and adversely affect our business, prospects, results of operations and financial condition. In the event that the FDA requires us to obtain marketing authorization of our RUO products in the future, there can be no assurance that the FDA will grant any clearance or approval requested by us in a timely manner, or at all. Furthermore, although we currently market our products as RUO, we may in the future make the decision to market them for clinical or diagnostic purposes, or may develop other different products intended for clinical or diagnostic purposes, which would result in the application of a more onerous set of regulatory requirements.

We depend on our key personnel and other highly qualified personnel, and if we are unable to recruit, train and retain our personnel, we may not achieve our goals.

Our future success depends on our ability to recruit, train, retain and motivate key personnel, including our senior management, research and development, manufacturing and sales, customer service and marketing personnel. In particular, Dr. Knopp, our Chief Executive Officer and one of our co-founders, and Dr. Brown, our Chief Product Officer and one of our co-founders, are critical to our vision, strategic direction, culture and products. Each of our employees may terminate his or her relationship with us at any time and the loss of the services of such persons could have an adverse effect on our business. We rely on our senior management to manage our existing business operations and to identify and pursue new growth opportunities. The loss of any member of senior management could significantly delay or prevent the achievement of our business objectives and their replacement would likely involve significant time and expense.

As we continue to scale our business, we may find that certain of our products, certain customers or certain markets, including the biopharmaceutical market, may require a dedicated sales force or sales personnel with different experience than those whom we currently employ. Our continued growth will depend, in part, on attracting, retaining and motivating highly-trained sales personnel with the necessary scientific background and technical ability to understand our systems and effectively identify and sell to potential new customers. Identifying, recruiting and training additional qualified personnel will require significant time, expense and attention. In addition, the continued development of complementary software tools, such as our analysis tools and visualization software, requires us to compete for highly trained software engineers in the Boston area and for highly trained customer service personnel globally.

We do not have fixed term employment contracts with any of our employees. As a result, our employees could leave our company with little or no prior notice and would be free to work for a competitor, subject to the terms of their confidentiality, non-solicitation and intellectual property assignment agreements. Because of the complex and technical nature of our products and the dynamic market in which we compete, any failure to attract, train, retain and motivate qualified personnel could materially harm our operating results and growth prospects.

We may be unable to consistently manufacture our devices and consumables to the necessary specifications or in quantities necessary to meet demand at an acceptable cost or at an acceptable performance level.

Our products are integrated solutions with many different components that work together. As such, a quality defect in a single component can compromise the performance of the entire solution. As we continue to grow and introduce new products, and as our products incorporate increasingly sophisticated technology, it will be increasingly difficult to ensure our products are produced in the necessary quantities without sacrificing quality. There is no assurance that we or our third party manufacturers will be able to continue to manufacture our products so that they consistently achieve the product specifications and quality that our customers expect. Any future design issues, unforeseen manufacturing problems, such as contamination of our or such third party facilities, equipment malfunctions, aging components, quality issues with components and materials sourced from third party suppliers, or failures to strictly follow procedures or meet specifications, may have a material adverse effect on our brand, business, financial condition and operating results and could result in us or our third party manufacturers losing International Organization for Standardization, or ISO, quality management certifications. If we or our third party manufacturers fail to maintain ISO quality management certifications, our customers might choose not to purchase products from us. Furthermore, we or our third party manufacturers may not be able to increase manufacturing to meet anticipated demand or may experience downtime.

In order to meet our customers’ needs, we attempt to forecast demand for our products and components used for the manufacture of our products. If we fail to accurately forecast this demand, we could incur additional costs or experience manufacturing delays and may experience lost sales or significant inventory carrying costs.

The risk of manufacturing defects or quality control issues is generally higher for new products, whether produced by us or a third party manufacturer, products that are transitioned from one manufacturer to another, particularly if manufacturing is transitioned or initiated with a manufacturer we have not worked with in the past, and products that are transferred from one manufacturing facility to another. We cannot assure investors that we and our third party manufacturers will be able to launch new products on time, transition manufacturing of existing products to new manufacturers, transition our manufacturing capabilities to a new location or transition manufacturing of any additional consumables in-house without manufacturing defects. An inability to manufacture products and components that consistently meet specifications, in necessary quantities and at commercially acceptable costs will have a negative impact and may have a material adverse effect on our business, financial condition and results of operations.

We depend on a continued supply of components and raw materials for our products from third party suppliers, and if shortages of these components or raw materials arise, we may not be able to secure enough components to build new products to meet customer demand or we may be forced to pay higher prices for these components.

We rely on a limited number of suppliers for several key components utilized in the assembly of our products, and in some cases, such as the glass in our microfluidic chips, swab samplers, and sensors within our products, we rely on a single supplier for a particular component, subassembly or consumable. Although in many cases we use standard components for our products, in some cases, components may only be purchased from a limited number of suppliers. In particular, we are dependent on single suppliers for our Rebel and ZipChip autosampler subassemblies, our MX908 consumables, the Raman spectrometer and optical probe and fiber assemblies for Maverick, and our device subassembly for Maven. If, for any reason, our access to these products is limited or delayed, we would need to quickly identify and qualify an alternate source of products. Identifying and qualifying an alternate source may take time and involve additional expense, and there is no guarantee that the alternate source will perform as expected. If our customers experienced a shortage or delay in consumables, such as swab samplers, microfluidic chips, or assay kits, or if these consumables do not perform at the levels our customers expect, our business could be materially and adversely impacted.

In addition, we maintain relatively low inventory and acquire components based upon anticipated annual demand. Neither we nor our contract manufacturers enter into long-term supply contracts for these components, and none of our third party suppliers is obligated to supply products to us for any specific period or in any specific quantities, except as may be provided in a particular purchase order. We are not a major customer of many of our suppliers, and these suppliers may therefore give other customers' needs higher priority than ours. Our industry has experienced component shortages and delivery delays in the past, and we may experience shortages or delays of critical components in the future as a result of strong demand in the industry or other factors. Many of the other components required to build our systems are also occasionally in short supply. Therefore, if shortages or delays arise, we may not be able to secure enough components at reasonable prices or of acceptable quality to build new products, resulting in an inability to meet customer demand or our own operating goals, which could adversely affect our customer relationships, business, operating results and financial condition.

Additionally, damage to a manufacturing facility or other property of any of our suppliers, due to fire, flood or other natural disaster or casualty event may have a material adverse effect on our business, financial condition and results of operations.

Our current research and development efforts may not produce significant revenue for several years, if at all.

Developing our products is expensive, and the investment in product development may involve a long payback cycle. Our investment in research and development may not result in marketable products or may result in products that take longer to generate revenue, or generate less revenue, than we anticipate. Our future plans include significant investments in research and development of product opportunities for expansion of our handheld products and new application areas for our desktop products. We believe that we must continue to dedicate a significant amount of resources to our research and development efforts to maintain our competitive position. However, we may not receive significant revenue from these investments for several years, if at all.

Undetected errors or defects in our products, or errors made by the end users of our products, could harm our reputation and decrease market acceptance of our products.

Our devices and consumables, as well as the software that accompanies them, may contain undetected errors or defects when first introduced or as new versions are released. Disruptions or other performance problems with our products or software may adversely impact our customers' research or business, harm our reputation and result in reduced revenue or increased costs associated with product repairs or replacements. Further, in the event that an end user makes an error or fails to analyze a particular substance correctly, our product may be associated with a failure to identify a substance that ultimately turns out to be harmful, or, conversely, be associated with a false alarm raised over a substance that turns out to be benign. We also provide customer support services, such as in connection with our "Reachback" program described in the "Business" section of our Annual Report on Form 10-K. It is possible that incorrect or inaccurate information may be delivered to a customer in the context of one or more support consultations. If any such errors or mistakes occur, we may also incur significant costs, the attention of our key personnel could be diverted or other significant customer relations problems may arise. We may also be subject to unwanted media attention, warranty claims or breach of contract for damages related to errors or defects in our products and solutions.

If we experience a significant disruption in our information technology systems and infrastructure, or breaches or compromises of data security, our business could be adversely affected.

We rely on information technology systems to keep financial records, facilitate our research and development initiatives, manage our manufacturing operations, maintain quality control, fulfill customer orders, maintain corporate records, communicate with staff and external parties and operate other critical functions. Our information technology systems and infrastructure are potentially vulnerable to breakdown or damage or interruption or otherwise may sustain damage from malicious intrusion and computer viruses, data breaches, phishing attacks, cybercriminals, system malfunction, natural disasters and catastrophes (including hurricanes and earthquakes), terrorism, war and telecommunication and electrical failures, or other disruptive events. Cyberattacks and other malicious internet-based activity continue to increase and cloud-based platform providers of services have been and are expected to continue to be targeted. In addition to traditional computer hackers, malicious code (such as viruses and worms), phishing attacks and social engineering, business email compromise, employee theft or misuse, denial-of-service attacks and sophisticated nation-state and nation-state supported actors now engage in attacks (including advanced persistent threat intrusions). Because the techniques used by threat actors who may attempt to penetrate and sabotage our computer systems or those of our vendors or partners change frequently and may not be recognized until launched against a target, we may be unable to anticipate these techniques. Therefore, despite significant efforts to create security barriers to such threats, it is virtually impossible for us to entirely mitigate these risks. If our security measures or those of our vendors and partners are meaningfully compromised as a result of third party action, employee or customer error, malfeasance, stolen or fraudulently obtained log-in credentials, hostile foreign governments, industrial espionage, wire fraud or otherwise, our reputation and customer trust could be damaged, our business, results of operations and financial condition may be harmed and we could incur significant liability. If we were to experience a prolonged system disruption in our information technology systems and infrastructure or those of certain of our vendors, it could negatively impact our ability to serve our customers, which could adversely impact our business. If operations at our facilities were disrupted, it may cause a material disruption in our business if we are not capable of restoring functionality on an acceptable timeframe. In addition, our information technology systems (and those of our vendors and partners) are potentially vulnerable to data security compromises or breaches, whether by internal bad actors (e.g., employees) or external bad actors (attacks of which are becoming increasingly sophisticated, including social engineering and phishing scams), which could lead to the exposure of personal data, sensitive data and confidential information to unauthorized persons. Further, it is possible that unauthorized access to our data may be obtained through inadequate use of security controls by suppliers or other vendors. We rely on such third parties to implement effective security measures and identify and correct for any failures, deficiencies or breaches. Such data security compromises or breaches to our data, whether stored on our systems or on those of third parties, could lead to the loss of trade secrets or other intellectual property, or could lead to the exposure of personal information (including sensitive personal information) of our employees, customers and others, any of which could have a material adverse effect on our business, reputation, financial condition and results of operations.

In addition, any such access, disclosure or other loss or unauthorized use of information or data could result in legal claims or proceedings, regulatory investigations or actions, and other types of liability under laws that protect the privacy and security of personal information, including federal, state and foreign data protection and privacy regulations, violations of which could result in significant penalties and fines. In addition, although we seek to detect and investigate all data security incidents, breaches or compromises, these events can be difficult to detect and any delay in identifying such breaches, incidents or compromises may lead to increased harm and legal exposure of the type described above.

The cost of investigating, mitigating and responding to potential data security breaches or compromises and complying with applicable breach notification obligations to individuals, regulators, partners and others can be significant. Our insurance policies may not be adequate to compensate us for the potential costs and other losses arising from such disruptions, failures or security breaches. In addition, such insurance may not be available to us in the future on economically reasonable terms, or at all. Further, defending a suit, regardless of its merit, could be costly, divert management attention and harm our reputation.

We are subject to various and evolving laws and regulations governing the privacy and security of personal data, and our failure to comply could result in fines or criminal penalties and damage our reputation and result in the loss of business.

Privacy and data security are significant issues in the United States, Europe and many other jurisdictions where we operate or collect personal information. We are subject to data privacy and security laws and regulations in various jurisdictions that apply to the collection, storage, use, sharing and security of personal data, including health information, and impose significant compliance obligations. In addition, numerous other federal and state laws, including state security breach notification laws, state health information privacy laws and federal and state consumer protection and privacy laws, govern the collection, use, disclosure and security of personal information.

For example, in California, the California Consumer Protection Act, or CCPA, which went into effect on January 1, 2020, established a comprehensive privacy framework for covered businesses by creating an expanded definition of personal information, establishing new data privacy rights for consumers in the State of California, imposing special rules on the collection of consumer data from minors, and creating a new and potentially severe statutory damages framework for violations of the CCPA and for businesses that fail to implement reasonable security procedures and practices to prevent data breaches. In addition, a ballot initiative, the California Privacy Rights Act, or CPRA, has been in effect since January 1, 2023 and has imposed additional obligations on companies covered by the legislation. The CPRA significantly modified the CCPA, including by expanding consumers' rights with respect to certain sensitive personal information.

Similar laws have been passed in numerous other states and other states have proposed similar new privacy laws. Such proposed legislation, if enacted, may add additional complexity, variation in requirements, restrictions and potential legal risk, require additional investment of resources in compliance programs, impact strategies and the availability of previously useful data and could result in increased compliance costs and/or changes in business practices and policies. The existence of comprehensive privacy laws in different states in the country would make our compliance obligations more complex and costly and may increase the likelihood that we may be subject to enforcement actions or otherwise incur liability for noncompliance. In addition, other states have proposed and/or passed legislation that regulates the privacy and/or security of certain specific types of information. For example, a small number of states have passed laws that regulate biometric data specifically. These various privacy and security laws may impact our business activities, including our identification of research subjects, relationships with business partners and ultimately the marketing and distribution of our products. State laws are changing rapidly and there is discussion in the U.S. Congress of a new comprehensive federal data privacy law to which we may likely become subject, if enacted.

For Europe, we are subject to the EU General Data Protection Regulation, or EU GDPR, and the UK equivalent of the same, the UK GDPR (collectively referred to as the GDPR), as well as other national data protection legislation in force in relevant European Economic Area, or EEA, Member States and the UK (including the UK Data Protection Act 2018) with respect to any collecting or processing of personal data (i) regarding individuals in the EEA and UK , and/or (ii) carried out in the context of the activities of an establishment in the EEA and UK. The GDPR places strict obligations on companies relating to their processing of personal data (for example, informing individuals of how their personal data is handled and how they can exercise their rights, ensuring a valid lawful basis for processing, mandatory data breach notification requirements, maintaining internal records, entering into data processing agreements with third parties, implementing appropriate security and data retention requirements). The GDPR also imposes strict rules on the transfer of personal data outside of the EEA and UK to countries that do not ensure an adequate level of protection, like the United States in certain circumstances unless valid GDPR transfer mechanisms and transfer impact assessments are put in place. Any inability to transfer personal data from the EEA and UK to the United States in compliance with data protection laws may impede our business operations and adversely affect our business and financial position.

Failure to comply with the GDPR, and any supplemental EEA Member State or UK national data protection laws may result in substantial penalties for us, including potential fines of up to the greater of €20 million (£17.5 million under the UK GDPR) or 4% of our total worldwide annual turnover. The GDPR also confers a private right of action on data subjects and consumer associations to lodge complaints with supervisory authorities, seek judicial remedies, and obtain compensation for damages resulting from violations of the GDPR.

The UK's data protection regime is independent from but aligned to the EU's data protection regime. However, following the UK's exit from the EU, or Brexit, there will be increasing scope for divergence in application, interpretation and enforcement of the data protection laws between these territories. For example, the UK Government has introduced a Data Protection and Digital Information Bill, or Data Reform Bill into the UK legislative process to reform the UK's data protection regime following Brexit, which may have the effect of further altering the similarities between the UK and EEA data protection regimes. The respective provisions and enforcement of the EU GDPR and UK GDPR may further diverge in the future and create additional regulatory challenges and uncertainties. This lack of clarity on future UK laws and regulations and their interaction with EU laws and regulations could add legal risk, complexity and cost to our handling of European personal data and our privacy and data security compliance programs, and could require us to implement different compliance measures for the UK and the EEA.

All of these evolving compliance and operational requirements impose significant costs, such as costs related to organizational changes, implementing additional protection technologies, training employees and engaging consultants and legal advisors, which are likely to increase over time. In addition, such requirements may require us to modify our data processing practices and policies, utilize management's time and/or divert resources from other initiatives and projects. Any failure or perceived failure by us to comply with any applicable federal, state or foreign laws and regulations relating to data privacy and security could result in damage to our reputation, as well as proceedings or litigation by governmental agencies or other third parties, including class action privacy litigation in certain jurisdictions, which would subject us to significant fines, sanctions, awards, injunctions, penalties or judgments. Any of the foregoing could have a material adverse effect on our business, financial condition, results of operations and prospects.

Artificial intelligence presents risks and challenges that can impact our business including by posing security risks to our confidential information, proprietary information, and personal data.

Issues in the development and use of artificial intelligence, combined with an uncertain regulatory environment, may result in reputational harm, liability, or other adverse consequences to our business operations. As with many technological innovations, artificial intelligence presents risks and challenges that could impact our business. We may adopt and integrate generative artificial intelligence tools into our systems for specific use cases reviewed by legal and information security. Our vendors may incorporate generative artificial intelligence tools into their offerings without disclosing this use to us, and the providers of these generative artificial intelligence tools may not meet existing or rapidly evolving regulatory or industry standards with respect to privacy and data protection and may inhibit our or our vendors' ability to maintain an adequate level of service and experience. If we, our vendors, or our third-party partners experience an actual or perceived breach or privacy or security incident because of the use of generative artificial intelligence, we may lose valuable intellectual property and confidential information and our reputation and the public perception of the effectiveness of our security measures could be harmed. Further, bad actors around the world use increasingly sophisticated methods, including the use of artificial intelligence, to engage in illegal activities involving the theft and misuse of personal information, confidential information, and intellectual property. Any of these outcomes could damage our reputation, result in the loss of valuable property and information, and adversely impact our business.

Our international operations may raise additional risks, which could have an adverse effect on our operating results.

We expect our international revenue and operations will continue to expand in the future. Our international operations are subject to a variety of risks that we do not face in the United States, including:

- adverse or uncertain macroeconomic conditions, including a global economic downturn or recession;
- global impacts of inflation and actions taken by central banks to counter inflation;
- the rising cost of labor in the foreign countries in which we and our suppliers operate, resulting in increases in our costs of doing business internationally;
- geopolitical conditions, including changes in a specific country's or region's political or economic conditions, including the ongoing military conflict between Russia and Ukraine, and the ongoing hostilities in Israel and the Gaza Strip, and the threat that such conflicts could spread to other parts of Europe and the Middle East;
- the difficulty of increased travel, infrastructure and legal compliance costs associated with developing international revenue;
- difficulties in enforcing contracts, collecting accounts receivable and longer payment cycles, especially in emerging markets;
- many, if not most, foreign governments are investing less in safety and security and in technology to detect dangerous chemicals than the U.S. government;
- additional withholding taxes or other taxes on our foreign income, and tariffs or other restrictions on foreign trade or investment;
- compliance with privacy and data security requirements in foreign jurisdictions in which we operate;
- imposition of, or unexpected adverse changes in, foreign laws or regulatory requirements, many of which differ from those in the United States;
- costs and delays associated with developing products or technology in multiple languages, such as the software embedded in our products and the products' built-in library of chemical substances;

- compliance with foreign technical standards;
- increased length of time for shipping and acceptance of our products;
- increased exposure to foreign currency exchange rate risk;
- reduced protection for intellectual property rights in some countries; and
- political unrest, war, incidents of terrorism, natural disasters, and public health concerns or epidemics, or responses to such events.

As we continue to expand our business globally, our success will depend, in large part, on our ability to anticipate and effectively manage these and other risks associated with our international operations.

Our overall success in international markets depends, in part, on our ability to succeed in differing legal, regulatory, economic, social and political conditions. We may not be successful in developing and implementing policies and strategies that will be effective in managing these risks in each country where we do business. Our failure to manage these risks successfully could harm our international operations, reduce our international sales and increase our costs, thus adversely affecting our business, operating results and financial condition.

Our loan and security agreement contains covenants, which restrict our operating activities, and we may be required to repay the outstanding indebtedness in an event of default, which could have a material adverse effect on our business, financial condition, results of operations, and prospects.

On August 4, 2023, we entered into a Default Waiver and First Amendment to Loan and Security Agreement, or the Amended 2022 Revolver, with Silicon Valley Bank, or the Lender, pursuant to which the Lender waived certain of its rights and remedies against us in connection with covenants requiring us to maintain all of our operating accounts, depository accounts and excess cash with the Lender, and pursuant to which the our Loan and Security Agreement with the Lender dated November 2, 2022 was amended. The Amended 2022 Revolver subjects us to various customary covenants, including requirements as to financial reporting and financial covenants (including a requirement that the amount of unrestricted and unencumbered cash minus advances under the Amended 2022 Revolver, is not less than the amount equal to the greater of (i) $10.0 million or (ii) nine (9) months of cash burn), and restrictions on our ability to change the principal nature of our business, dispose of our business or property, engage in any change of control transaction, merge or consolidate with any other entity or to acquire all or substantially all the capital stock or property of another entity, incur additional indebtedness or liens, pay dividends or make other distributions on capital stock, redeem our capital stock, engage in transactions with affiliates or otherwise encumber our intellectual property, in each case, subject to customary exceptions.

We are permitted to make interest-only payments on the revolving line of credit through November 3, 2025, at which time all outstanding indebtedness shall be immediately due and payable. However, we may be required to repay the outstanding indebtedness under the revolving line of credit if an event of default occurs under the Amended 2022 Revolver. An event of default will occur if, among other things, we fail to make required payments under the Amended 2022 Revolver; we breach any of our covenants under the Amended 2022 Revolver, subject to specified cure periods with respect to certain breaches; the Lender determines that a material adverse change (as defined in the Amended 2022 Revolver) has occurred; we or our assets become subject to certain legal proceedings, such as bankruptcy proceedings; we are unable to pay our debts as they become due; or we default on contracts with third parties which would permit the third party to accelerate the maturity of such indebtedness above certain thresholds or that could have a material adverse effect on our business or operations. We may not have enough available cash or be able to raise additional funds through equity or debt financings to repay such indebtedness at the time any such event of default occurs. In such a case, we may be required to delay, limit, reduce or terminate our product development or operations or grant to others rights to develop and market products that we would otherwise prefer to develop and market ourselves. The Lender could also exercise its rights as secured lender to take possession of and to dispose of the collateral securing the revolving line of credit, which collateral includes substantially all of our property (excluding intellectual property, which is subject to a negative pledge). Our business, financial condition, results of operations, and prospects could be materially adversely affected as a result of any of these events.

The majority of our operations are currently conducted at a single location and any disruption at our facility could negatively impact our operations and increase our expenses.

Our headquarters in Boston, Massachusetts contains nearly all of our corporate and administrative functions, the majority of our research, and substantially all of our in-house manufacturing. A natural or other disaster, such as a fire or flood, could cause substantial delays in our operations, damage or destroy our manufacturing equipment or inventory, and cause us to incur additional expenses. The insurance we maintain against fires, floods and other natural disasters may not be adequate to cover our losses in any particular case. With or without insurance, damage to our manufacturing facility or our other property, or to any of our suppliers, due to fire, flood or other natural disaster or casualty event may have a material adverse effect on our business, financial condition and results of operations.

Risks related to sales of products to the U.S. Government

A significant percentage of our product and service revenues are generated from agencies and departments of the U.S. government. In addition, substantially all of our revenue from license and contracts revenue are derived from contracts or sub-contracts related to the U.S. government. We expect significant revenue from U.S. government contracts for the foreseeable future. There is considerable risk associated with deriving a material portion of our revenue from sales to the U.S. government, including the risks described below.

A significant portion of our business depends on sales to the public sector, and our failure to receive and maintain government contracts or changes in the contracting or fiscal policies of the public sector could have a material adverse effect on our business.

We derive a significant portion of our revenue from contracts that we have, either directly or through channel partners, with federal, state, local and foreign governments and government agencies, and we believe that the success and growth of our business will continue to depend on our successful procurement of government contracts. For example, we have historically derived, and expect to continue to derive, a significant portion of our revenue from sales to agencies of the U.S. federal government, either directly by us or through other channel partners.

Sales to such government agencies are subject to a number of challenges and risks. Selling to government agencies can be highly competitive, expensive and time-consuming, often requiring significant upfront time and expense, without any assurance that these efforts will generate a sale. We also must comply with laws and regulations relating to the formation, administration and performance of contracts, which provide public sector customers certain rights that are not typically found in commercial contracts.

Accordingly, our business, financial condition, results of operations, and prospects may be adversely affected by certain events or activities, including, but not limited to:

- changes in fiscal or contracting policies or decrease in available government funding;
- changes in government programs or applicable requirements;
- changes in the political environment, including before or after a change to the leadership within the government administration, and any resulting uncertainty or changes in policy or priorities and resultant funding;
- appeals, disputes or litigation relating to government procurement, including but not limited to bid protests by unsuccessful bidders on potential or actual awards of contracts to us or our partners by the government;
- the adoption of new laws or regulations or changes to existing laws or regulations;
- budgetary constraints, including automatic reductions as a result of “sequestration” or similar measures and constraints imposed by lapses in appropriations for the federal government or certain of its departments and agencies;
- influence by, or competition from, third parties with respect to pending, new or existing contracts with government customers;
- potential delays or changes in the government appropriations or procurement processes, including as a result of events such as war, incidents of terrorism, natural disasters, and public health concerns or epidemics; and
- increased or unexpected costs or unanticipated delays caused by other factors outside of our control, such as performance failures of our partners and subcontractors.

Any such event or activity, among others, could cause governments and governmental agencies to delay or refrain from purchasing our products and services in the future, reduce the size or payment amounts of purchases from existing or new government customers, or otherwise have an adverse effect on our business, results of operations, financial condition and prospects.

U.S. government programs are limited by budgetary constraints and political considerations and are subject to uncertain future funding levels that could result in the termination of programs.

U.S. government agency and department purchases are often strategic in nature and large in size. Therefore, reductions in federal funding levels that impact our customers could negatively affect the size of our customers' orders or lead to cancellation of orders. Government contracts are often subject to more extensive scrutiny and publicity than commercial contracts. The number and terms of new government contracts signed can be affected significantly by political and economic factors, such as pending elections and revisions to government tax policies. Negative publicity related to our government contracts, regardless of its accuracy, may damage our business by affecting our ability to compete for new contracts. A decline in security-related government spending for any reason, or a shift away from programs that we address, could hurt our sales, put pressure on our prices and reduce our revenue and margins.

A multi-year U.S. government program may be implemented through the award of many different individual contracts, grants, cooperative agreements and subcontracts or other subawards. For U.S. government programs, program funding is subject to Congressional appropriations. Congress generally appropriates funds on a fiscal year basis even though a program may continue for several years. Government programs are often only partially funded initially, and additional funds are committed only as Congress makes further appropriations. The termination of a program or failure to commit funds to a program would result in a loss of anticipated future revenue attributable to that program, which could materially harm our business.

Our contracts with the U.S. government may impose requirements that may be unfavorable to us and that may have a material adverse effect on our growth prospects and operating results.

There are inherent risks in contracting with the U.S. government. The U.S. government can typically terminate, reduce orders under or otherwise modify any of its contracts with us for its convenience (i.e., without cause) whether or not we have failed to perform under the terms of the applicable contract. In such case, the government would not be required to pay us for the lost profits for the unperformed work. A termination arising out of our default could expose us to liability and harm our ability to compete for future contracts and orders. In addition to unfavorable termination provisions, our U.S. government contracts and related regulations contain provisions that allow the U.S. government to unilaterally suspend us from receiving new contracts pending resolution of alleged violations of procurement laws or regulations, reduce the value of existing contracts, issue modifications to a contract and potentially restrict exports of our products, services and associated materials.

Our contracts with government agencies may subject us to other risks and give the government additional rights and remedies not typically found in commercial contracts, including rights that allow the government to, for example:

- obtain detailed cost or pricing information;
- receive "most favored customer" pricing;
- perform routine audits;
- impose equal employment and hiring standards;
- require products to be manufactured in specified countries;
- restrict non-U.S. ownership or investment in our company; and/or
- pursue administrative, civil or criminal remedies for contractual violations.

These rights and remedies have the potential to limit our sales to, and increase our costs of, doing business with both government and commercial customers, which could materially adversely affect our growth prospects and operating results.

We are subject to audits by the U.S. government which could adversely affect our business.

U.S. government agencies routinely audit and investigate government contractors to monitor performance, cost allocations, cost accounting and compliance with applicable laws, regulations and standards. Since some of our contracts provide for cost reimbursement, the U.S. government has the right to audit our costs even after job completion and after we have billed and recognized the corresponding revenue. The U.S. government also may review the adequacy of, and a contractor's compliance with, its internal control systems and policies, including the contractor's purchasing, property, estimating, compensation and management information systems. Any costs found to be improperly allowed or improperly allocated to a specific contract will not be reimbursed, and any such costs that have already been reimbursed must be refunded, which would affect associated revenue that had already been recognized. While we intend to implement uniform procurement and compliance programs for all of our business, we may be subject to more risks from these audits until we are able to implement such a program effectively.

Responding to governmental audits, inquiries or investigations may involve significant expense and divert the attention of our management. If a government review or investigation uncovers improper or illegal activities, we may be subject to civil and criminal penalties and administrative sanctions, including termination of contracts, forfeiture of profits, suspension of payments, damages, fines and suspension or debarment from doing business with U.S. government agencies. In addition, our reputation could be seriously harmed by allegations of impropriety, even if unfounded. Our internal controls may not prevent or detect all improper or illegal activities.

Our business is subject to laws and regulations that are more restrictive because we are a contractor and subcontractor to the U.S. government.

As a contractor and subcontractor to the U.S. government, we are subject to various laws and regulations that are more restrictive than those applicable to non-government contractors, including the Federal Acquisition Regulations and its supplements, which comprehensively regulate the formation, administration and performance of U.S. government contracts, and the Truth in Negotiations Act and various other laws, which require certain certifications and disclosures.

These laws and regulations, among other things:

- require that we obtain and maintain material governmental authorizations and approvals to conduct our business as it is currently conducted;
- require certification and disclosure of cost and pricing data in connection with certain contract negotiations;
- impose rules that define allowable and unallowable costs and otherwise govern our right to reimbursement under certain cost-based U.S. government contracts;
- restrict the use and dissemination of information classified for national security purposes and the export of certain products and technical data; and
- impose requirements relating to ethics and business practices, which carry penalties for noncompliance ranging from monetary fines and damages to loss of the ability to do business with the U.S. government as a prime contractor or subcontractor.

In addition, we may be subject to industrial security regulations of the U.S. Department of Defense and other federal agencies that are designed to safeguard against unauthorized access by foreigners and others to classified and other sensitive U.S. government information. If we were to come under foreign ownership, control or influence, our U.S. government customers could terminate, or decide not to renew, our contracts, or we may be subjected to burdensome industrial security compliance measures. Such a situation could impair our ability to obtain new contracts and subcontracts. The government may also change its procurement practices or adopt new contracting rules and regulations that could be costly to satisfy or that could impair our ability to obtain new contracts.

Risks related to litigation and our intellectual property

We rely on in-bound licenses granted to us from third parties. If we lose these rights, our business may be materially adversely affected, our ability to develop improvements to our existing products and to develop new products may be negatively and substantially impacted, and if disputes arise, we may be subjected to future litigation as well as the potential loss of or limitations on our ability to develop and commercialize products and technology covered by these license agreements.

We are party to royalty-bearing license agreements and we may need to obtain additional licenses from others to advance our research, development and commercialization activities. Our current license agreements impose, and we expect that any future exclusive in-bound license agreements will impose, various development, diligence, commercialization and other obligations on us. We have also entered into engagements in the past, and may enter into engagements in the future, with other partners and customers under which we obtain certain intellectual property rights relating to our platform and technology. These engagements take the form of exclusive licenses, non-exclusive licenses, or assignment of actual ownership of intellectual property rights or technology from third parties. Our rights to use the technology we license are subject to the continuation of and compliance with the terms of those agreements. In some cases, we may not control the prosecution, maintenance or filing of the patents and patent applications to which we hold licenses, or the enforcement of those patents against third parties.

Moreover, disputes may arise with respect to our licensing or other upstream agreements, including:

- the scope of rights granted under the agreements and other interpretation-related issues;
- the extent to which our systems and consumables, technology and processes infringe on intellectual property rights of the licensor that are not licensed under the licensing agreement;
- the sublicensing of patent and other rights under our collaborative development relationships;
- our diligence obligations under the license agreements and what activities satisfy those diligence obligations;
- the inventorship and ownership of inventions and know-how resulting from the joint creation or use of intellectual property by our licensors and us and our partners; and
- the priority of invention of patented technology.

In spite of our efforts to comply with our obligations under our in-bound license agreements, our licensors might conclude that we have materially breached our obligations under our license agreements and might therefore, including in connection with any aforementioned disputes, terminate the relevant license agreement, thereby removing or limiting our ability to develop and commercialize products and technology covered by these license agreements. If any such in-bound license is terminated, or if the licensed patents fail to provide the scope of exclusivity expected, competitors or other third parties might have the freedom to market, develop, or commercialize products similar to ours. In addition, absent the rights granted to us under such license agreements, we may infringe the intellectual property rights that are the subject of those agreements, we may be subject to litigation by the licensor, and if such litigation by the licensor is successful we may be required to pay damages to our licensor, or we may be required to cease our development and commercialization activities which are deemed infringing, and in such event we may ultimately need to modify our activities or products to design around such infringement, which may be time- and resource-consuming, and which may not be ultimately successful. Any of the foregoing could have a material adverse effect on our business, financial condition, results of operations, and prospects.

In addition, our rights to certain technologies are licensed to us on a non-exclusive basis. The owners of these non-exclusively licensed technologies are therefore free to license them to third parties, including our competitors, on terms that may be superior to those offered to us, which could place us at a competitive disadvantage. Moreover, our licensors may own or control intellectual property that has not been licensed to us and, as a result, we may be subject to claims, regardless of their merit, that we are infringing or otherwise violating the licensor's rights. In addition, certain of our agreements with third parties may provide that intellectual property arising under these agreements, such as data that could be valuable to our business, will be owned by the counterparty, in which case, we may not have adequate rights to use such data or have exclusivity with respect to the use of such data, which could result in third parties, including our competitors, being able to use such data to compete with us.

Patent terms may be inadequate to protect our competitive position on our products for an adequate amount of time.

Patents have a limited lifespan. In the United States, if all maintenance fees are timely paid, the natural expiration of a patent is generally 20 years from its earliest U.S. non-provisional filing date. Various extensions may be available, but the life of a patent, and the protection it affords, is limited. Even if patents covering our products are obtained, once the patent life has expired, we may be open to competition from competitive products. If one of our products requires extended development, testing, regulatory review and/or examination by a patent granting authority, patents protecting such products might expire before or shortly after such products are commercialized. As a result, our owned and licensed patent portfolio may not provide us with sufficient rights to exclude others from commercializing products similar or identical to ours.

Obtaining and maintaining our patent protection depends on compliance with various required procedures, document submissions, fee payments and other requirements imposed by governmental patent agencies, and our patent protection could be reduced or eliminated for non-compliance with these requirements.

Periodic maintenance fees, renewal fees, annuity fees and various other governmental fees on patents and/or applications will be due to be paid to the U.S. Patent and Trademark Office, or the USPTO, and various governmental patent agencies outside of the United States at several stages over the lifetime of the patents and/or applications. We have systems in place to remind us to pay these fees, and we engage an outside service and rely on our outside counsel to pay these fees due to non-U.S. patent agencies. The USPTO and various non-U.S. governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other similar provisions during the patent application process. We employ reputable law firms and other professionals to help us comply, and in some cases, an inadvertent lapse can be cured by payment of a late fee or by other means in accordance with the applicable rules. However, there are situations in which non-compliance can result in abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. In such an event, our competitors may be able to enter the market without infringing our patents and this circumstance may have a material adverse effect on our business.

Changes in patent law in the United States and other jurisdictions could diminish the value of patents in general, thereby impairing our ability to protect our products.

Changes in either the patent laws or in interpretations of patent laws in the United States or other countries or regions may diminish the value of our intellectual property. We cannot predict the breadth of claims that may be allowed or enforced in our patents or in third party patents. We may not develop additional proprietary products, methods and technologies that are patentable.

Assuming that other requirements for patentability are met, prior to March 16, 2013, in the United States, the first to invent the claimed invention was entitled to the patent, while outside the United States, the first to file a patent application was entitled to the patent. On or after March 16, 2013, under the Leahy-Smith America Invents Act, or the America Invents Act, enacted in September 16, 2011, the United States transitioned to a first inventor to file system in which, assuming that other requirements for patentability are met, the first inventor to file a patent application will be entitled to the patent on an invention regardless of whether a third party was the first to invent the claimed invention. A third party that files a patent application in the USPTO on or after March 16, 2013, but before us could therefore be awarded a patent covering an invention of ours, even if we had made the invention before it was made by such third party. This requires us to be cognizant of the time from invention to filing of a patent application. Since patent applications in the United States and most other countries are confidential for a period of time after filing or until issuance, we cannot be certain that we or our licensors were the first to either (i) file any patent application related to our products or (ii) invent any of the inventions claimed in our or our licensor’s patents or patent applications.

The America Invents Act also includes a number of significant changes that affect the way patent applications are prosecuted and also affects patent litigation. These include allowing third party submission of prior art to the USPTO during patent prosecution and additional procedures to attack the validity of a patent by USPTO administered post-grant proceedings, including post-grant review, inter partes review and derivation proceedings. Because of a lower evidentiary standard in USPTO proceedings compared to the evidentiary standard in United States federal courts necessary to invalidate a patent claim, a third party could potentially provide evidence in a USPTO proceeding sufficient for the USPTO to hold a claim invalid, even though the same evidence would be insufficient to invalidate the claim if first presented in a district court action. Accordingly, a third party may attempt to use the USPTO procedures to invalidate our patent claims that would not have been invalidated if first challenged by the third party as a defendant in a district court action. Therefore, the America Invents Act and its implementation could increase the uncertainties and costs surrounding the prosecution of our owned or in-bound licensed patent applications and the enforcement or defense of our owned or in-bound licensed issued patents, all of which could have a material adverse effect on our business, financial condition, results of operations, and prospects.

In addition, the patent position of companies in the biotechnology field is particularly uncertain. Various courts, including the United States Supreme Court have rendered decisions that affect the scope of patentability of certain inventions or discoveries relating to biotechnology. These decisions state, among other things, that a patent claim that recites an abstract idea, natural phenomenon or law of nature are not themselves patentable. Precisely what constitutes a law of nature or abstract idea is uncertain, and it is possible that certain aspects of our technology could be considered natural laws. Accordingly, the evolving case law in the United States may adversely affect our ability to obtain patents and may facilitate third party challenges to any owned or licensed patents.

Our ability to compete and the success of our business could be jeopardized if we are unable to protect our intellectual property adequately.

Our success depends to a degree upon the protection of our proprietary technology and obtaining, maintaining and enforcing our intellectual property and other proprietary rights. We rely on a combination of trade secrets, patents, copyrights, trademarks and contractual provisions with employees, contract manufacturers, consultants, customers and other third parties to establish and protect our intellectual property rights, all of which offer only limited protection. Other parties may not comply with the terms of their agreements with us, and we may not be able to enforce our rights adequately against these parties.

Although we enter into confidentiality, assignments of proprietary rights and license agreements, as appropriate, with our employees and third parties, including our contract manufacturers, contract engineering firms, and generally control access to and distribution of our technologies, documentation and other proprietary information, we cannot be certain that the steps we take to prevent unauthorized use of our intellectual property rights are sufficient to prevent their misappropriation, particularly in foreign countries where laws or law enforcement practices may not protect our intellectual property rights as fully as in the United States. In addition, we rely on trade secrets to protect certain of our technologies, especially where we do not believe patent protection is appropriate or obtainable. However, trade secrets are difficult to protect. Although we use reasonable efforts to protect our trade secrets, our employees and third parties to whom our trade secrets are disclosed may unintentionally or willfully disclose our information to competitors. Enforcing a claim that a third party entity illegally obtained and is using any of our trade secrets is expensive and time-consuming, and the outcome is unpredictable. In addition, courts outside the U.S. are sometimes less willing to protect trade secrets. Moreover, our competitors may independently develop equivalent knowledge, methods and know-how.

If competitors are able to use our technology, our ability to compete effectively could be harmed. For example, if a competitor were to gain use of certain of our proprietary technology, it might be able to develop and manufacture similarly designed solutions at a reduced cost, which would result in a decrease in demand for our products.

Furthermore, we have adopted a strategy of seeking limited patent protection both in the United States and in foreign countries with respect to the technologies used in or relating to our products. We do not know whether any of our pending patent applications will result in the issuance of patents or whether the examination process will require us to narrow our claims, and even if patents are issued, they may be contested, circumvented or invalidated over the course of our business. Moreover, the rights granted under any issued patents may not provide us with proprietary protection or competitive advantages, and, as with any technology, competitors may be able to develop and obtain patents for technologies that are similar to or superior to our technologies. If that happens, we may need to license these technologies and we may not be able to obtain licenses on reasonable terms, if at all, thereby causing great harm to our business. Additionally, the determination that a patent application or patent claim meets all of the requirements for patentability is a subjective determination based on the application of law and jurisprudence. The ultimate determination by the USPTO or by a court or other trier of fact in the U.S., or corresponding foreign national patent offices or courts, on whether a claim meets all requirements of patentability cannot be assured. Accordingly, we cannot predict the breadth of claims that may be allowed or enforced in our patents or patent applications, in our licensed patents or patent applications or in third party patents.

Even in those instances where we have determined that another party is breaching our intellectual property and other proprietary rights, enforcing our legal rights with respect to such breach may be expensive and difficult. We may need to engage in litigation to enforce or defend our intellectual property and other proprietary rights, which could result in substantial costs and diversion of management resources. Further, many of our current and potential competitors are substantially larger than we are and have the ability to dedicate substantially greater resources to defending any claims by us that they have breached our intellectual property rights.

Failure to protect our intellectual property could affect our ability to secure additional contracts or preserve market advantages when we commercialize our products.

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

Filing, prosecuting and defending patents on our products in all countries throughout the world would be prohibitively expensive, and our intellectual property rights in some countries outside the United States can be less extensive than those in the United States. In addition, the laws of some foreign countries do not protect intellectual property rights to the same extent as the laws of the United States, and we may encounter difficulties in protecting and defending such rights in foreign jurisdictions. Consequently, we may not be able to prevent third parties from practicing our inventions in some or all countries outside the United States, or from selling or importing products made using our inventions in and into the United States or other jurisdictions. Competitors may use our technologies in jurisdictions where we have not obtained patent protection to develop their own products and may also export infringing products to territories where we have patent protection, but enforcement is not as strong as that in the United States. These products may compete with our products. Our patents or other intellectual property rights may not be effective or sufficient to prevent them from competing. In addition, certain countries have compulsory licensing laws under which a patent owner may be compelled to grant licenses to other parties. Furthermore, many countries limit the enforceability of patents against other parties, including government agencies or government contractors. In these countries, the patent owner may have limited remedies, which could materially diminish the value of any patents.

Many companies have encountered significant problems in protecting and defending intellectual property rights in foreign jurisdictions. The legal systems of many other 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 misappropriation or other violations of our intellectual property rights including infringement of our patents in such countries. 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, could put our patents at risk of being invalidated or interpreted narrowly and our patent applications at risk of not issuing, and could provoke third parties to assert claims against us. We may not prevail in any lawsuits that we initiate, or that are initiated against us, and the damages or other remedies awarded, if any, may not be commercially meaningful. In addition, changes in the law and legal decisions by courts in the United States and foreign countries may affect our ability to obtain adequate protection for our products, services and other technologies and the enforcement of intellectual property. Accordingly, our efforts to enforce our intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop or license.

We may be obligated to disclose our proprietary technology to our customers, which may limit our ability to protect our intellectual property.

Certain customer agreements contain provisions permitting the customer to become a party to, or a beneficiary of, a technology escrow agreement under which we place proprietary know-how and source code for our products in escrow with a third party. Under these escrow agreements, the know-how and source code to the applicable product may be released to the customer, typically for its use to further develop, maintain, modify and enhance the product, upon the occurrence of specified events, such as our filing for bankruptcy and breaching our representations, warranties or covenants of our agreements with our customers. Disclosing this know-how and source code may limit the intellectual property protection we can obtain or maintain for that know-how or source code or the products embodying or containing that know-how or source code, and may facilitate intellectual property infringement claims against us. Each of these could harm our business, results of operations and financial condition.

Issued patents covering our products could be found invalid or unenforceable if challenged.

Although patents granted by the USPTO or other patent granting authority are generally entitled to a presumption of validity and enforceability, a granted patent's scope, validity or enforceability can still be challenged. Some of our patents or patent applications (including in-bound licensed patents) have been or may be challenged at a future point in time in opposition, derivation, reexamination, inter partes review, post-grant review or interference. Any successful third party challenge to our patents in this or any other proceeding could result in the unenforceability or invalidity of such patents, which may lead to increased competition to our business, which could harm our business. In addition, in patent litigation in the United States, defendant counterclaims alleging invalidity or unenforceability are commonplace. The outcome following legal assertions of invalidity and unenforceability during patent litigation is unpredictable. If a defendant were to prevail on a legal assertion of invalidity or unenforceability, we would lose at least part, and perhaps all, of the patent protection on certain aspects of our platform technologies. In addition, if the breadth or strength of protection provided by our patents and patent applications is threatened, regardless of the outcome, it could dissuade companies from collaborating with us to license, develop, or commercialize current or future products.

We may not be aware of all third party intellectual property rights potentially relating to our products. Publications of discoveries in the scientific literature often lag behind the actual discoveries, and patent applications in the United States and other jurisdictions are typically not published until approximately 18 months after filing or, in some cases, not until such patent applications issue as patents. Moreover, we may not search for or identify all relevant third party patents or we may incorrectly interpret the relevance, scope or expiration of a third party patent of which we are aware. We might not have been the first to make the inventions covered by each of our pending patent applications and we might not have been the first to file patent applications for these inventions. To determine the priority of these inventions, we may have to participate in interference proceedings, derivation proceedings or other post-grant proceedings declared by the USPTO that could result in substantial cost to us. The outcome of such proceedings is uncertain. No assurance can be given that other patent applications will not have priority over our patent applications. In addition, changes to the patent laws of the United States allow for various post-grant opposition proceedings that have not been extensively tested, and their outcome is therefore uncertain. Furthermore, if third parties bring these proceedings against our patents, we could experience significant costs and management distraction.

Claims by other parties that we infringe or misuse their proprietary technology could subject us to significant liability and could force us to redesign our products or to incur significant costs.

Our competitors protect their intellectual property rights by means such as trade secrets, patents, copyrights and trademarks. Although we have not been involved in any litigation related to intellectual property rights of others, from time to time we receive letters from other parties alleging, or inquiring about, breaches of their intellectual property rights. Any party asserting that our products infringe their proprietary rights would force us to defend ourselves, and possibly our customers, against the alleged infringement. These claims and any resulting lawsuit, if successful, could subject us to significant liability for damages and invalidation of our proprietary rights. The risk of such a lawsuit will likely increase as our size and the number and scope of our products increase, as our geographic presence and market share expand and as the number of competitors in our market increases. Any such claims or litigation could:

- be time-consuming and expensive to defend, whether meritorious or not;
- require us to stop selling, incorporating or using our products that use the other party's intellectual property;
- divert the attention of our technical and managerial resources;
- require us to enter into royalty or licensing agreements with third parties, which may not be available on terms that we deem acceptable, if at all;
- prevent us from operating all or a portion of our business or force us to redesign our products, which could be difficult and expensive and may degrade performance of our products, or withdraw one or more of our products altogether;

- subject us to significant liability for damages or result in significant settlement payments;
- require us to indemnify our customers, channel partners or suppliers; and
- refund deposits and other amounts received for allegedly infringing technology or products.

Intellectual property litigation can be costly. Even if we prevail, the cost of such litigation could deplete our financial resources. Litigation is also time-consuming and could divert management's attention and resources away from our business. Furthermore, during the course of litigation, confidential information may be disclosed in the form of documents or testimony in connection with discovery requests, depositions or trial testimony. Disclosure of our confidential information and our involvement in intellectual property litigation could materially adversely affect our business. Some of our competitors may be able to sustain the costs of complex intellectual property 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 significantly limit our ability to continue our operations. Any of the foregoing could disrupt our business and have a material adverse effect on our operating results and financial condition.

In the future we may be involved in litigation related to intellectual property, which could be time-intensive and costly and may adversely affect our business, financial condition, results of operations, and prospects.

In recent years, there has been significant litigation in the United States involving intellectual property rights. We may in the future be, involved with litigation or actions at the USPTO or a foreign patent office with various third parties that claim we or our partners or customers using our solutions and services have misappropriated or misused other parties' intellectual property rights. We expect that the number of such claims may increase as the number of our systems, workflows, consumables and kits, and the level of competition in our industry segments, grow. Any infringement claim, regardless of its validity, could harm our business by, among other things, resulting in time-consuming and costly litigation, diverting management's time and attention from the development of the business, requiring the payment of monetary damages (including treble damages, attorneys' fees, costs and expenses) or royalty payments, or result in potential or existing customers delaying purchases of our products or entering into engagements with us pending resolution of the dispute.

As we move into new markets and applications for our products, incumbent participants in such markets may assert their patents and other proprietary rights against us as a means of slowing our entry into such markets or as a means to extract substantial license and royalty payments from us. Our competitors and others may now and in the future have significantly larger and more mature patent portfolios than we currently have. In addition, future litigation may involve patent holding companies or other adverse patent owners who have no relevant product or service revenue and against whom our own patents may provide little or no deterrence or protection. Therefore, our commercial success may depend in part on our non-infringement of the patents or proprietary rights of third parties, or the invalidity of such patents or proprietary rights.

Our research, development and commercialization activities may in the future be subject to claims that we infringe or otherwise violate patents or other intellectual property rights owned or controlled by third parties. There is a substantial amount of litigation and other patent challenges, both within and outside the United States, involving patent and other intellectual property rights in the biotechnology industry, including patent infringement lawsuits, interferences, oppositions and inter partes review proceedings before the USPTO, and corresponding foreign patent offices. Numerous U.S. and foreign issued patents and pending patent applications, which are owned by third parties, exist in the fields in which we are developing products. As the biotechnology industry expands and more patents are issued, the risk increases that our products may be subject to claims of infringement of the patent rights of third parties. Numerous significant intellectual property issues have been litigated, are being litigated and will likely continue to be litigated, between existing and new participants in our existing and targeted markets, and one or more third parties may assert that our products or services infringe their intellectual property rights as part of a business strategy to impede our successful entry into or growth in those markets.

There can be no assurance that we will prevail in any suit initiated against us by third parties, successfully settle or otherwise resolve patent infringement claims. Third parties making claims against us may be able to obtain injunctive or other relief, which could block our ability to develop, commercialize and sell products or services, and could result in the award of substantial damages against us, including treble damages, attorneys' fees, costs and expenses if we are found to have willfully infringed. In the event of a successful claim of infringement against us, we may be required to pay damages and ongoing royalties, and obtain one or more licenses from third parties, or be prohibited from selling certain products or services. We may not be able to obtain these licenses on acceptable or commercially reasonable terms, if at all, or these licenses may be non-exclusive, which could result in our competitors gaining access to the same intellectual property. In addition, we could encounter delays and incur significant costs, in product or service introductions while we attempt to develop alternative products or services, or redesign our products or services, to avoid infringing third party patents or proprietary rights. Defense of any lawsuit or failure to obtain any of these licenses or to develop a workaround could prevent us from commercializing products or services, and the prohibition of sale or the threat of the prohibition of sale of any of our products or services could materially affect our business and our ability to gain market acceptance for our products or services.

In addition, our agreements with some of our customers, suppliers or other entities with whom we do business require us to defend or indemnify these parties to the extent they become involved in infringement claims, including the types of claims described above. We could also voluntarily agree to defend or indemnify third parties in instances where we are not obligated to do so if we determine it would be important to our business relationships. If we are required or agree to defend or indemnify third parties in connection with any infringement claims, we could incur significant costs and expenses that could adversely affect our business, financial condition, results of operations, and prospects.

Our use of open source software could compromise our ability to offer our services and subject us to possible litigation.

We use open source software in connection with our products and services. Companies that incorporate open source software into their products have, from time to time, faced claims challenging their use of open source software and compliance with open source license terms. As a result, we could be subject to lawsuits and other allegations by parties claiming ownership of what we believe to be open source software or claiming noncompliance with open source licensing terms. Some open source software licenses require users who distribute software containing open source software to publicly disclose all or part of the source code to the licensee's software that incorporates, links or uses such open source software, and make available to third parties for no cost, any derivative works of the open source code created by the licensee, which could include the licensee's own valuable proprietary code. While we monitor our use of open source software and try to ensure that none is used in a manner that would require us to disclose our proprietary source code or that would otherwise breach the terms of an open source agreement, such use could inadvertently occur, or could be claimed to have occurred, in part because open source license terms can be ambiguous. Legal precedent in this area is not well established and any actual or claimed requirement to disclose our proprietary source code or pay damages for breach of contract could harm our business and could help third parties, including our competitors, develop products and services that are similar to or better than ours. Any of the foregoing could harm our business, financial condition, results of operations, and prospects.

Risks related to ownership of our common stock

If securities or industry analysts do not publish research or reports about our business or if they issue unfavorable commentary or downgrade our common stock, the price of our common stock could decline.

The trading market for our common stock relies in part on the research and reports that equity research analysts publish about us and our business. The price of our stock could decline if one or more equity analysts downgrade our stock or if those analysts issue other unfavorable commentary or cease publishing reports about us or our business.

The trading market for our common stock depends in part on research reports that securities or industry analysts publish about us or our business. We do not control these analysts. If securities or industry analysts fail to maintain coverage of our company, the trading price for our stock may be negatively affected. In the event one or more of these analysts downgrade our stock or publish unfavorable reports about our business, our stock price will likely decline. In addition, if any securities or industry analysts cease coverage of our company or fail to publish reports on us regularly, demand for our stock could decrease, which could cause our stock price to decline.

The market price of our common stock has been volatile and could continue to be volatile.

Since the shares were sold in our initial public offering in December 2020, the price per share of our common stock has experienced significant fluctuations. Some of the factors that may cause the market price of our common stock to fluctuate, many of which may be beyond our control, include:

- actual or anticipated fluctuations in our quarterly financial results or the quarterly financial results of companies perceived to be similar to us;
- fluctuations in our revenue as a result of our revenue recognition policy, even during periods of significant sales activity;
- the financial guidance that we may provide to the public, any changes in such guidance, or our failure to meet such guidance;
- changes in financial estimates by securities analysts, our failure to meet such estimates, or failure of analysts to initiate or maintain coverage of our stock;
- the public's response to our press releases or other public announcements by us, including our filings with the SEC;
- announcements by us or our competitors of significant technical innovations, products, contracts, acquisitions, strategic partnerships, joint ventures, or capital commitments;
- failure of any of our products to achieve or maintain market acceptance;
- introduction of technologies or product enhancements that reduce the need for our products;
- changes in our capital structure, such as future issuances of securities or the incurrence of debt;
- regulatory developments in the United States, foreign countries or both;
- litigation involving our company, our general industry or both;
- additions or departures of senior management or key personnel;
- changes in market valuations of similar companies in reaction to industry events, even if these events do not directly affect us;
- investors' general perception of us;
- market volatility or downturns caused by outbreaks, epidemics, pandemics, geopolitical tensions or conflicts, or other macroeconomic dynamics;
- the sustainability of an active trading market for our common stock; and
- future sales of our common stock by our officers, directors or affiliates.

In addition, if the market for technology stocks or the stock market in general experiences a loss of investor confidence, the trading price of our common stock could decline for reasons unrelated to our business, financial condition or results of operations. If any of the foregoing occurs, it could cause our stock price to fall and may expose us to class action lawsuits that, even if unsuccessful, could be costly to defend and divert management's attention and resources.

Our actual operating results may differ significantly from any operating guidance we may provide.

From time to time, we may release guidance in our quarterly or annual earnings conference calls, quarterly or annual earnings releases, or otherwise, regarding our future performance that represents our management's estimates as of the date of release. This guidance, which will include forward-looking statements, will be based on projections prepared by our management. These projections may not be prepared with a view toward compliance with published guidelines of the American Institute of Certified Public Accountants, or AICPA, and neither our independent registered public accounting firm nor any other independent expert or outside party compiles or examines the projections. Accordingly, no such person will express any opinion or any other form of assurance with respect to the projections.

Projections are based upon a number of assumptions and estimates that, while presented with numerical specificity, are inherently subject to significant business, economic and competitive uncertainties and contingencies, many of which are beyond our control and are based upon specific assumptions with respect to future business decisions, some of which will change. The principal reason that we may release guidance is to provide a basis for our management to discuss our business outlook with analysts and investors. We do not accept any responsibility for any projections or reports published by any such third parties.

Guidance is necessarily speculative in nature, and it can be expected that some or all of the assumptions underlying the guidance furnished by us will not materialize or will vary significantly from actual results. Accordingly, our guidance is only an estimate of what management believes is realizable as of the date of release. Actual results may vary from our guidance and the variations may be material. Any failure to successfully implement our operating strategy or the occurrence of any of the events or circumstances set forth in this "Risk Factors" section could result in actual operating results being different from our guidance, and the differences may be adverse and material.

Sales of a significant number of shares of our common stock in the public markets, or the perception that such sales could occur, could depress the market price of our common stock.

Sales of a substantial number of shares of our common stock in the public markets, or the perception in the market that the holders of a large number of shares of common stock intend to sell shares, could depress the market price of our common stock and impair our ability to raise capital through the sale of additional equity securities. We cannot predict the effect that future sales of our common stock would have on the market price of our common stock.

Certain holders of our common stock have rights, subject to conditions, to require us to file registration statements covering their shares or to include their shares in registration statements that we may file for ourselves or other stockholders. We also filed a registration statement on Form S-8 registering the issuance of shares of common stock issued or reserved for future issuance under our equity compensation plans. Shares registered under such registration statement on Form S-8 can be freely sold in the public market upon issuance and once vested, subject to volume limitations applicable to affiliates and the lock-up agreements described above. If any of these additional shares are sold, or if it is perceived that they will be sold, in the public market, the market price of our common stock could decline.

We do not currently intend to pay dividends on our common stock and, consequently, your ability to achieve a return on your investment will depend on appreciation in the price of our common stock.

We have never declared or paid any cash dividends on our common stock and we do not currently expect to pay any cash dividends for the foreseeable future. Our credit agreements with our lenders contain provisions prohibiting us from paying any dividends during the term of the agreements without our lenders' prior written consent. We intend to use our future earnings, if any, in the operation and expansion of our business. Accordingly, you are not likely to receive any dividends on your common stock for the foreseeable future, and your ability to achieve a return on your investment will, therefore, depend on appreciation in the price of our common stock.

We are incurring significant increased costs to implement and maintain an effective system of internal controls, and our management is required to devote substantial time to public company compliance initiatives. If we are unable to absorb these increased costs or maintain management focus on development and sales of our product offerings and services, we may not be able to achieve our business plan.

We are incurring significant legal, accounting and other expenses that we did not incur as a private company. In addition, the Sarbanes-Oxley Act, as well as rules subsequently implemented by the SEC and Nasdaq, impose a variety of corporate governance requirements on public companies. Our management and other personnel devote a substantial amount of time to these compliance initiatives. Moreover, these rules and regulations are increasing our legal and financial compliance costs and making some activities more time-consuming and costly. For example, these rules and regulations have made it more difficult and expensive for us to obtain director and officer liability insurance, and we are incurring substantial costs to maintain the same or similar coverage.

In addition, the Sarbanes-Oxley Act requires, among other things, that we maintain effective internal control over financial reporting and disclosure controls and procedures. In particular, we must perform system and process evaluation and testing of our internal control over financial reporting to allow management and, after we are no longer an "emerging growth company," our independent registered public accounting firm to report on the effectiveness of our internal control over financial reporting, as required by Section 404 of the Sarbanes-Oxley Act, or Section 404. Our testing, or the subsequent testing by our independent registered public accounting firm, may reveal deficiencies in our internal control over financial reporting that are deemed to be material weaknesses. Our compliance with Section 404 requires that we incur substantial accounting expense and expend significant management efforts, including hiring additional accounting and financial staff with appropriate public company experience and technical accounting knowledge. Moreover, if we are not able to comply with the requirements of Section 404 in a timely manner, or if we or our independent registered public accounting firm identifies deficiencies in our internal control over financial reporting that are deemed to be material weaknesses, the market price of our stock could decline and we could be subject to sanctions or investigations by Nasdaq, the SEC or other regulatory authorities, which would require additional financial and management resources.

The increased costs associated with operating as a public company may decrease our net income or increase our net loss and may require us to reduce costs in other areas of our business or increase the prices of our products or services. Additionally, if these requirements divert our management's attention from other business concerns, they could have a material adverse effect on our business, financial condition, results of operations, and prospects.

We are an "emerging growth company" and the reduced disclosure requirements applicable to "emerging growth companies" may make our common stock less attractive to investors.

We are an "emerging growth company," as defined in the JOBS Act, and we may take advantage of certain exemptions and relief from various reporting requirements that are applicable to other public companies that are not "emerging growth companies." In particular, while we are an "emerging growth company," we will not be required to comply with the auditor attestation requirements of Section 404(b) of the Sarbanes-Oxley Act of 2002, or the Sarbanes-Oxley Act; we will be subject to reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements; and we will not be required to hold nonbinding advisory votes on executive compensation or stockholder approval of any golden parachute payments not previously approved.

In addition, the JOBS Act provides that an emerging growth company can take advantage of an extended transition period for complying with new or revised accounting standards. This allows an emerging growth company to delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. We have elected not to "opt out" of such extended transition period, which means that when a standard is issued or revised and it has different application dates for public or private companies, we will adopt the new or revised standard at the time private companies adopt the new or revised standard and will do so until such time that we either (i) irrevocably elect to "opt out" of such extended transition period or (ii) no longer qualify as an emerging growth company.

We may be an "emerging growth company" until December 31, 2025, though we may cease to be an "emerging growth company" earlier under certain circumstances, including if (i) we have more than $1.235 billion in annual revenue in any fiscal year, (ii) we become a "large accelerated filer" as a result of the market value of our common stock that is held by non-affiliates being greater than or equal to $700 million as of any June 30, or (iii) we issue more than $1.0 billion of non-convertible debt over a three-year period.

The exact implications of the JOBS Act are subject to interpretation and guidance by the SEC and other regulatory agencies, and we cannot assure you that we will be able to take advantage of all of the benefits of the JOBS Act. In addition, investors may find our common stock less attractive to the extent we rely on the exemptions and relief granted by the JOBS Act. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may decline or become more volatile.

Provisions in our certificate of incorporation, our by-laws or Delaware law might discourage, delay or prevent a change in control of our company or changes in our management and, therefore, depress the trading price of our common stock.

Provisions of our certificate of incorporation, our by-laws or Delaware law may discourage, delay or prevent a merger, acquisition or other change in control that stockholders may consider favorable, including transactions in which you might otherwise receive a premium for your shares of our common stock. These provisions may also prevent or frustrate attempts by our stockholders to replace or remove our management. These provisions:

- establish a classified board of directors so that not all members of our board are elected at one time;
- place limitations on the removal of directors;
- eliminate the ability of our stockholders to call special meetings of stockholders;

- prohibit stockholder action by written consent, which has the effect of requiring all stockholder actions to be taken at a meeting of stockholders;
- establish advance notice requirements for nominations for election to our board of directors or for proposing matters that can be acted upon by stockholders at stockholder meetings; and
- enable our board of directors to designate the terms of and issue new series of preferred stock without stockholder approval, which could be used to institute a rights plan, or a poison pill, that would work to dilute the stock ownership of a potential hostile acquirer, likely preventing acquisitions that have not been approved by our board of directors.

In addition, Section 203 of the Delaware General Corporation Law may discourage, delay or prevent a change in control of our company by prohibiting stockholders owning in excess of 15% of our outstanding voting stock from merging or combining with us during a specified period unless certain approvals are obtained.

The existence of the foregoing provisions and anti-takeover measures could limit the price that investors might be willing to pay in the future for shares of our common stock. They could also deter potential acquirers of our company, thereby reducing the likelihood that you could receive a premium for your common stock in an acquisition.

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

Our amended and restated certificate of incorporation specifies that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware is the sole and exclusive forum for most legal actions involving actions brought against us by stockholders; provided that, if and only if the Court of Chancery of the State of Delaware dismisses any such action for lack of subject matter jurisdiction, such action may be brought in another state or federal court sitting in the State of Delaware. Our amended and restated certificate of incorporation also provides that the federal district courts of the United States will be the exclusive forum for the resolution of any complaint asserting a cause of action against us or any of our directors, officers, employees or agents and arising under the Securities Act. We believe these provisions may benefit us by providing increased consistency in the application of Delaware law and federal securities laws by chancellors and judges, as applicable, particularly experienced in resolving corporate disputes, efficient administration of cases on a more expedited schedule relative to other forums and protection against the burdens of multi-forum litigation. However, these provisions may have the effect of discouraging lawsuits against our directors and officers. The choice of forum provision requiring that the Court of Chancery of the State of Delaware be the exclusive forum for certain actions would not apply to suits brought to enforce any liability or duty created by the Exchange Act.

There is uncertainty as to whether a court would enforce such provisions, and the enforceability of similar choice of forum provisions in other companies' charter documents has been challenged in legal proceedings. While the Delaware courts have determined that such choice of forum provisions are facially valid, a stockholder may nevertheless seek to bring a claim in a venue other than those designated in the exclusive forum provisions, and there can be no assurance that such provisions will be enforced by a court in those other jurisdictions. If a court were to find these types of provisions to be inapplicable or unenforceable, and if a court were to find the exclusive forum provision in our amended and restated certificate of incorporation to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving the dispute in other jurisdictions, which could materially adversely affect our business.

Our fourth amended and restated bylaws designate specific courts in Delaware as the exclusive forum for certain litigation that may be initiated by the Company's stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us.

Pursuant to our fourth amended and restated bylaws, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware is the sole and exclusive forum for state law claims for (1) any derivative action or proceeding brought on our behalf; (2) any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers, or other employees to us or our stockholders; (3) any action asserting a claim arising pursuant to any provision of the Delaware General Corporation Law or our sixth amended and restated certificate of incorporation or fourth amended and restated bylaws; (4) any action to interpret, apply, enforce or determine the validity of our certificate of incorporation or bylaws; or (5) any action asserting a claim governed by the internal affairs doctrine, or the Delaware Forum Provision. The Delaware Forum Provision would not apply to any causes of action arising under the Securities Act or the Exchange Act. Our amended and restated bylaws further provide that unless we consent in writing to the selection of an alternative forum, the United States District Court for the District of Massachusetts shall be the sole and exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act, or the Federal Forum Provision, as our headquarters are located in Boston, Massachusetts. In addition, our amended and restated bylaws provide that any person or entity purchasing or otherwise acquiring any interest in shares of our capital stock is deemed to have notice of and consented to the Delaware Forum Provision and the Federal Forum Provision; provided, however, that stockholders cannot and will not be deemed to have waived our compliance with the U.S. federal securities laws and the rules and regulations thereunder.

The Delaware Forum Provision and the Federal Forum Provision in our bylaws may impose additional litigation costs on stockholders in pursuing any such claims. Additionally, these forum selection clauses may limit our stockholders' ability to bring a claim in a judicial forum that they find favorable for disputes with us or our directors, officers or employees, which may discourage the filing of lawsuits against us and our directors, officers and employees, even though an action, if successful, might benefit our stockholders. In addition, while the Delaware Supreme Court ruled in March 2020 that federal forum selection provisions purporting to require claims under the Securities Act be brought in federal court are "facially valid" under Delaware law, there is uncertainty as to whether other courts will enforce our Federal Forum Provision. If the Federal Forum Provision is found to be unenforceable, we may incur additional costs associated with resolving such matters. The Federal Forum Provision may also impose additional litigation costs on stockholders who assert that the provision is not enforceable or invalid. The Court of Chancery of the State of Delaware and the United States District Court for the District of Massachusetts may also reach different judgments or results than would other courts, including courts where a stockholder considering an action may be located or would otherwise choose to bring the action, and such judgments may be more or less favorable to us than to our stockholders.

General Risk Factors

If we fail to offer high quality customer service, our business and reputation could suffer.

We differentiate ourselves from our competition through our commitment to an exceptional customer experience. Accordingly, high quality customer service is important for the growth of our business and any failure to maintain such standards of customer service, or a related market perception, could affect our ability to sell products to existing and prospective customers. The number of our customers has grown significantly and such growth, as well as any future growth, will put additional pressure on our customer service organization. We may be unable to hire qualified staff quickly enough or to the extent necessary to accommodate increases in demand. Providing an exceptional customer experience requires significant time and resources from our customer service team. Therefore, failure to scale our customer service organization adequately may adversely impact our business results and financial condition.

Customers utilize our service teams and online content for help with a variety of topics, including how to use our products efficiently, how to integrate our products into existing workflows, and how to resolve technical, analysis, and operational issues if and when they arise. While we have developed significant resources for remote training, including an extensive library of online videos, we may need to rely more on these resources for future customer training, or we may experience increased expenses to enhance our online and remote solutions. If our customers do not adopt these resources, we may be required to increase the staffing of our customer service team, which would increase our costs. Also, as our business scales, we may need to engage third party customer service providers, which could increase our costs and negatively impact the quality of the customer experience if such third parties are unable to provide service levels equivalent to ours.

In addition, as we continue to grow our operations and reach a global customer base, we need to be able to provide efficient customer service that meets our customers' needs globally at scale. In geographies where we sell through channel partners, we rely on those channel partners to provide customer service. If these third party channel partners do not provide a high quality customer experience, our business operations and reputation may suffer.

If we were to be sued for product liability, we could face substantial liabilities that exceed our resources.

The marketing, sale and use of our products could lead to the filing of product liability claims were someone to allege that our products identified inaccurate or incomplete information regarding the cells analyzed or otherwise failed to perform as designed. We may also be subject to liability for errors in, a misunderstanding of or inappropriate reliance upon, the information we provide in the ordinary course of our business activities. A product liability claim could result in substantial damages and be costly and time-consuming for us to defend. We maintain product liability insurance, but this insurance may not fully protect us from the financial impact of defending against product liability claims. Any product liability claim brought against us, with or without merit, could increase our insurance rates or prevent us from securing insurance coverage in the future. Additionally, any product liability lawsuit could damage our reputation, or cause current customers to terminate existing agreements and potential clinical partners to seek other partners, any of which could impact our business, financial condition, results of operations, and prospects.

Repair or replacement costs due to warranties we provide on our products and consumables could have a material adverse effect on our business, financial condition, and results of operations.

We provide a one-year assurance-type warranty on our products and consumables. Existing and future warranties place us at the risk of incurring future repair and/or replacement costs. At the time revenue is recognized, we establish an accrual for estimated warranty expenses based on historical data and trends. We exercise judgment in estimating the expected product warranty costs, using data such as the actual and projected product failure rates, estimated repair costs, freight, material, labor and overhead costs. While we believe that historical experience provides a reliable basis for estimating such warranty costs, unforeseen quality issues or component failure rates could result in future costs in excess of such estimates, or alternatively, improved quality and reliability in our products and consumables could result in actual expenses that are below those currently estimated. Substantial amounts of warranty claims could have a material adverse effect on our business, financial condition, and results of operations.

Our business has inherent operational risks that cannot be adequately covered by insurance or indemnity.

We may face unanticipated risks of legal liability for damages caused by the actual or alleged failure of our products. Our products may be deployed in response to an emergency or terrorist attack, which may increase our exposure to third party claims. While we have attempted to secure business liability insurance coverage at appropriate cost, it is impossible to insure against all risks inherent in our industry, nor can we assure you that our insurers will pay a particular claim, or that we will be able to maintain coverage at reasonable rates in the future. Our insurance policies also contain deductibles, limitations and exclusions, which increase our costs in the event of a claim. Substantial claims resulting from an accident in excess of or not otherwise covered by indemnity or insurance could harm our financial condition and operating results.

We may be subject to governmental export controls that could impair our ability to compete in international markets.

We are subject to governmental export controls that could impair our ability to compete in international markets.

Our products are or may be subject to U.S. export controls, including the International Traffic in Arms Regulations, or ITAR, the Export Administration Regulations, or EAR, the Office of Foreign Assets Control, or OFAC, and other similar laws and regulations of our products and associated technology. Obtaining export licenses can be a costly and time-consuming process, often three to six months in duration. In addition, in some cases, a license might not be granted for shipment to a particular customer in a particular country. Further, ascertaining the proper export classifications for our products is time-consuming and may lead to unpredictable results. A product's export classification may be very broad with export licenses required for only a small number of countries or very restrictive with licenses required for many countries. It is also possible that a competitor may obtain a less restrictive classification than we do for a competitive product, giving them a significant competitive advantage in international markets. Changes in our products or changes in export regulations may require reclassification and create delays in the introduction and sale of our products in international markets, prevent our customers with international operations from deploying our products throughout their global systems or, in some cases, constrain in some way the export of our products to additional countries. Any change in export regulations or related legislation, shift in approach to the enforcement or scope of existing regulations or change in the countries, persons or technologies targeted by these regulations could result in decreased use of our products by, or in our decreased ability to export or sell our products to, existing or potential customers with international operations.

We may also be required to obtain licenses from the U.S. government before we can work with foreign entities on the development of our products.

Export control laws may also inhibit the free interchange of technical discussions among our employees. Absent license authorization from the appropriate agency, some technical information related to our products and technologies cannot be discussed with or otherwise disclosed to our foreign national employees, or with our foreign channel partners. Export licensing requirements may delay product development and other engineering activities.

Violations of export control requirements are subject to criminal, civil and administrative penalties. Export control agencies are authorized to impose monetary penalties or even to suspend export privileges. While such actions have not been taken against our company to date, such risks exist in this highly regulated field, and we cannot entirely eliminate the possibility that such agency action may occur in the future.

We could be adversely affected by violations of the Foreign Corrupt Practices Act of 1977, as amended, or the FCPA, and the anti-bribery and anti-corruption laws of the United States or other countries.

We are subject to the FCPA, which among other things prohibits companies and their intermediaries from making payments in violation of law to non-U.S. government officials for the purpose of obtaining or retaining business or securing any other improper advantage. We have engaged independent channel partners in the past and currently use independent channel partners to sell our products outside of the United States. Our reliance on independent channel partners to sell our products internationally demands a high degree of vigilance in maintaining our policy against participation in corrupt activity, because these channel partners could be deemed to be our agents and we could be held responsible for their actions. Other U.S. companies in our markets have faced criminal penalties under the FCPA for allowing their agents to deviate from appropriate practices in doing business with these individuals. We are also subject to similar anti-bribery laws in the jurisdictions in which we operate, including the United Kingdom’s Bribery Act of 2010, which also prohibits commercial bribery and makes it a crime for companies to fail to prevent bribery, and the People’s Republic of China anti-bribery laws, including the PRC Anti-Unfair Competition Law amended in 2017 and the PRC Criminal Law amended in 2017. These laws are complex and far-reaching in nature, and, as a result, we cannot assure you that we would not be required in the future to alter one or more of our practices to be in compliance with these laws or any changes in these laws or the interpretation thereof. Any violations of these laws, or allegations of such violations, could disrupt our operations, involve significant management distraction, involve significant costs and expenses, including legal fees, and could result in a material adverse effect on our business, financial condition, results of operations, and prospects. We could also suffer severe penalties, including criminal and civil penalties, disgorgement, and other remedial measures.

Our employees, consultants, channel partners and commercial partners may engage in misconduct or other improper activities, including non-compliance with regulatory standards and requirements, and insider trading.

We are exposed to the risk of fraud or other misconduct by our employees, consultants, channel partners, and commercial partners. Misconduct by these parties could include intentional failures to comply with the applicable laws and regulations in the United States and abroad, report financial information or data accurately or disclose unauthorized activities to us. These laws and regulations may restrict or prohibit a wide range of pricing, discounting, and other business arrangements. Such misconduct could result in legal or regulatory sanctions and cause serious harm to our reputation. It is not always possible to identify and deter employee misconduct, and any other precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses, or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to comply with these laws or regulations. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could result in the imposition of significant civil, criminal and administrative penalties, which could have a significant impact on our business. Whether or not we are successful in defending against such actions or investigations, we could incur substantial costs, including legal fees, and divert the attention of management in defending ourselves against any of these claims or investigations.

Our business is subject to environmental regulation and regulations relating to the protection of health and safety matters that could result in compliance costs. Any violation or liability under environmental laws or health and safety regulations could harm our business.

We are subject to environmental and safety laws and regulations governing the use, storage and disposal of hazardous substances or wastes and imposing liability for the cleanup of contamination from these substances. We handle hazardous substances in our manufacturing processes and in the compilation of our chemical library, and we could be liable for any improper use, storage, or disposal of such substances. We cannot completely eliminate the risk of contamination or injury from hazardous substances or wastes, and, in the event of such an incident, we could be held liable for any damages that result. In addition, we may be required to incur significant additional costs to comply with environmental laws and regulations in the future.

The Occupational Safety and Health Act of 1970, or OSHA, establishes certain employer responsibilities, including maintenance of a workplace free of recognized hazards likely to cause death or serious injury, compliance with standards promulgated by the Occupational Safety and Health Administration and various record keeping, disclosure and procedural requirements. Various OSHA standards may apply to our operations. We have incurred, and will continue to incur, capital and operating expenditures and other costs in the ordinary course of our business in complying with OSHA and other state and local laws and regulations.

The failure to comply with these regulations could result in fines by government authorities and payment of damages to private litigants, which could harm our business.

If we fail to maintain effective internal control over financial reporting and effective disclosure controls and procedures, we may not be able to accurately report our financial results in a timely manner or prevent fraud, which may adversely affect investor confidence in our company.

We are required to comply with the SEC’s rules implementing Sections 302 and 404 of the Sarbanes-Oxley Act, which require management to certify financial and other information in our quarterly and annual reports and provide an annual management report on the effectiveness of controls over financial reporting. We are required to disclose changes made in our internal controls and procedures on a quarterly basis to provide our annual management assessment of our internal control over financial reporting pursuant to Section 404. As an emerging growth company, our independent registered public accounting firm is not required to formally attest to the effectiveness of our internal control over financial reporting pursuant to Section 404 until the later of the year following our first annual report required to be filed with the SEC or the date we are no longer an emerging growth company. At such time, our independent registered public accounting firm may issue a report that is adverse in the event it is not satisfied with the level at which our controls are documented, designed or operating.

To comply with the requirements of being a public company, we may need to undertake actions, such as implementing new internal controls and procedures and hiring additional accounting or internal audit staff. Testing and maintaining internal control can divert our management’s attention from other matters that are important to the operation of our business. In addition, when evaluating our internal control over financial reporting, we may identify material weaknesses that we may not be able to remediate in time to meet the applicable deadline imposed upon us for compliance with the requirements of Section 404. If we identify any material weaknesses in our internal controls over financial reporting, including in connection with any past or future acquisitions, or we are unable to comply with the requirements of Section 404 in a timely manner or assert that our internal control over financial reporting is effective, or if our independent registered public accounting firm is unable to express an opinion as to the effectiveness of our internal control over financial reporting once we are no longer an emerging growth company, investors may lose confidence in the accuracy and completeness of our financial reports. As a result, the market price of our common stock could be materially adversely affected.

We may need additional capital in the future, which may not be available to us, and if it is available, may dilute your ownership of our common stock and have a material adverse effect on our business, operating results and financial condition.

We may need to raise additional funds in the future, through public or private debt or equity financings, if we are presented with unforeseen circumstances or opportunities in order to, among other things:

- develop or enhance our products;
- support additional capital expenditures;
- respond to competitive pressures;
- fund operating losses in future periods; or
- take advantage of acquisition or expansion opportunities.

We, and indirectly, our stockholders, will bear the cost of issuing and servicing such securities if required to raise additional funds. Because our decision to issue debt or equity securities in any future offering will depend on market conditions and other factors beyond our control, we cannot predict or estimate the amount, timing, or nature of any future offerings. Our decision to issue debt or equity securities will also depend on contractual, legal, and other restrictions that may limit our ability to raise additional capital and may require us to obtain stockholder approval, which we may not be able to obtain.

Any required additional financing may not be available on terms acceptable to us, or at all. For instance, debt financing, if available, may involve restrictive covenants and could reduce our operational flexibility or profitability, and any new or refinanced debt may be subject to substantially higher interest rates, which could adversely affect our financial condition and impact our business. Recent quantitative tightening by the U.S. Federal Reserve, along with other central banks around the world, may further negatively affect our short-term ability or desire to incur debt. A failure to obtain additional funding could prevent us from making expenditures that may be required to grow or maintain our operations.

Current capital market conditions, including the impact of inflation, have increased borrowing rates and can be expected to significantly increase our cost of capital as compared to prior periods should we seek additional funding. Moreover, global capital markets have undergone periods of significant volatility and uncertainty in the past, and there can be no assurance that such financing alternatives will be available to us on favorable terms or at all, should we determine it necessary or advisable to seek additional capital.

If we raise additional funds by issuing equity securities, you may experience significant dilution of your ownership interest, and the newly-issued securities may have rights senior to those of the holders of our common stock. If we raise additional funds by obtaining loans from third parties, the terms of those financing arrangements may include negative covenants or other restrictions on our business that could impair our operational flexibility and would also require us to fund additional interest expense, which could harm our profitability. Holders of debt would also have rights, preferences or privileges senior to those of holders of our common stock.

We may engage in future acquisitions that could disrupt our business, cause dilution to our stockholders and harm our financial condition and operating results.

On August 3, 2022, we entered into a share purchase and transfer agreement and completed our acquisition of 100% of the registered share capital of Trace Analytics GmbH, a German limited liability company located in Braunschweig, Germany, for total potential purchase price consideration of $17.3 million, comprised of (i) a $14.4 million initial cash payment plus (ii) up to $2.0 million contingent cash consideration upon achievement of certain milestones over a twenty four month period and (iii) $0.9 million contingent pension liability holdback to be released upon discharging or transferring of such liability from Trace Analytics GmbH.

In the future, we may acquire additional companies, assets or technologies in an effort to complement our existing offerings or enhance our market position. We currently have no plans, proposals or arrangements with respect to any acquisition. We may not be able to find additional suitable acquisition candidates and we may not be able to complete additional acquisitions on favorable terms, if at all. Any prior acquisitions we have made or future acquisitions we make could subject us to a number of risks, including:

- the purchase price we pay could significantly deplete our cash reserves, impair our future operating flexibility or result in dilution to our existing stockholders;
- we may find that the acquired company, assets or technology does not further improve our financial and strategic position as planned;
- we may find that we overpaid for the company, asset or technology, or that the economic conditions underlying our acquisition have changed;
- we may have difficulty integrating the operations and personnel of the acquired company;
- we may have difficulty retaining the employees with the technical skills needed to enhance and provide services with respect to the acquired assets or technologies;
- the acquisition may be viewed negatively by customers, financial markets, or investors;
- we may have difficulty incorporating the acquired technologies or products with our existing products;
- we may encounter difficulty entering and competing in new product or geographic markets;
- we may encounter a competitive response, including price competition or intellectual property litigation;
- we may have product liability, customer liability or intellectual property liability associated with the sale of the acquired company's products;
- we may be subject to litigation by terminated employees or third parties;
- we may be subject to additional liabilities that are not possible to be known at the time of the acquisition;
- we may incur debt and restructuring charges;
- we may acquire goodwill and other intangible assets that are subject to impairment tests, which could result in future impairment charges;
- our ongoing business and management's attention may be disrupted or diverted by transition or integration issues and the complexity of managing geographically or culturally diverse enterprises; and
- our due diligence process may fail to identify significant existing issues with the target company's product quality, product architecture, financial disclosures, accounting practices, internal controls, legal contingencies, intellectual property and other matters.

Any acquisitions of businesses, technologies, products or services may not generate sufficient revenue to offset the associated costs of the acquisitions or may result in other adverse effects, which could have a material adverse effect on our business, operating results, and financial condition.

In addition, negotiations for acquisitions or investments that are not ultimately consummated could result in significant diversion of management time, as well as substantial out-of-pocket costs, any of which could have a material adverse effect on our business, operating results and financial condition.

We may face exposure to foreign currency exchange rate fluctuation.

Our results of operations and cash flows are subject to fluctuations due to changes in foreign currency exchange rates, particularly changes in the Euro, the GBP and the Chinese Yuan. We expect our non-U.S. operations to continue to grow in the near term and we are continually monitoring our foreign currency exposure to determine if we should consider a hedging program. Today, our non-U.S. contracts are denominated in either U.S. dollars or local currency, while our non-U.S. operating expenses are often denominated in local currencies. Additionally, as we expand our non-U.S. operations, a larger portion of our operating expenses may be denominated in local currencies. Therefore, increases in the value of the U.S. dollar and decreases in the value of foreign currencies could result in the dollar equivalent of our revenue being lower.

We generally recognize revenue from extended warranty and service contracts over the contract term, and changes in sales of such contracts may not be immediately reflected in our operating results.

We offer our customers the option to purchase extended warranty and service for regular system maintenance and system optimization on a fixed fee basis. We generally recognize revenue from our extended warranty and service plans ratably over the contract terms, which typically range from one additional year to four additional years and could in some cases be subject to an early termination right. A portion of the revenue we report in each quarter is derived from the recognition of deferred revenue relating to extended warranty and service contracts entered into during previous quarters. Consequently, a decline in new or renewed extended warranty and service contracts by our customers in any one quarter may not be immediately reflected in our revenue for that quarter. Such a decline, however, will negatively affect our revenue in future quarters. Accordingly, the effect of significant downturns in sales and market acceptance of our services and potential changes in our rate of renewals may not be fully reflected in our operating results until future periods.

Our ability to use our net operating losses and certain other tax attributes may be limited.

Under legislation enacted in 2017, informally titled the Tax Cuts and Jobs Act, as modified by the Coronavirus Aid, Relief, and Economic Security Act, or CARES Act, unused federal net operating losses, or NOLs, generated in tax years beginning after December 31, 2017, will not expire and may be carried forward indefinitely, and generally may not be carried back to prior taxable years, except that under the CARES Act, net operating losses generated in 2018, 2019 and 2020 may be carried back five taxable years. Additionally, the deductibility of such federal NOLs in tax years beginning after December 31, 2020, is limited to 80% of taxable income. It is uncertain if and to what extent various states will conform to the Tax Cuts and Jobs Act, or the CARES Act. In addition, under Sections 382 and 383 of the Internal Revenue Code of 1986, as amended, or the Code, if a corporation undergoes an "ownership change," generally defined as a cumulative change of more than 50 percentage points (by value) in its equity ownership by certain stockholders over a three-year period, the corporation's ability to use its pre-change NOL carryforwards and other pre-change tax attributes (such as research tax credits) to offset its post-change income or taxes may be limited. We may experience ownership changes in the future as a result of shifts in our stock ownership (some of which may be outside our control). As a result, if we earn net taxable income, our ability to use our pre-change NOL carryforwards to offset such taxable income may be subject to limitations. Similar provisions of state tax law may also apply to limit our use of accumulated state tax attributes. For example, California recently imposed limits on the usability of California state NOLs to offset taxable income in tax years beginning after 2019 and before 2023. As a result, even if we attain profitability, we may be unable to use a material portion of our NOL carryforwards and other tax attributes, which could adversely affect our future cash flows.

Changes in tax laws or regulations that are applied adversely to us or our customers may have a material adverse effect on our business, cash flow, financial condition or results of operations.

New income, sales, use or other tax laws, statutes, rules, regulations or ordinances could be enacted at any time, which could affect the tax treatment of our domestic and foreign earnings. Any new taxes could adversely affect our domestic and international business operations and our business and financial performance. Further, existing tax laws, statutes, rules, regulations or ordinances could be interpreted, changed, modified or applied adversely to us. For example, the Tax Cuts and Jobs Act significantly revised the Code. Future guidance from the Internal Revenue Service and other tax authorities with respect to the Tax Cuts and Jobs Act may affect us, and certain aspects of the Tax Cuts and Jobs Act could be repealed or modified in future legislation. For example, the CARES Act modified certain provisions of the Tax Cuts and Jobs Act. In addition, it is uncertain if and to what extent various states will conform to the Tax Cuts and Jobs Act, the CARES Act, or any newly enacted federal tax legislation. Changes in corporate tax rates, the realization of net deferred tax assets relating to our operations, the taxation of foreign earnings, and the deductibility of expenses under the Tax Cuts and Jobs Act or future tax reform legislation could have a material impact on the value of our deferred tax assets, could result in significant one-time charges, and could increase our future U.S. tax expense.

We are subject to risks related to taxation in the United States.

Significant judgments based on interpretations of existing tax laws or regulations are required in determining our provision for income taxes. Our effective income tax rate could be adversely affected by various factors, including, but not limited to, changes in the mix of earnings in tax jurisdictions with different statutory tax rates, changes in the valuation of deferred tax assets and liabilities, changes in existing tax policies, laws, regulations or rates, changes in the level of non-deductible expenses (including share-based compensation), changes in the location of our operations, changes in our future levels of research and development spending, mergers and acquisitions or the result of examinations by various tax authorities. Although we believe our tax estimates are reasonable, if the United States

Internal Revenue Service or other taxing authority disagrees with the positions taken on our tax returns, we could have additional tax liability, including interest and penalties. If material, payment of such additional amounts upon final adjudication of any disputes could have a material impact on our results of operations and financial position.

Future interpretations of existing accounting standards could adversely affect our operating results.

Generally accepted accounting principles in the United States of America ("GAAP"), are subject to interpretation by the Financial Accounting Standards Board, or FASB, the American Institute of Certified Public Accountants, or AICPA, the SEC and various other bodies formed to promulgate and interpret appropriate accounting principles. A change in these principles or interpretations could have a significant effect on our reported financial results, and they could affect the reporting of transactions completed before the announcement of a change.

Item 1B. Unresolved Staff Comments.

None.

Item 1C. Cybersecurity.

Governance Related to Cybersecurity Risks

Our board of directors, as a whole and through its committees, holds overall oversight responsibility for our risk management processes, including in relation to risks from cybersecurity threats. Our board of directors exercises its oversight function through the audit committee, which oversees the management of risk exposure across various areas, including cybersecurity risks, in accordance with its charter. The audit committee receives quarterly reports from our Director of Information Technology on the status of our cybersecurity program, including measures implemented to monitor and address cybersecurity risks and threats, as appropriate. The Chair of the audit committee provides a quarterly report to the board of directors, which includes any key updates on cybersecurity matters, as applicable.

Our Director of Information Technology is responsible for the day-to-day administration and management of our cybersecurity program, under the direct supervision of our Chief Product Officer (formerly our Chief Technology Officer). Currently, the Director of Information Technology role is held by an individual who has approximately 19 years of information technology experience and 10 years of cybersecurity experience. We also work with external security service providers to support our security monitoring and threat detection capabilities and have implemented a process to report relevant findings to the Director of Information Technology and up to the Chief Product Officer and other members of executive management, where appropriate.

Cybersecurity Risk Management and Strategy

We maintain a cybersecurity program, which is informed by industry standards, that includes processes for identification, assessment, and management of cybersecurity risks. We conduct periodic risk assessments, including with support from external vendors, to assess our cyber program, identify potential areas of enhancement, and develop strategies for the mitigation of cyber risks. We also conduct regular security testing and have established a vulnerability management process, supported by security testing, that is designed to address the treatment of identified security risks based on severity.

As part of our cybersecurity risk management program, we have a process to assess and review the cybersecurity practices of major third-party vendors and service providers that access, process, collect, share, create, store, transmit or destroy our information or have access to our systems, including through review of applicable certifications, and security reports, and contractual requirements, as appropriate.

We have implemented a process to periodically conduct security awareness training for employees and simulated phishing campaigns. We also conduct specific training and tabletop exercises for key personnel involved in cybersecurity risk management.

Our Director of Information Technology and his team are informed about and monitor the prevention, detection, mitigation, and remediation of cybersecurity risks through various means, including by leveraging a managed security service provider and other third-party security software and technology services. In addition, we use various internal and external processes and technologies, including third-party security solutions, monitoring, and alerting tools and resources, designed to monitor, identify, and address risks from cybersecurity threats. We also have implemented processes and technologies for network monitoring and data loss prevention procedures.

We have adopted an incident response plan to guide us in responding to cybersecurity incidents and maintain processes to inform and update executive management and the audit committee about security incidents that may pose a significant risk for our business, as applicable.

We have not identified any cybersecurity incidents or threats that have materially affected us or are reasonably likely to materially affect us, including our business strategy, results of operations or financial condition; however, like other companies in our industry, we and our third-party vendors may, from time to time, experience threats and security incidents relating to our and our third-party vendors' information systems. See Item 1A "Risk Factors" in this Annual Report on Form 10 K for more information.

Item 2. Properties.

Our corporate headquarter is located in Boston, Massachusetts, where we lease and occupy approximately 37,500 square feet of space for office, research and development laboratories, assembly, high tech manufacturing and light manufacturing uses. The lease for this facility expires on October 7, 2025. Our Europe headquarter is located in Braunschweig, Germany, where we lease and occupy approximately 7,500 square feet of space for office, research and development laboratories, assembly, high tech manufacturing and light manufacturing uses. The lease for this facility expires on January 5, 2028. We have an approximately 13,300 square foot facility in Morrisville, North Carolina to expand the Company's research and development activities focused on its desktop offerings, and to serve as an additional manufacturing site for the Company as needed. The lease for this facility expires in July 2030. We believe that our current facilities meet our anticipated needs for the foreseeable future.

Item 3. Legal Proceedings.

We are not currently subject to any material legal proceedings. From time to time, we may be involved in legal proceedings or investigations, which could have an adverse impact on our reputation, business and financial condition and divert the attention of our management from the operation of our business.

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.

Certain Information Regarding the Trading of Our Common Stock

Our common stock trades under the symbol "MASS" on the Nasdaq Global Market. Trading of our common stock commenced on December 18, 2020 in connection with our initial public offering, or IPO. Prior to that time, there was no established public market for our common stock.

Holders of Our Common Stock

As of March 5, 2024, there were approximately 22 holders of record of our common stock. The actual number of holders of our common stock is greater than this number of record holders and includes stockholders who are beneficial owners, but whose shares are held in "street name" by brokers or held by other "nominees." The number of holders of record also does not include stockholders whose shares may be held in trust by other entities.

Securities Authorized for Issuance Under Equity Compensation Plans

Information about our equity compensation plans will be included in our definitive proxy statement to be filed with the SEC with respect to our 2024 Annual Meeting of Stockholders and is incorporated herein by reference.

Recent Sales of Unregistered Equity Securities

We did not issue or grant any equity securities during the period covered by this Annual Report on Form 10-K that were not registered under the Securities Act.

Issuer Purchases of Equity Securities

We did not purchase any of our registered equity securities during the period covered by this Annual Report on Form 10-K.

Dividends

We have never declared or paid any cash dividends on our common stock or any other securities. We anticipate that we will retain all available funds and any future earnings, if any, for use in the operation of our business and do not anticipate paying cash dividends in the foreseeable future. Our ability to pay cash dividends is currently restricted by the terms of our Amended 2022 Revolver with Silicon Valley Bank. In addition, the terms of any future debt instruments may also materially restrict our ability to pay dividends on our common stock. Payment of future cash dividends, if any, will be at the discretion of the board of directors after taking into account various factors, including our financial condition, operating results, current and anticipated cash needs, the requirements of current or then-existing debt instruments and other factors the board of directors deems relevant.

Item 6. Reserved.

Not applicable.

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations.

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with our consolidated financial statements and related notes appearing in Part II, Item 8 of this Annual Report on Form 10-K. Some of the information contained in this discussion and analysis or set forth elsewhere in this Annual Report on Form 10-K, including information with respect to our plans and strategy for our business, includes forward-looking statements that involve risks and uncertainties. As a result of many factors, including those factors set forth in the "Risk Factors" section of this Annual Report on Form 10-K, our actual results could differ materially from the results described in, or implied by, the forward-looking statements contained in the following discussion and analysis.

Overview

We have developed an innovative suite of purpose-built handheld and desktop devices for point-of-need chemical and biochemical analysis. Leveraging our proprietary mass spectrometry, or Mass Spec, microfluidics, and analytics and machine learning technologies, we make devices that are significantly smaller and more accessible than conventional laboratory instruments. Our devices are used at the point-of-need to interrogate unknown and invisible materials and provide quick, actionable answers to directly address some of the most critical problems in life sciences research, bioprocessing, pharma/biopharma, forensics and adjacent markets. The term "products" as used in this "Management's Discussion and Analysis of Financial Condition and Results of Operations" refers to the Maverick, MX908, Rebel, ZipChip Interface, and Maven and related sampling devices.

We create simplified measurement devices that our customers can use as accurate tools where and when their work needs to be done, rather than overly complex and centralized analytical instrumentation. We believe the insights and answers our devices provide will accelerate workflows, reduce costs, and offer transformational opportunities for our end users.

Front-line workers rely upon our handheld devices to combat the opioid crisis and detect counterfeit pharmaceuticals and illicit materials in the air or on surfaces at levels 1,000 times below their lethal dose. Our desktop devices are accelerating development and production of biotherapeutics by identifying and quantifying extracellular species in bioprocessing critical to cell health and productivity. They sit alongside or are directly connected to bioreactors and fermenters producing drug candidates, functional proteins, cell and gene therapies, and synthetic biology derived products. We believe the insights and answers our devices provide accelerate workflows, reduce costs, and offer transformational opportunities for our end users.

On August 3, 2022, we completed our acquisition of 100% of the registered share capital of Trace Analytics GmbH, renamed 908 Devices GmbH, pursuant to a share purchase and transfer agreement, for a total purchase price consideration of $17.3 million, comprised of (i) a $14.4 million initial cash payment, (ii) up to $2.0 million contingent cash consideration upon achievement of certain milestones over a twenty-four-month period and (iii) $0.9 million contingent pension liability holdback to be released upon discharging or transferring of such liability from 908 Devices GmbH. 908 Devices GmbH is a leading provider of online analysis systems for biotech applications in research, development and production. 908 Devices GmbH's products are used for monitoring and control of complex processes in industrial pharmaceutical productions under continuous measurement conditions. We expect to integrate acquired sampling technology within future product offerings.

Since our inception, we have incurred significant operating losses. Our ability to generate revenue sufficient to achieve profitability will depend on the successful further development and commercialization of our products. We generated revenue of $50.2 million and $46.9 million for the years ended December 31, 2023 and 2022, respectively, and incurred net losses of $36.4 million and $33.6 million for those same years. As of December 31, 2023, we had an accumulated deficit of $170.6 million. We expect to continue to incur net losses as we focus on growing commercial sales of our products in both the United States and international markets, including growing our sales teams, scaling our manufacturing operations, continuing research and development efforts to develop new products and further enhance our existing products. Further, we expect to incur additional costs associated with operating as a public company. As a result, we may need additional funding for expenses related to our operating activities, including selling, general and administrative expenses and research and development expenses.

Because of the numerous risks and uncertainties associated with product development and commercialization, we are unable to accurately predict the timing or amount of increased expenses or when, or if, we will be able to achieve or maintain profitability. Until such time, if ever, as we can generate substantial revenue sufficient to achieve profitability, we expect to finance our operations through a combination of equity offerings, debt financings and strategic alliances. We may be unable to raise additional funds or enter into such other agreements or arrangements when needed on favorable terms, or at all. If we are unable to raise capital or enter into such agreements as, and when, needed, we may have to significantly delay, scale back or discontinue the further development and commercialization efforts of one or more of our products, or may be forced to reduce or terminate our operations.

We believe that our existing cash and cash equivalents, will enable us to fund our operating expenses, capital expenditure requirements and debt service payments for at least the next 12 months. We have based this estimate on assumptions that may prove to be wrong, and we could exhaust our available capital resources sooner than we expect. See "*Liquidity and Capital Resources*."

Global Economic Conditions

We are continuing to closely monitor macroeconomic factors, including, but not limited to, continued inflationary and interest rate pressures, challenging capital market conditions and the limited availability of financing alternatives, which may have an impact on our business, results of operations and financial results.

We are closely monitoring continued economic uncertainty in the United States and abroad, including volatility in the global markets and the rise and fluctuations in inflation and interest rates. These developments and the potential worsening of other macro-economic conditions present risks for us, and our suppliers and customers. For example, general inflation in the United States, EMEA and other geographies has recently been at levels not experienced in recent decades, which has led to higher prices for our raw materials and other inputs, as well as higher salaries and travel expenses, which could continue to negatively impact our business by increasing our cost of sales and operating expenses. General inflation could also negatively impact our business if it leads to spending pressure and decreased available capital for our customers to deploy to purchase our products and services.

In addition, the United States Federal Reserve has raised, and may again raise, interest rates in response to concerns about inflation. Inflation, together with increased interest rates, may cause our customers to reduce or delay orders for our goods and services thereby causing a decrease in or change in timing of sales of our products and services. The impact of future inflation and interest rate fluctuations on the results of our operations cannot be accurately predicted.

Challenging capital market conditions and the limited availability of financing alternatives , together with inflationary and interest rates pressures, may contribute to more cautious spending by our customers. Certain of our pharmaceutical and biotechnology customers, including bioprocessing customers, may evaluate their inventory levels, cash on hand and path to profitability, and institute cost controls and take other actions to reduce or delay purchases of our products and services. We cannot accurately predict the full impact of current macroeconomic factors on the budgets and capital expenditures of our customers, or the timing of the normalization of customer purchasing patterns.

We are closely monitoring the ongoing military conflict between Russia and Ukraine, and the ongoing hostilities in Israel and the Gaza Strip. Although we do not directly source any material products or supplies from Russia, Ukraine, Israel or the Gaza Strip, our customers in Europe and the Middle East could be impacted by extended conflicts or an escalation of these conflicts into neighboring countries.

While it is difficult to predict all of the impacts these global economic events and continued inflationary and interest rate pressures will have on our business and to predict the effects of these factors on our customers' spending in the near term, we believe the long-term opportunity that we see for our products and services remain unchanged.

Additional information regarding these global impacts on our business is set forth within this Part I, Item 1A, Risk Factors of this Annual Report on Form 10-K.

Factors affecting our performance

We believe that our financial performance has been and in the foreseeable future will continue to be primarily driven by the following factors. While each of these factors presents significant opportunities for our business, they also pose important challenges that we must successfully address in order to sustain our growth and improve our results of operations. Our ability to successfully address the factors below is subject to various risks and uncertainties, including those described under the heading "*Risk Factors.*"

Device sales

Our financial performance has largely been driven by, and in the future will continue to be impacted by, the rate of sales of our handheld and desktop devices. Management focuses on device sales as an indicator of current business success and a leading indicator of likely future recurring revenue from consumables and services. We expect our device sales to continue to grow as we increase penetration in our existing markets and expand into, or offer new features and solutions that appeal to, new markets.

We plan to grow our device sales in the coming years through multiple strategies including expanding our sales efforts domestically and globally and continuing to enhance the underlying technology and applications for life sciences research related to our Maverick, Rebel, ZipChip Interface, and Maven and related sampling devices. We regularly solicit feedback from our customers and focus our research and development efforts on enhancing our devices and enabling our customers to use additional applications that address their needs, which we believe in turn helps to drive additional sales of our devices and consumables.

Our sales process varies considerably depending upon the type of customer to whom we are selling. Our handheld device orders relate to our MX908 as well as components for the Aerosol and Vapor Chemical Agent Detectors ("AVCAD") sold to our channel partner. Historically, our handheld devices have been used by state, federal and foreign governments and governmental agencies. Our sales process with government customers is often long and involves multiple levels of approvals, testing and, in some cases, trials. Device orders from a government customer are typically large orders and can be impacted by the timing of their capital budgets. As a result, the revenue for our handheld devices can vary significantly from period-to-period and has been and may continue to be concentrated in a small number of customers in any given period.

Our desktop devices are typically used by the pharmaceutical, biotechnology and academia markets. Our sales cycles within these markets tend to vary based on the size of the customer and the number of devices they purchase. Our shortest sales cycles are typically for small laboratories and individual researchers where, in some cases, we receive purchase orders from these customers within three months. Our sales process with other institutions can be longer with most customers submitting purchase orders within six to twelve months. Given the variability of our sales cycle, we have in the past experienced, and likely will in the future experience, fluctuations in our desktop device sales on a period-to-period basis.

Recurring revenue

We regularly assess trends relating to recurring revenue which includes consumables and services based on our product offerings, our customer base and our understanding of how our customers use our products. Recurring revenue was 33% and 35% of total product and service revenue for the years ended December 31, 2023 and 2022, respectively. Our recurring revenue as a percentage of total product and service revenue will vary based upon new device placements in the period. As our device installed base expands, recurring revenue on an absolute basis is expected to increase and over time should be an increasingly important contributor to our revenue.

Revenue from the sales of consumables will vary by type of device. We expect that recurring revenue as a percentage of the original device price to be higher for our desktop devices (Rebel, ZipChip Interface, Maverick, Maven and related sampling devices) than for our handheld device (MX908). While we sell single-use swab samplers for MX908 to be used in liquid and solid materials analysis, there are a number of other applications that the MX908 can be used for that do not require consumables. Rebel and ZipChip Interface require consumables kits for all areas of operations. Currently, Rebel customers, who are actively utilizing the device, are consuming on average approximately half a 200-sample kit per month; however, Rebel is a relatively new product and purchasing patterns related to our consumables kits are evolving. We expect that the number of kits sold per month will vary over the short term. In time, we expect Rebel consumables kits sales to become more consistent as our installed base grows and our customers establish usage patterns. At maximum potential capacity, with continuous operation, the Rebel can consume approximately one 200-sample kit per day. Maverick devices require consumables, probes and standards for all areas of operations. Maven and related sampling devices require consumable sets of buffers, probes and biosensors for all areas of operations.

Revenue mix and gross margin

Our revenue is derived from sales of our devices, consumables and services. There will be fluctuations in mix between devices and consumables from period-to-period. Over time, as our device installed base grows and we see adoption of Rebel, we expect consumables revenue to constitute a larger percentage of product and service revenue. However, the percentage will be subject to fluctuation based upon our handheld sales in a period. In addition, our selling price and, consequently, our margins, are higher for those devices and consumables that we sell directly to customers as compared to those that we sell through channel partners. While we expect the mix of direct sales as compared to sales through channel partners to remain relatively constant in the near term, we are currently evaluating increasing our direct sales capabilities in certain geographies.

Future device and consumable selling prices and gross margins may fluctuate due to a variety of factors, including the introduction by others of competing products and solutions. We aim to mitigate downward pressure on our average selling prices by increasing the value proposition offered by our devices and consumables, primarily by expanding the applications for our devices and increasing the quantity and quality of data that can be obtained using our consumables.

Product adoption

We monitor our customers' stage of adoption of our products to provide insight into the timing of future potential sales and to help us formulate financial projections. Typical stages of adoption include testing, trials, pilot and deployment as follows:

- Testing—a customer is actively engaged with internal or external testing of our products. This may include an onsite or virtual demonstration with a salesperson, a customer submitting samples for testing in one of our facilities or testing by a third party.

- Trials—a customer has committed to a trial of one of our products, which may include a defined period to assess functionality of the device in their operational environment (in the field or onsite within the customer's facility).

- Pilot—a customer commits to the purchase of an initial quantity of devices to deploy in their operational environment to assess a broader opportunity that may grow to tens or hundreds of devices.

- Deployment—a customer has completed testing, a trial, and/or a pilot and intends to roll out the technology across their enterprise (either at a site or throughout the entire organization).

Key Business Metrics

We regularly review the number of product placements and cumulative product placement as key metrics to evaluate our business, measure our performance, identify trends affecting our business, formulate financial projections, and make strategic decisions. We believe that these metrics are representative of our current business; however, we anticipate these will change or may be substituted for additional or different metrics as our business grows.

During the years ended December 31, 2023 and 2022, our product placements (units recognized as revenue) were as follows:

	Year Ended December 31,	
	2023	2022
Product s:		
Handheld	402	370
Desktop	66	80

The number of product placements vary considerably from period-to-period due to the type and size of our customers and concentrations among larger government customers as described above. We expect continued fluctuations in our period-to-period number of product placements.

Our cumulative product placements consist of the following number of devices:

	December 31,	
	2023	2022
Cumulative Product Placements:		
Handheld	2,422	2,020
Desktop	431	365

Components of Our Results of Operations

Revenue

Product and Service Revenue

We generate product and service revenue from the sale of our devices and recurring revenue from the sale of consumables and services. Device sales accounted for 67% and 65% of our product and service revenue for the years ended December 31, 2023 and 2022, respectively. Consumables and service revenue accounted for 33% and 35% of our product and service revenue for the years ended December 31, 2023 and 2022, respectively.

Our current device offerings include:
- Handheld devices—MX908 and AVCAD components; and
- Desktop devices—Rebel, ZipChip Interface, Maverick, and Maven and related sampling devices.

We sell our devices directly to customers and through channel partners. Each of our device sales drives various streams of recurring revenue comprised of consumable product sales and service revenue.

Our consumables consist of:
- MX908—accessories and swabs;
- Rebel—consumables kit with a microfluidic chip and standards;
- ZipChip Interface—microfluidic chip, reagent and assay kits;
- Maverick—calibration kits and accessories; and
- Maven and related sampling devices—probes, tubing sets and accessories.

Rebel and ZipChip Interface consumables can only be used with our devices and there are no alternative after-market options that can be used as a substitute. Each chip is used for a defined number of samples (or runs). We recognize revenue from the sale of consumables as the consumable products are shipped.

We also offer our customers extended warranty and service plans. Our extended warranty and service plans are offered for periods beyond the standard one-year warranty that all of our customers receive. These extended warranty and service plans generally have fixed fees and terms ranging from one additional year to four additional years. We recognize revenue from the sale of extended warranty and service plans over the respective coverage period, which approximates the service effort provided by us.

We expect consumables and service revenue to increase in future periods as our installed base grows and we are able to generate recurring sales.

Contract revenue

Contract agreements are arrangements whereby we provide engineering services for the development of our technology platform for specific programs or new and expanding applications of our technologies for future commercial endeavors. Our contract agreements are with the U.S. government and commercial entities (who may be contracting with the government). Contracts typically include compensation for labor effort and materials incurred related to the deliverables under the contract. Our license and contract revenue was primarily related to one customer during the years ended December 31, 2023 and 2022.

During the years ended December 31, 2023 and 2022, our revenue was comprised of revenue from the following sources (in thousands):

	Year Ended December 31,	
	2023	2022
Product and service revenue:		
Device sales revenue	$ 33,379	$ 28,757
Consumables and service revenue	16,480	15,718
Total product and service revenue	49,859	44,475
Contract revenue	370	2,377
Total revenue	$ 50,229	$ 46,852

Our product and service revenue is comprised of sales of our handheld and desktop devices and related consumables and service contracts to end-users in the government, pharmaceuticals/biotechnology and academia markets as follows (in thousands):

	Year Ended December 31,	
	2023	2022
Government	$ 37,862	$ 29,964
Pharmaceutical/Biotechnology	11,340	14,241
Academia and other	657	270
Total product and service revenue	$ 49,859	$ 44,475

We sell our products primarily in the United States; however, we are continuing to expand our global sales efforts as we see traction in our products and assess global market needs. The majority of our international sales are through channel partners and to a lesser extent, starting in 2023, through our 908 Devices GmbH subsidiary for our desktop sales in Europe and the United Kingdom.

Cost of Revenue, Gross Profit and Gross Margin

Product cost of revenue primarily consists of costs for raw material parts and associated freight, shipping and handling costs, royalties, contract manufacturer costs, salaries and other personnel costs, overhead, amortization of intangibles and other direct costs related to those sales recognized as product revenue in the period.

Cost of revenue for services primarily consists of salaries and other personnel costs, travel related to services provided, facility costs associated with training, warranties and other costs of servicing equipment on a return-to-factory basis and at customer sites. Contract cost of revenue primarily consists of salaries and other personnel costs, materials, travel and other direct costs related to the revenue recognized in the period. The contract cost of revenue will vary based upon the type of contract, including whether it is primarily for development services or for both materials and development services.

We expect that our cost of revenue will increase or decrease to the extent that our revenue increases and decreases and depending on how many contracts we have ongoing at any given point in time and the stage of those contracts.

Gross profit is calculated as revenue less cost of revenue. Gross profit margin is gross profit expressed as a percentage of revenue. Our gross profit in future periods will depend on a variety of factors, including: market conditions that may impact our pricing, sales mix among devices, sales mix changes among consumables, excess and obsolete inventories, our cost structure for manufacturing operations relative to volume, and product warranty obligations. Our gross profit in future periods will vary based upon our channel mix and may decrease based upon our distribution channels and the potential to establish original equipment manufacturing channels for certain components of our technology platform which would have a lower gross margin.

We expect that our gross profit margin for product and service will increase over the long term as our sales and production volumes increase and our cost per unit decreases due to efficiencies of scale. We intend to use our design, engineering and manufacturing capabilities to further advance and improve the efficiency of our manufacturing, which we believe will reduce costs and increase our gross margin. We expect that our gross profit margin for contract will remain consistent for our contracts that are cost reimbursement contracts.

Operating Expenses

Research and development expenses

Research and development expenses consist primarily of costs incurred for our research activities, product development, hardware and software engineering and consultant services and other costs associated with our technology platform and products, which include:

- employee-related expenses, including salaries, related benefits and stock-based compensation expense for employees engaged in research and hardware and software development functions;
- the cost of maintaining and improving our product designs, including third party development costs for new products and materials for prototypes;
- research materials and supplies; and
- facilities, depreciation and other expenses, which include direct and allocated expenses for rent and maintenance of facilities and insurance.

We believe that our continued investment in research and development is essential to our long-term competitive position and expect these expenses to increase in future periods.

Selling, general and administrative expenses

Selling, general and administrative expenses consist primarily of salaries and other personnel costs, and stock-based compensation for our sales and marketing, finance, legal, human resources and general management, as well as professional services, such as legal, audit and accounting services. We expect selling, general and administrative expenses, amortization of customer relationship and tradename intangibles to increase in future periods as the number of sales, sales application specialists and marketing and administrative personnel grows and we continue to introduce new products, invest in demonstration equipment, broaden our customer base and grow our business. We also anticipate that we will incur increased accounting, audit, legal, regulatory, compliance and director and officer insurance costs as well as investor and public relations expenses associated with operating as a public company.

Other Income (Expense)

Interest income

Interest income consists of interest earned on our invested cash balances.

Interest expense

Interest expense consists of interest expense associated with outstanding borrowings under our loan and security agreements and the amortization of deferred financing costs and debt discounts associated with such arrangements.

Other income (expense), net

Other income (expense), net consists of interest income from our cash and cash equivalents, miscellaneous other income and expense unrelated to our core operations.

Provision for Income Taxes

We have not recorded any U.S. federal or state income tax benefits for the net operating losses we have incurred in each year or for the research and development tax credits we generated in the United States and have recorded a full valuation allowance against our net deferred assets, as we believe, based upon the weight of available evidence, that it is more likely than not that all of our net operating loss carryforwards and tax credits will not be realized.

We recognized an income tax benefit of $0.2 million and $0 during the years ended December 31, 2023 and 2022, respectively. The income tax benefit recognized during the year ended December 31, 2023 primarily resulted from a reduction in the deferred tax liabilities recorded as part of our acquisition of 908 Devices GmbH.

As of December 31, 2023, we had gross federal and state operating loss carryforwards of $108.2 million and $77.4 million, respectively, which may be available to offset future taxable income and begin to expire in 2032 and 2025, respectively, of which $73.8 million of federal gross operating losses do not expire. As of December 31, 2023, we also had U.S. federal and state research and development tax credit carryforwards of $7.2 million and $3.4 million, respectively, which may be available to offset future tax liabilities and begin to expire in 2032 and 2030, respectively.

Results of Operations

The results of operations presented below should be reviewed in conjunction with the consolidated financial statements and notes included elsewhere in this Annual Report on Form 10-K. The following tables set forth our results of operations for the periods presented:

Comparison of the Years ended December 31, 2023 and 2022

The following table summarizes our results of operations for the years ended December 31, 2023 and 2022:

	Year Ended December 31, 2023	Year Ended December 31, 2022	Change
	(in thousands)		
Revenue:			
Product revenue	$ 40,214	$ 37,499	$ 2,715
Service revenue	9,645	6,976	2,669
Contract revenue	370	2,377	(2,007)
Total revenue	50,229	46,852	3,377
Cost of revenue:			
Product cost of revenue	18,428	16,010	2,418
Service cost of revenue	6,380	4,420	1,960
Contract cost of revenue	99	399	(300)
Total cost of revenue	24,907	20,829	4,078
Gross profit	25,322	26,023	(701)
Operating expenses:			
Research and development	21,904	17,526	4,378
Selling, general and administrative	46,176	43,879	2,297
Total operating expenses	68,080	61,405	6,675
Loss from operations	(42,758)	(35,382)	(7,376)
Other income, net:			
Interest income	6,480	2,031	4,449
Interest expense	(201)	(129)	(72)
Other expense, net	(131)	(83)	(48)
Total other income, net	6,148	1,819	4,329
Loss from operations before income taxes	(36,610)	(33,563)	(3,047)
Benefit for income taxes	211	—	211
Net loss	$ (36,399)	$ (33,563)	$ (2,836)

Revenue, Cost of revenue and Gross profit

Product

Our product revenue is comprised of revenue from sales of devices and related accessories and consumables and service as follows:

	Year Ended December 31, 2023	Year Ended December 31, 2022	Change Amount	Change %
	(dollars in thousands)			
Product revenue	$ 40,214	$ 37,499	$ 2,715	7 %
Product cost of revenue	18,428	16,010	2,418	15 %
Gross profit	$ 21,786	$ 21,489	$ 297	1 %
Gross profit margin	54 %	57 %	(3)%	

Product revenue increased by $2.7 million, or 7%, for the year ended December 31, 2023, compared to the year ended December 31, 2022. The increase was primarily related to an increase in handheld sales of $5.8 million, which was due to an increase of $7.9 million in handheld device sales, primarily related to a 32 unit increase in MX908 device placements and shipments of AVCAD components under our subcontract agreement with a commercial entity that holds a U.S. government prime contract, offset in part by a $2.2 million decrease in consumables and accessories, primarily related to Aero module shipments, an accessory for the MX908, to the US Army in the year ended December 31, 2022 that were not repeated in 2023. The increase in handheld revenue was offset in part by a decrease of $4.1 million in desktop sales for the year ended December 31, 2023 compared to the year ended December 31, 2022, which was primarily related to a decrease of $3.4 million in desktop device revenue, offset in part by an increase in desktop consumables and accessories for the year ended December 31, 2023. The decrease in device revenue was driven by a 35 unit decrease in Rebel device placements and an 11 unit decrease in ZipChip Interface placements compared to 2022, offset in part by new product shipments for Maven and Maverick.

Product cost of revenue increased by $2.4 million, or 15%, for the year ended December 31, 2023, compared to the year ended December 31, 2022. The increase in product cost of revenue was primarily related to additional volume and material costs for product shipped of approximately $0.9 million, as well as $0.5 million in higher materials and supplies consumed in warranty obligations related primarily to part replacements, $0.3 million in intangibles amortization, and $0.3 million in higher provisions for excess and obsolete materials.

Product gross profit increased by $0.3 million, or 1%, and gross profit margin decreased by 3% for the year ended December 31, 2023, as compared to the year ended December 31, 2022. The increase in product gross profit was, primarily due to the increased volume in sales. The decrease in product gross profit margin percentage of 3% is driven primarily by three factors. These factors, each of which resulted in an approximate 1% decrease in product gross profit margin, were: an increase in materials and supplies used in warranty obligations, an increase in the provision for excess and obsolete materials, and higher non-cash charges for intangible amortization.

Service

Our service revenue is comprised of revenue from sales of extended warranty and service plans and customer training as follows:

	Year Ended December 31,		Change	
	2023	2022	Amount	%
	(dollars in thousands)			
Service revenue	$ 9,645	$ 6,976	$ 2,669	38 %
Service cost of revenue	6,380	4,420	1,960	44 %
Gross profit	$ 3,265	$ 2,556	$ 709	28 %
Gross profit margin	34 %	37 %	(3)%	

Service revenue increased by $2.7 million, or 38%, for the year ended December 31, 2023, compared to the year ended December 31, 2022. The increase was primarily related to an increase in handheld service revenues related to extended service contracts for MX908 devices and to a lesser extent increases in handheld training revenue and revenue from desktop service arrangements.

Service cost of revenue increased by $2.0 million, or 44%, for the year ended December 31, 2023, compared to the year ended December 31, 2022. The increase in service cost of revenue was primarily related to a $0.5 million increase in fees paid to contract trainers used to support the higher handheld training revenue, a $0.4 million increase in materials related to servicing the installed base, a $0.2 million increase in stock based compensation and an increase in personnel costs to support the increase in service revenue.

Service gross profit increased by $0.7 million, or 28%, and gross profit margin decreased by 3% for the year ended December 31, 2023, as compared to the year ended December 31, 2022, primarily due to the increase in materials shipped under service arrangements and an increase in the use of independent contract trainers versus internal resources to meet the increased demand for handheld training.

Contract

	Year Ended December 31,		Change	
	2023	2022	Amount	%
	(dollars in thousands)			
Contract revenue	$ 370	$ 2,377	$ (2,007)	(84)%
Contract cost of revenue	99	399	(300)	(75)%
Gross profit	$ 271	$ 1,978	$ (1,707)	(86)%
Gross profit margin	73 %	83 %	(10)%	

Contract revenue decreased by $2.0 million, or 84%, for the year ended December 31, 2023, compared to the year ended December 31, 2022. The majority of contract revenue, for the years ended December 31, 2023 and 2022, was related to activities under our subcontract agreement with a commercial entity that holds a U.S. government prime contract, which was concluded in the second quarter of 2023 and represented a decrease of $1.3 million in contract revenue for the year ended December 31, 2023. The decrease in contract revenue for the year ended December 31, 2023 is also related to the completion of work in 2022 related to a prime contract directly with the U.S. government and a subcontract agreement with a commercial entity that holds a U.K. government prime contract.

Contract cost of revenue decreased by $0.3 million, or 75% for the year ended December 31, 2023, compared to the year ended December 31, 2022. The decrease was primarily due to lower material costs with the subcontract agreement with a commercial entity that holds a U.S. government prime contract compared to the contract deliverables for the prime contract held directly with the U.S. government and a subcontract agreement with a commercial entity that holds a U.K. government prime contract for the year ended December 31, 2022.

Contract gross profit decreased by $1.7 million and gross profit margin decreased by 10% for the year ended December 31, 2023 as compared to the year ended December 31, 2022, primarily due to the mix in contract deliverables, including a mix of materials with lower costs during the year ended December 31, 2022, which resulted in a higher gross profit margin for that period, as compared to the year ended December 31, 2023.

Operating Expenses

Research and development

	Year Ended December 31,		Change	
	2023	2022	Amount	%
	(dollars in thousands)			
Research and development expenses	$ 21,904	$ 17,526	$ 4,378	25 %
Percentage of total revenue	44 %	37 %		

Our research and development expenses were $21.9 million for the year ended December 31, 2023, an increase of $4.4 million from research and development expenses of $17.5 million for the year ended December 31, 2022. The increase was due primarily to a $2.2 million increase in salaries and related costs from growing our headcount in 2023, a $1.0 million increase in stock-based compensation, and a $1.0 million increase in occupancy related expenses, mainly related to our new facility in North Carolina.

Selling, general and administrative expenses

	Year Ended December 31,		Change	
	2023	2022	Amount	%
	(dollars in thousands)			
Selling, general and administrative expenses	$ 46,176	$ 43,879	$ 2,297	5 %
Percentage of total revenue	93 %	94 %		

Our selling, general and administrative expenses were $46.2 million for the year ended December 31, 2023, an increase of $2.3 million from selling, general and administrative expenses of $43.9 million for the year ended December 31, 2022. The increase was due primarily to a $1.1 million increase in salaries and related costs from growing our headcount in 2023, a $1.3 million increase in stock-based compensation, a $1.1 million increase in commissions earned, primarily related to handheld device sales, a $0.4 million increase related to software subscriptions and dues, a $0.4 million increase in provision for credit losses and a $0.2 million increase in acquisition-related costs for intangible amortization and accretion and valuation of contingent milestones. These increases were partially offset by a $1.3 million decrease in insurance costs, primarily related to our director and officers insurance premiums that decreased with market rates for 2023 and a $1.0 million decrease in professional fees for legal, audit, tax and other related costs, partly related to costs incurred with our acquisition of Trace Analytics GmbH during the year ended December 31, 2022.

Other Income (Expense)

Interest income

Interest income increased by $4.4 million for the year ended December 31, 2023 from $2.0 million for the year ended December 31, 2022. The increase was due primarily to higher interest rates on our interest bearing accounts and interest earned on our marketable securities, which were purchase during the year ended December 31, 2023.

Interest expense

Interest expense increased by $0.1 million for the year ended December 31, 2023 from $0.1 million for the year ended December 31, 2022. The increase was primarily due to costs incurred in March 2023 related to the write-off of deferred financing costs on our 2022 Revolver, which was in default and later amended in August 2023.

Other income (expense), net

Other expense, net was $0.1 million for the year ended December 31, 2023 and did not change materially from $0.1 million for the year ended December 31, 2022.

Benefit for Income Taxes

Benefit for income taxes increased by $0.2 million for the year ended December 31, 2023, from $0.0 million for the year ended December 31, 2022. The income tax benefit recognized during the year ended December 31, 2023 primarily resulted from a reduction in the deferred tax liabilities recorded as part of our acquisition of 908 Devices GmbH.

Liquidity and Capital Resources

Since our inception, we have incurred significant operating losses. To date, we have funded our operations primarily with proceeds from sales of redeemable preferred stock, borrowings under loan agreements and revenue from sales of our products and services and license and contract revenue, proceeds from our IPO in December 2020, and our underwritten public offering in November 2021. As of December 31, 2023, we had cash and cash equivalents of $121.0 million and marketable securities of $24.6 million, which were held for working capital purposes and for investment in growth opportunities. Our marketable securities consist of U.S. treasury securities. We believe that our existing cash and cash equivalents will enable us to fund our operating expenses, capital expenditure requirements and debt service payments for at least the next twelve months.

We have based this estimate on assumptions that may prove to be wrong, and we could utilize our available capital resources sooner than we expect. Our future funding requirements will depend on many factors, including:

- market uptake of our products and growth into new and existing markets:

- the cost of our research and development efforts to expand the applications of our current devices and to create enhanced products with our platform of technologies;
- the cost of expanding our commercial operations, including distribution capabilities, and accelerating planned investments, such as hiring additional support, service, and sales management in Europe, Asia Pacific, and Latin America, bolstering our infrastructure in these regions;
- the cost of acquiring complementary businesses, products, services, or technologies, when and if required;
- the success of our existing collaborations and our ability to enter additional collaborations in the future;
- the effect of competing technological and market developments; and
- the level of our selling, general and administrative expenses.

On March 11, 2021, we entered into an Amended and Restated Loan and Security Agreement, or the 2021 Revolver, with Signature Bank, to replace our 2019 Loan and Security Agreement, or the 2019 Loan. The 2021 Revolver created a revolving line of credit totaling $25.0 million and eliminated the existing term loan. Borrowings under the revolving line of credit bear interest at an annual rate equal to the greater of (i) one-half percent (0.5%) above the prime rate or (ii) 4.0% and mature on March 11, 2024. Borrowings are collateralized by substantially all of our property, excluding intellectual property, which is subject to a negative pledge. The 2021 Revolver subjects us to various customary covenants, including requirements as to financial reporting and financial covenants (including an unrestricted minimum cash level of $10.0 million), and restrictions on our ability to dispose of our business or property, to change our line of business, to liquidate or dissolve, to enter into any change in control transaction, to merge or consolidate with any other entity or to acquire all or substantially all the capital stock or property of another entity, to incur additional indebtedness, to incur liens on our property, to pay any dividends or make other distributions on capital stock other than dividends payable solely in capital stock, to redeem capital stock, to enter into in-bound licensing agreements, to engage in transactions with affiliates, and to encumber our intellectual property. Events of default under the 2021 Revolver include failure to make payments when due, insolvency events, failure to comply with covenants or material adverse events with respect to us. Upon the occurrence of an event of default and until such event of default is no longer continuing, the annual interest rate will be 5.0% above the otherwise applicable rate.

The terms of the 2021 Revolver required that the existing term loan outstanding under the 2019 Loan be repaid with an advance under the line of credit. Accordingly, on March 11, 2021, we used $14.5 million of proceeds from the revolving line of credit to repay all amounts then due on the existing term loan. We also borrowed an additional $0.5 million from the 2021 Revolver in March 2021. On November 2, 2022, we satisfied in full all of our obligations and voluntarily terminated 2021 Revolver. We did not incur any early termination penalties in connection with the termination of the 2021 Revolver. No amounts were outstanding upon termination of the 2021 Revolver.

On November 2, 2022, we entered into a Loan and Security Agreement, or the 2022 Revolver, with Silicon Valley Bank, or the Lender.

The 2022 Revolver provided for a revolving line of credit of up to $35.0 million. We were permitted to make interest-only payments on the revolving line of credit through November 2, 2025, at which time all outstanding indebtedness would be immediately due and payable. The outstanding principal amount of any advance accrued interest at a floating rate per annum equal to the greater of (i) three and one-half percent (3.50%) and (ii) the “prime rate” as published in The Wall Street Journal for the relevant period minus one-half percent (0.50%). Our obligations under the 2022 Revolver were secured by substantially all of our assets, excluding our intellectual property, which was subject to a negative pledge. The revolving line of credit under the 2022 Revolver was scheduled to terminate on November 2, 2025.

The 2022 Revolver also contained certain financial covenants, including a requirement that the amount of unrestricted and unencumbered cash minus advances under the 2022 Revolver was not less than the amount equal to the greater of (i) $10.0 million or (ii) nine (9) months of cash burn. The 2022 Revolver contained customary representations and warranties, as well as certain non-financial covenants, including limitations on, among other things, our ability to change the principal nature of our business, dispose of our business or property, engage in any change of control transaction, merge or consolidate with any other entity or to acquire all or substantially all the capital stock or property of another entity, incur additional indebtedness or liens, pay dividends or make other distributions on capital stock, redeem our capital stock, engage in transactions with affiliates or otherwise encumber our intellectual property, in each case, subject to customary exceptions.

As of December 31, 2023, there were no balances outstanding under the 2022 Revolver. As of December 31, 2022, the outstanding principal balance under the 2022 Revolver was $15.0 million, which was repaid in full on January 4, 2023. The interest rate applicable to borrowing under the 2022 Revolver was 7.0% as of December 31, 2022.

On March 10, 2023, the Lender, also one of our financial institutions, was closed by the California Department of Financial Protection and Innovation, which appointed the Federal Deposit Insurance Corporation, or FDIC, as receiver.

As of March 31, 2023, the Company had transferred substantially all its cash, cash equivalents and marketable securities away from the Lender and deposited the funds with new financial institutions. As a result of the transfer of the Company's cash, cash equivalents and marketable securities, the Company was in default, of its financial covenants under the 2022 Revolver. The Company recorded a loss on extinguishment of $0.5 million in the three months ended March 31, 2023, which was included in interest expense in the condensed consolidated statements of operations.

On August 4, 2023, we entered into a Default Waiver and First Amendment to Loan and Security Agreement with the Lender, or the Amended 2022 Revolver, in which the Lender waived its rights and remedies against the Company and amended the 2022 Revolver. The Amended 2022 Revolver provides for a revolving line of credit of up to $10.0 million. The Company is permitted to make interest-only payments on the revolving line of credit through November 3, 2025, at which time all outstanding indebtedness shall be immediately due and payable. The outstanding principal amount of any advance shall accrue interest at a floating rate per annum equal to the greater of (i) four and one-half percent (4.50%) and (ii) the "prime rate" as published in The Wall Street Journal for the relevant period minus one-half percent (0.50%). The Company's obligations under the Amended 2022 Revolver are secured by substantially all of the Company's assets, excluding its intellectual property, which is subject to a negative pledge. The revolving line of credit under the Amended 2022 Revolver terminates on November 3, 2025. As of December 31, 2023, there were no balances outstanding under the Amended 2022 Revolver.

Pursuant to the Amended 2022 Revolver, the Lender waived filing any legal action or instituting or enforcing any rights and remedies it may have had against the Company in connection with the Company's failing to maintain all of its operating accounts, depository accounts and excess cash with the Lender, as previously required under the 2022 Revolver. The Company recorded a credit of $0.3 million during the three months ended September 30, 2023 related to the previously recorded early termination penalties.

The Amended 2022 Revolver also contains certain financial covenants, including a requirement that the Company maintain $20.0 million on account at or through the Lender and that the amount of unrestricted and unencumbered cash minus advances under the Amended 2022 Revolver, is not less than the amount equal to the greater of (i) $10.0 million or (ii) nine (9) months of cash burn. The Amended 2022 Revolver contains customary representations and warranties, as well as certain non-financial covenants, including limitations on, among other things, the Company's ability to change the principal nature of its business, dispose of the Company's business or property, engage in any change of control transaction, merge or consolidate with any other entity or to acquire all or substantially all the capital stock or property of another entity, incur additional indebtedness or liens, pay dividends or make other distributions on capital stock, redeem the Company's capital stock, engage in transactions with affiliates or otherwise encumber the Company's intellectual property, in each case, subject to customary exceptions.

We may seek additional funding through private or public equity financings, debt financings, collaborations, strategic alliances and marketing, channel partner or licensing arrangements. We cannot assure you that we will be able to obtain additional funds on acceptable terms, or at all. If we raise additional funds by issuing equity or equity-linked securities, our stockholders may experience dilution. Future debt financing, if available, may involve covenants, in addition to our existing covenants, restricting our operations or our ability to incur additional debt or potentially limiting our ability to obtain new debt financing or the refinance of our existing debt. Any debt or equity financing that we raise may contain terms that are not favorable to us or our stockholders. If we raise additional funds through collaboration and licensing arrangements with third parties, it may be necessary to relinquish some rights to our technologies or our products, or grant licenses on terms that are not favorable to us. If we do not have or are not able to obtain sufficient funds, we may have to delay development or commercialization of our products. We also may have to reduce marketing, customer support or other resources devoted to our products or cease operations.

Cash Flows

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

	Year Ended December 31,	
	2023	2022
	(in thousands)	
Cash used in operating activities	$ (25,059)	$ (20,930)
Cash used in investing activities	(26,400)	(15,807)
Cash (used in) provided by financing activities	(15,935)	1,179
Effect of foreign exchange rate changes on cash and cash equivalents	13	18
Net decrease in cash, cash equivalents and restricted cash	$ (67,381)	$ (35,540)

Operating Activities

During the year ended December 31, 2023, net cash used in operating activities was $25.1 million, primarily resulting from our net loss of $36.4 million and net cash used in changes in our operating assets and liabilities of $1.6 million, partially offset by noncash charges of $12.9 million. Net cash used in changes in our operating assets and liabilities for the year ended December 31, 2023, consisted primarily of a $3.9 million decrease from changes in inventory and a $1.6 million decrease from changes in operating lease liabilities, partially offset by a $1.7 million increase from changes in right-of-use operating lease assets, a $2.0 million increase from changes in accounts payable and accrued expenses and a $0.7 million increase from changes in account receivable.

During the year ended December 31, 2022, net cash used in operating activities was $21.0 million, primarily resulting from our net loss of $33.6 million, partially offset by net cash provided by changes in our operating assets and liabilities of $3.3 million and noncash charges of $9.3 million. Net cash provided by changes in our operating assets and liabilities for the year ended December 31, 2022, consisted primarily of a $5.9 million increase from changes in account receivable, a $1.9 million increase from changes in deferred revenue and a $1.2 million increase in right-of-use operating lease assets, partially offset by a $5.5 million decrease from changes in inventory and a $1.3 million decrease from operating lease liabilities.

Investing Activities

During the year ended December 31, 2023, net cash used in investing activities was $26.4 million, due to $48.9 million in purchases of marketable securities, partially offset by $24.5 million in proceeds from maturities of marketable securities and $2.0 million in purchases of property and equipment.

During the year ended December 31, 2022, net cash used in investing activities was $15.8 million, due primarily to $13.8 million used with the acquisition of Trace Analytics GmbH that occurred in August 2022 and $2.0 million in purchases of other property and equipment.

Financing Activities

Cash used in financing activities during the year ended December 31, 2023, was $15.9 million, consisting primarily of the repayment of $15.0 million outstanding under the 2022 Revolver and $1.1 million in payments for contingent consideration related to the release of the $0.9 million assignment of the pension liability in connection with our acquisition of Trace Analytics GmbH and the $0.2 million initial fair value of contingent consideration, related to the $0.5 million initial milestone achievement in August 2023, that was paid in 2023.

Cash provided by financing activities during the year ended December 31, 2022, was $1.2 million, consisting primarily of proceeds from the issuance of common stock upon option exercises. We also paid off and drew down $60.0 million under the 2022 Revolver and 2021 Revolver, resulting in no net proceeds during the year ended December 31, 2022.

Contractual Obligations

We have operating lease obligations for office space and certain equipment, which have remaining lease terms ranging from two to seven years. The total future minimum payments under such leases are $7.0 million as of December 31, 2023, of which $2.4 million is expected to be paid in 2024.

At times, we have purchase orders or contracts for the purchase of supplies and other goods and services. We are not able to determine the aggregate amount of such purchase orders that represent contractual obligations, as purchase orders may represent authorizations to purchase rather than binding agreements. Our purchase orders are based on our current procurement or development needs and are fulfilled by our vendors within short time horizons.

We have also entered into a license agreement under which we are obligated to make royalty payments in the low single digit percent range. We have not included future payments under this agreement in the table of contractual obligations above since the payment obligations under this agreement are contingent upon generating product sales.

During the fiscal years ended December 31, 2023 and 2022, we made no cash contributions to our foreign pension plan, assumed as a part of Trace Analytics GmbH acquisition. The plan was transferred and the Company was released from the pension obligation in April 2023.

Critical Accounting Policies and Significant Judgments and Estimates

Our consolidated financial statements are prepared in accordance with GAAP. The preparation of our consolidated financial statements and related disclosures requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenue, costs and expenses and the disclosure of contingent assets and liabilities in our consolidated financial statements. We base our estimates on historical experience, known trends and events and various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. We evaluate our estimates and assumptions on an ongoing basis. Our actual results may differ from these estimates under different assumptions or conditions.

While our significant accounting policies are described in more detail in Note 2 to our consolidated financial statements included elsewhere in this Annual Report on Form 10-K, we believe that the following accounting policies are those most critical to the judgments and estimates used in the preparation of our consolidated financial statements.

Revenue Recognition

We recognize revenue from sales to customers under Accounting Standards Codification 606, Revenue from Contracts with Customers, or ASC 606 by applying the following five steps: (1) identification of the contract, or contracts, with a customer, (2) identification of the performance obligations in the contract, (3) determination of the transaction price, (4) allocation of the transaction price to the performance obligations in the contract and (5) recognition of revenue when, or as, performance obligations are satisfied.

For a contract with multiple performance obligations, we allocate the contract's transaction price to each performance obligation on a relative standalone selling price basis using our best estimate of the standalone selling price of each distinct product or service in the contract. The primary method used to estimate standalone selling price is the price observed in standalone sales to customers; however, when prices in standalone sales are not available, we may use third party pricing for similar products or services or estimate the standalone selling price, which is set by management. Allocation of the transaction price is determined at the contract's inception and is not updated to reflect changes between contract inception and when the performance obligations are satisfied.

Product and Service Revenue

We derive revenue primarily from the sale of handheld and desktop products and related consumables and services. Revenue is recognized when control of the promised products, consumables or services is transferred to our customers, in an amount that reflects the consideration we expect to be entitled to in exchange for those products, consumables or services (the transaction price). A performance obligation is a promise in a contract to transfer a distinct product or service to a customer and is the unit of accounting under ASC 606. For devices and consumables sold by us, control transfers to the customer at a point in time. To indicate the transfer of control, we must have a present right to payment, legal title must have passed to the customer, the customer must have the significant risks and rewards of ownership, and where acceptance is other than perfunctory, the customer must have accepted the product or service. Our principal terms of sale are freight on board, or FOB, shipping point, or equivalent, and, as such, we primarily transfer control and record revenue for product sales upon shipment. Sales arrangements with delivery terms that are not FOB shipping point are not recognized upon shipment and the transfer of control for revenue recognition is evaluated based on the associated shipping terms and customer obligations. If a performance obligation to the customer with respect to a sales transaction remains to be fulfilled following shipment (typically installation or acceptance by the customer), revenue recognition for that performance obligation is deferred until such commitments have been fulfilled. For extended warranty and support, control transfers to the customer over the term of the arrangement. Revenue for extended warranty and support is recognized based upon the period of time elapsed under the arrangement as this period represents the transfer of benefits or services under the agreement.

Contract Revenue

We generate revenue from short and long-term contracts associated with the design and development and delivery of detection devices or related design and support services. To date, these contracts are primarily with the U.S. government or commercial entities contracting with the U.S. government, but we have also had such contracts with commercial partners. Our contracts with the U.S. government typically are subject to the Federal Acquisition Regulation, or FAR, and are priced based on estimated or actual costs of producing goods or providing services. The FAR provides guidance on the types of costs that are allowable in establishing prices for goods or services provided under U.S. government contracts. The pricing for non-U.S. government contracts is based on the specific negotiations with each customer.

Under the typical payment terms of U.S. government fixed-price contracts, the customer pays in accordance with the terms of the specific agreement, but generally through progress payments. If these progress payments are made in advance, these payments are recorded as a contract liability, classified as deferred revenue within the accompanying consolidated balance sheet, until we provide the underlying services. For U.S. government cost-type contracts, the customer generally pays for actual costs incurred within a short period of time. For contracts with commercial partners, payments are made in accordance with the terms of the specific agreement. For agreements which call for milestone payments, to the extent we do not conclude that it is probable that a significant reversal of cumulative revenue will occur, a contract asset is generated until we are permitted to bill for costs incurred, which is classified as unbilled receivables in the accompanying consolidated balance sheet. In some cases, payments received in advance under license agreements are recorded as deferred revenue and recognized over the respective contract term, absent any other performance obligations.

Generally, revenue for long-term contracts is recognized based upon the cost-to-cost measure of progress, provided that we meet the criteria associated with transferring control of the good or service over time such as not creating an asset with an alternative use and having an enforceable right to payment for completed performance. However, we evaluate the proper revenue recognition on a contract by contract basis, as each contract generally contains terms specific to the underlying agreement which result in differing performance obligations and payment terms (cost plus, fixed price agreements among others). For revenue recognized under the cost-to-cost measure of progress basis, we continually assess total costs expected to be incurred and if such costs require adjustment to the measure of progress, we record such adjustment as a change in estimate on a cumulative catch-up basis in the period of adjustment.

We include the unconstrained amount of consideration in the transaction price. The amount included in the transaction price is constrained to the amount for which it is probable that a significant reversal of cumulative revenue recognized will not occur. At the end of each subsequent reporting period, as required by ASC 606, we re-evaluate the estimated consideration included in the transaction price and any related constraint, and if necessary, adjust our estimate of the overall transaction price. Any such adjustments are recorded on a cumulative catch-up basis in the period of adjustment.

Distribution Channels

A majority of our revenue is generated by sales in conjunction with our channel partners, such as our international channel partners and in the United States for end customers where a government contract is required or a customer has a pre-existing relationship. When we transact with a channel partner, our contractual arrangement is with the partner and not with the end-use customer. Whether we transact business with and receive the order from a channel partner or directly from an end-use customer, our revenue recognition policy and resulting pattern of revenue recognition for the order are the same.

Stock-Based Compensation

We measure stock-based option awards granted to employees, consultants and directors based on their fair value on the date of grant using the Black-Scholes option-pricing model. Compensation expense for those awards is recognized, net of estimated forfeitures, over the requisite service period, which is generally the vesting period of the respective award. The straight-line method of expense recognition is applied to all awards with service-only conditions, while the graded vesting method is applied to all grants with both service and performance conditions. Forfeitures are recorded as they occur instead of estimating forfeitures that are expected to occur.

The Black-Scholes option-pricing model uses as inputs the fair value of our common stock and assumptions we make for the volatility of our common stock, the expected term of our common stock options, the risk-free interest rate for a period that approximates the expected term of our common stock options, and our expected dividend yield.

Valuation of Inventory

Inventory is valued at the lower of cost or net realizable value. Cost is computed using the first-in, first-out method. We regularly review inventory quantities on-hand for excess and obsolete inventory and, when circumstances indicate, record charges to write down inventories to their estimated net realizable value, after evaluating historical sales, future demand, market conditions and expected product life cycles. Such charges are classified as cost of revenue in the consolidated statements of operations and comprehensive loss. Any write-down of inventory to net realizable value creates a new cost basis.

Goodwill

Goodwill is not amortized, but is evaluated for impairment on an annual basis, or on an interim basis when events or changes in circumstances indicate that the carrying value may not be recoverable. In assessing the recoverability of goodwill, we must make assumptions regarding the estimated future cash flows, and other factors, to determine the fair value of these assets. If these estimates or their related assumptions change in the future, we may be required to record impairment charges against these assets in the reporting period in which the impairment is determined.

We test goodwill for impairment at the reporting unit level, which is the operating segment, in the fourth quarter of every year. We have the option of performing a qualitative assessment to determine whether further impairment testing is necessary before performing the quantitative assessment. If as a result of the quantitative assessment, it is more-likely-than-not that the fair value of a reporting unit is less than its carrying amount, a quantitative impairment test will be required. The quantitative goodwill impairment test requires the management to estimate and compare the fair value of the reporting unit with its carrying value. If the fair value of the reporting unit exceeds the carrying value of the net assets, goodwill is not impaired. If the fair value of the reporting unit is less than the carrying value, the difference is recorded as an impairment loss up to the amount of goodwill.

We review other long-lived assets for impairment whenever events or changes in circumstances indicate the carrying amount of an asset or an asset group may not be recoverable. In evaluating long-lived assets for recoverability, we estimate the future cash flows that are expected from the use of each asset. Impairment losses are measured and recorded for the excess of an asset's carrying value over its fair value. To determine the fair value of long-lived assets, we utilize the valuation technique or techniques deemed most appropriate based on the nature of the asset or asset group, which may include the use of quoted market prices, prices for similar assets or other valuation techniques such as discounted future cash flows or earnings.

Business combination

Under the acquisition method of accounting, we generally recognize the tangible and identifiable intangible assets acquired and liabilities assumed based on their estimated fair values on the date of acquisition. The fair values assigned, defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between willing market participants, are based on estimates and assumptions determined by management. The excess consideration over the aggregate value of tangible and intangible assets, net of liabilities assumed, is recorded as goodwill. These valuations require significant estimates and assumptions, especially with respect to intangible assets.

We estimate the fair value of the contingent consideration earnouts using the Monte Carlo Simulation or probability weighted scenario depending on the nature of the contingent consideration and update the fair value of the 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 that these estimates change in the future regarding the likelihood of achieving these targets, we may need to record material adjustments to our accrued contingent consideration. Such changes in the fair value of contingent consideration are recorded as contingent consideration expense or income in the 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, probabilities of customer renewals, 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 technology, software and trade name amounts determined represent the fair value at the date of acquisition and do not exceed the amount a third-party would pay for the assets.

If the actual results differ from the estimates and judgments used in these estimates, the amounts recorded in the financial statements may be exposed to potential impairment of the intangible assets and goodwill. The determination of fair value is considered a critical accounting estimate because the valuation techniques mentioned use significant estimates and assumptions, including projected future revenues, a hypothetical royalty rate, the expected economic life of the asset, tax rates and a discount rate that reflects the level of risk associated with the future earnings attributable to the asset.

During the measurement period, which is up to one year from the acquisition date, adjustments to the assets acquired and liabilities assumed may be recorded, with the corresponding offset to goodwill.

Recently Issued Accounting Pronouncements

A description of recently issued accounting pronouncements that may potentially impact our financial position and results of operations is disclosed in Note 2 to our audited consolidated financial statements appearing in Part II, Item 8 of this Annual Report on Form 10-K.

Inflation Risk

During the last two years, inflation and changing prices have not had a material effect on our business. We are unable to predict whether inflation or changing prices will materially affect our business in the foreseeable future.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

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

Item 8. Financial Statements and Supplementary Data.

908 DEVICES INC.
Index to Consolidated Financial Statements

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of 908 Devices Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of 908 Devices Inc. and its subsidiaries (the “Company”) as of December 31, 2023 and 2022, and the related consolidated statements of operations, of comprehensive loss, of stockholders’ equity, and of cash flows for the years then ended, including 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 as of December 31, 2023 and 2022, and the results of its operations and its cash flows for the years then ended in conformity with accounting principles generally accepted in the United States of America.

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 audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (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 audits of these consolidated financial statements 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. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits, we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits 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 audits 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 audits provide a reasonable basis for our opinion.

/s/ PricewaterhouseCoopers, LLP
Boston, Massachusetts
March 8, 2024

We have served as the Company's auditor since 2013.

908 DEVICES INC.
Consolidated Balance Sheets
(in thousands, except share and per share amounts)

	December 31, 2023	December 31, 2022
Assets		
Current assets:		
Cash and cash equivalents	$ 121,041	$ 188,422
Marketable securities	24,641	—
Accounts receivable, net of allowance for credit losses of $395 and $25 at December 31, 2023 and December 31, 2022	8,989	10,033
Inventory	14,938	12,513
Prepaid expenses and other current assets	4,181	4,658
Total current assets	173,790	215,626
Operating lease, right-of-use assets	6,233	3,956
Property and equipment, net	3,342	3,083
Goodwill	10,367	10,050
Intangible assets, net	7,860	8,488
Other long-term assets	1,389	1,384
Total assets	$ 202,981	$ 242,587
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	$ 1,191	$ 1,397
Accrued expenses	8,713	8,847
Deferred revenue	10,629	7,514
Operating lease liabilities	2,016	1,468
Total current liabilities	22,549	19,226
Long-term debt	—	15,000
Operating lease liabilities, net of current portion	3,929	3,040
Deferred revenue, net of current portion	8,571	11,496
Deferred income taxes	2,441	2,671
Other long-term liabilities	—	555
Total liabilities	37,490	51,988
Commitments and contingencies (Note 15)		
Stockholders' equity:		
Preferred stock, $0.001 par value; 5,000,000 shares authorized, no shares issued or outstanding at December 31, 2023 and December 31, 2022, respectively	—	—
Common stock, $0.001 par value; 100,000,000 shares authorized; 32,519,023 shares and 31,859,847 shares issued and outstanding at December 31, 2023 and December 31, 2022, respectively	33	32
Additional paid-in capital	334,692	323,969
Accumulated other comprehensive income	1,365	798
Accumulated deficit	(170,599)	(134,200)
Total stockholders' equity	165,491	190,599
Total liabilities and stockholders' equity	$ 202,981	$ 242,587

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

908 DEVICES INC.
Consolidated Statements of Operations
(in thousands, except share and per share amounts)

	Year Ended December 31, 2023	2022
Revenue:		
Product revenue	$ 40,214	$ 37,499
Service revenue	9,645	6,976
Contract revenue	370	2,377
Total revenue	50,229	46,852
Cost of revenue:		
Product cost of revenue	18,428	16,010
Service cost of revenue	6,380	4,420
Contract cost of revenue	99	399
Total cost of revenue	24,907	20,829
Gross profit	25,322	26,023
Operating expenses:		
Research and development	21,904	17,526
Selling, general and administrative	46,176	43,879
Total operating expenses	68,080	61,405
Loss from operations	(42,758)	(35,382)
Other income, net:		
Interest income	6,480	2,031
Interest expense	(201)	(129)
Other expense, net	(131)	(83)
Total other income, net	6,148	1,819
Loss from operations before income taxes	(36,610)	(33,563)
Benefit for income taxes	211	—
Net loss	(36,399)	$ (33,563)
Net loss per share		
Basic and diluted	$ (1.13)	$ (1.07)
Weighted average common shares outstanding		
Basic and diluted	32,239,394	31,492,531

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

908 DEVICES INC.
Consolidated Statements of Comprehensive Loss
(in thousands)

	Year Ended December 31,			
	2023		2022	
Net loss	$	(36,399)	$	(33,563)
Other comprehensive income				
Foreign currency translation adjustment		554		798
Unrealized gain on marketable securities, net of tax of $0		13		—
Total other comprehensive income	$	567	$	798
Comprehensive loss	$	(35,832)	$	(32,765)

908 DEVICES INC.
Consolidated Statements of Stockholders' Equity
(in thousands, except share amounts)

	Common Stock		Additional Paid-in Capital	Accumulated Other Comprehensive Income	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount				
Balances at December 31, 2021	31,077,004	31	315,210	—	(100,637)	214,604
Issuance of common stock upon exercise of stock options	687,973	1	1,021	—	—	1,022
Stock-based compensation expense	—	—	7,207	—	—	7,207
Issuance of common stock upon ESPP purchase	37,316	—	531	—	—	531
Vesting of restricted stock units	57,554	—	—	—	—	—
Foreign currency translation adjustments	—	—	—	798	—	798
Net loss	—	—	—	—	(33,563)	(33,563)
Balances at December 31, 2022	31,859,847	32	323,969	798	(134,200)	190,599
Issuance of common stock upon exercise of stock options	264,971	1	431	—	—	432
Stock-based compensation expense	—	—	9,787	—	—	9,787
Issuance of common stock upon ESPP purchase	93,644	—	505	—	—	505
Vesting of restricted stock units	300,561	—	—	—	—	—
Foreign currency translation adjustments	—	—	—	554	—	554
Unrealized gain on marketable securities	—	—	—	13	—	13
Net loss	—	—	—	—	(36,399)	(36,399)
Balances at December 31, 2023	32,519,023	$ 33	$ 334,692	$ 1,365	$ (170,599)	$ 165,491

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

908 DEVICES INC.
Consolidated Statements of Cash Flows
(in thousands)

	Year Ended December 31, 2023	2022
Cash flows from operating activities:		
Net loss	$ (36,399)	$ (33,563)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization expense	2,384	1,614
Stock-based compensation expense	9,787	7,207
Noncash interest expense and loss on extinguishment of debt	192	47
Provision for inventory obsolescence	663	376
Net amortization of premiums and accretion of discounts on marketable securities	(301)	—
Provision for credit losses	386	—
Change in fair value of contingent consideration	107	161
Deferred income tax	(305)	(129)
Changes in operating assets and liabilities:		
Accounts receivable, net	680	5,930
Inventory	(3,902)	(5,475)
Prepaid expenses and other current assets	(513)	844
Other long-term assets	(135)	(93)
Accounts payable and accrued expenses	2,033	452
Deferred revenue	179	1,892
Right-of-use operating lease assets	1,668	1,226
Operating lease liabilities	(1,583)	(1,344)
Other long-term liabilities	—	(75)
Net cash used in operating activities	(25,059)	(20,930)
Cash flows from investing activities:		
Purchases of property and equipment	(2,045)	(2,045)
Purchases of marketable securities	(48,874)	—
Proceeds from sales and maturities of marketable securities	24,519	—
Acquisitions, net of cash acquired	—	(13,762)
Net cash used in investing activities	(26,400)	(15,807)
Cash flows from financing activities:		
Payments for withholding taxes on vested awards	(776)	(262)
Proceeds from issuance of common stock	936	1,553
Payments of public offering costs	—	(112)
Proceeds from borrowings on revolving line of credit	—	60,000
Repayment on revolving line of credit	(15,000)	(60,000)
Payments for contingent consideration	(1,095)	—
Net cash (used in) provided by financing activities	(15,935)	1,179
Effect of foreign exchange rate changes on cash and cash equivalents	13	18
Net decrease in cash, cash equivalents and restricted cash	(67,381)	(35,540)
Cash, cash equivalents and restricted cash at beginning of period	188,593	224,133
Cash, cash equivalents and restricted cash at end of period	$ 121,212	$ 188,593
Supplemental disclosure of noncash investing and financing information:		
Property and equipment included in account payable	$ 23	$ 219
Transfers of inventory to property and equipment	$ 1,047	$ 887
Transfers of property and equipment to inventory	$ 214	$ —
Reconciliation of cash, cash equivalents and restricted cash:		
Cash and cash equivalents	$ 121,041	$ 188,422
Restricted cash included in prepaid expenses and other current assets	—	60
Restricted cash included in other long-term assets	171	111
Total cash, cash equivalents and restricted cash shown in the statement of cash flows	$ 121,212	$ 188,593
Supplemental disclosure of cash flow information:		
Cash paid for interest	$ —	$ 135

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

908 DEVICES INC.
Notes to Consolidated Financial Statements

1. Nature of the Business and Basis of Presentation

908 Devices Inc. (the “Company”) was incorporated in the State of Delaware on February 10, 2012. The Company is a commercial-stage technology company providing a suite of purpose-built handheld and desktop devices used at the point-of-need for chemical and biochemical analysis in a broad array of markets including life sciences research, bioprocessing, pharma/biopharma, forensics and adjacent markets.

The Company is subject to risks and uncertainties common to technology companies in the device industry and of similar size, including, but not limited to, development by competitors of new technological innovations, dependence on key personnel, protection of proprietary technology, compliance with government regulations, uncertainty of market acceptance of products, and the need to obtain additional financing to fund operations. Potential risks and uncertainties also include, without limitation, uncertainties regarding higher inflation and interest rates. Products currently under development will require additional research and development efforts prior to commercialization and will require additional capital and adequate personnel and infrastructure. The Company’s research and development may not be successfully completed, adequate protection for the Company’s technology may not be obtained, the Company may not obtain necessary government regulatory approval, and approved products may not prove commercially viable. The Company operates in an environment of rapid change in technology and competition.

Underwritten Public Offerings

On December 22, 2020, the Company completed its initial public offering (“IPO”), pursuant to which it issued and sold 7,475,000 shares of common stock, inclusive of 975,000 shares pursuant to the full exercise of the underwriters’ option to purchase additional shares. The Company received net proceeds of $136.6 million after deducting underwriting discounts and commissions and other offering costs. Upon the closing of the IPO, all of the shares of the Company’s outstanding redeemable convertible preferred stock then outstanding automatically converted into 14,691,929 shares of common stock.

On November 15, 2021, the Company completed an underwritten public offering, pursuant to which it issued and sold 3,150,000 shares of common stock at a public offering price of $32.00 per share (the “November 2021 Offering”). The Company received net proceeds of $94.4 million after deducting underwriting discounts and commissions and other offering costs.

Acquisition

The Company acquired Trace Analytics GmbH, located in Braunschweig, Germany in August 2022. In February 2023, Trace Analytics GmbH formally changed its name to 908 Devices GmbH. 908 Devices GmbH is a leading provider of online analysis systems for biotech applications in research, development, and production. 908 Devices GmbH’s products are used for monitoring and control of complex processes in industrial pharmaceutical productions under continuous measurement conditions. With the acquisition of 908 Devices GmbH, the Company acquired enabling sampling technology that it expects to integrate within future product offerings. See Note 18, *Acquisition*, for further information.

Basis of Presentation

The Company’s consolidated financial statements have been prepared in conformity with GAAP. Any reference in these notes to applicable guidance is meant to refer to the authoritative GAAP as found in the Accounting Standards Codification (“ASC”) and Accounting Standards Update (“ASU”) of the Financial Accounting Standards Board (“FASB”).

The consolidated financial statements include the accounts of the Company and its wholly owned subsidiaries, 908 Devices Securities Corporation, 908 Devices (Shanghai) Technology Co., Ltd. and 908 Devices GmbH. All intercompany balances and transactions have been eliminated.

The accompanying consolidated financial statements have been prepared on the basis of continuity of operations, realization of assets and the satisfaction of liabilities and commitments in the ordinary course of business. The Company has incurred recurring losses since inception, including net losses of $36.4 million and $33.6 million for the years ended December 31, 2023 and 2022, respectively. As of December 31, 2023, the Company had an accumulated deficit of $170.6 million. The Company expects to continue to generate operating losses in the foreseeable future. As of March 8, 2024, the issuance date of the consolidated financial statements, the Company expects that its cash, cash equivalents and marketable securities will be sufficient to fund its operating expenses and capital expenditure requirements for at least the next 12 months from the issuance date of the consolidated financial statements. The Company may seek additional funding through private or public equity financings, debt financings, collaborations, strategic alliances and marketing, channel partner, or licensing arrangements. The Company may not be able to obtain financing on acceptable terms, or at all, and the Company may not be able to enter into collaborations or other arrangements. The terms of any financing may adversely affect the holdings or the rights of the Company's stockholders. If the Company is unable to obtain funding, the Company could be forced to delay, reduce or eliminate some or all of its research and development programs, product expansion or commercialization efforts, or the Company may be unable to continue operations. Although management continues to pursue these financing plans, there is no assurance that the Company will be successful in obtaining sufficient funding on terms acceptable to the Company to fund continuing operations, if at all.

2. Summary of Significant Accounting Policies

Use of Estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenue and expenses during the reporting periods. Significant estimates and assumptions reflected in these consolidated financial statements include, but are not limited to, revenue recognition and accounts receivable, the valuation of inventory, fair value of assets acquired and liabilities assumed in acquisitions and the valuation of stock-based awards. The Company bases its estimates on historical experience, known trends and other market-specific or other relevant factors that it believes to be reasonable under the circumstances. Due to the rising inflation and higher interest rates, there has been uncertainty and disruption in the global economy and financial markets. The Company is not aware of any specific event or circumstance that would require further updates to its estimates or judgments or a revision of the carrying value of its assets or liabilities as of the date of issuance of these consolidated financial statements. These estimates may change, as new events occur and additional information is obtained. On an ongoing basis, management evaluates its estimates as there are changes in circumstances, facts and experience. Changes in estimates are recorded in the period in which they become known. Actual results may differ from those estimates or assumptions.

Risk of Concentrations of Credit, Significant Customers and Significant Suppliers

Financial instruments that potentially expose the Company to concentrations of credit risk consist primarily of cash and cash equivalents, marketable securities, and accounts receivable. The Company’s cash and cash equivalents and restricted cash are maintained in bank deposit accounts and money market funds that regularly exceed federally insured limits. The Company is exposed to credit risk on its cash, cash equivalents and restricted cash in the event of default by the financial institutions to the extent account balances exceed the amount insured by the Federal Deposit Insurance Corporation (“FDIC”). The Company’s marketable securities are invested in U.S. treasury securities and as a result, the Company believes represent minimal credit risk.

Significant customers are those that accounted for 10% or more of the Company’s total revenue or accounts receivable. One customer represented 21% of total revenue for the year ended December 31, 2023. One customer represented 28% of total revenue for the year ended December 31, 2022. As of December 31, 2023, one customer accounted for 19% of gross accounts receivable. As of December 31, 2022, two customers accounted for 20% and 12%, respectively, of gross accounts receivable.

Certain of the components included in the Company's products are obtained from a sole source, a single source or a limited group of suppliers. Although the Company seeks to reduce dependence on those limited sources of suppliers and manufacturers, the partial or complete loss of certain of these sources, or the requirement to establish a new supplier for the components, could have a material adverse effect on the Company's operating results, financial condition and cash flows and damage its customer relationships.

Cash Equivalents

The Company considers all highly liquid investments with original maturities of three months or less at the date of purchase to be cash equivalents.

Restricted Cash

Restricted cash primarily represents collaterals for the corporate credit cards and a letter of credit issued as security for the lease for the Company's facility in Morrisville, North Carolina.

Accounts Receivable, net

Accounts receivable are presented net of an allowance for credit losses, which is an estimate of amounts that may not be collectible. The Company performs ongoing credit evaluations of its customers and monitors economic conditions to identify facts and circumstances that may indicate its receivables are at risk of collection. The Company provides reserves against accounts receivable for estimated credit losses, if any, that may result from a customer's inability to pay based on the composition of its accounts receivable, current economic conditions and historical credit loss activity. Amounts deemed uncollectible are charged or written-off against the reserve. As of December 31, 2023 and December 31, 2022, the Company recorded a $0.4 million allowance and less than a $0.1 million allowance for credit losses, respectively. The following is a summary of the activity of the Company's allowance for credit losses (in thousands):

	Year Ended December 31, 2023	2022
Balances at beginning of period	$ 25	$ 1,750
Current period change for expected credit loss	386	—
Deduction / recoveries collected	(16)	(1,725)
Balances at end of period	$ 395	$ 25

Inventory

Inventory is valued at the lower of cost or net realizable value. Cost is computed using the first-in, first-out method. The Company regularly reviews inventory quantities on-hand for excess and obsolete inventory and, when circumstances indicate, records charges to write down inventories to their estimated net realizable value, after evaluating historical sales, future demand, market conditions and expected product life cycles. Such charges are classified as cost of revenue in the consolidated statements of operations. Any write-down of inventory to net realizable value creates a new cost basis.

Assets Recognized from Costs to Obtain a Contract with a Customer

The Company recognizes an asset for the incremental costs of obtaining a contract with a customer if the Company expects the benefit of those costs to be longer than one year. The Company has determined that certain sales incentive programs meet the requirements to be capitalized. Total capitalized costs to obtain a contract were not significant during the periods presented and are included in other current assets and other long-term assets in the Company's consolidated balance sheets.

Leases

The Company accounts for leases under ASC 842, *Leases* ("ASC 842"). In accordance with ASC 842, the Company accounts for a contract as a lease when it has the right to control the asset for a period of time while obtaining substantially all of the asset's economic benefits. The Company determines if an arrangement is a lease or contains an embedded lease at inception. For arrangements that meet the definition of a lease, the Company determines the initial classification and measurement of its right-of-use asset and lease liability at the lease commencement date and thereafter if modified. The lease term includes any renewal options that the Company is reasonably assured to exercise. The present value of lease payments is determined by using the interest rate implicit in the lease, if that rate is readily determinable; otherwise, the Company uses its estimated secured incremental borrowing rate for that lease term. The Company's policy is to not record leases with an original term of twelve months or less on its consolidated balance sheets and recognizes those lease payments in the consolidated statements of operations and comprehensive loss on a straight-line basis over the lease term. The Company's existing leases are for office and laboratory space. In addition to rent, the leases may require the Company to pay additional costs, such as utilities, maintenance and other operating costs, which are generally referred to as non-lease components. The Company has elected to not separate lease and non-lease components. Only the fixed costs for lease components and their associated non-lease components are accounted for as a single lease component and recognized as part of a right-of-use asset and liability. Rent expense for operating leases is recognized on a straight-line basis over the reasonably assured lease term based on the total lease payments and is included in operating expense in the consolidated statements of operations and comprehensive loss.

Property and Equipment

Property and equipment are stated at cost less accumulated depreciation and amortization.

Depreciation and amortization expense is recognized using the straight-line method over the estimated useful life of each asset as follows:

	Estimated Useful Life
Laboratory and demonstration equipment	2 to 5 years
Computer equipment and software	3 years
Furniture and fixtures	7 years
Leasehold improvements	Shorter of remaining life of lease or useful life

Costs for capital assets not yet placed into service are capitalized as construction-in-progress and depreciated once placed into service. Upon retirement or sale, the cost of assets disposed of and the related accumulated depreciation and amortization are removed from the accounts and any resulting gain or loss is included in loss from operations. Expenditures for repairs and maintenance are charged to expense as incurred.

When a device is used as demonstration equipment, such device is reclassified from inventory to demonstration equipment under property and equipment and begins to depreciate over its estimated useful life. The Company does not refurbish such device or reverse transfer the device to inventory.

Impairment of Long-Lived Assets

Long-lived assets consist of operating lease right-of-use assets and property and equipment. Long-lived assets to be held and used are tested for recoverability whenever events or changes in business circumstances indicate that the carrying amount of the assets may not be fully recoverable. Factors that the Company considers in deciding when to perform an impairment review include significant underperformance of the business in relation to expectations, significant negative industry or economic trends and significant changes or planned changes in the use of the assets. If an impairment review is performed to evaluate a long-lived asset group for recoverability, the Company compares forecasts of undiscounted cash flows expected to result from the use and eventual disposition of the long-lived asset group to its carrying value. An impairment loss can be recognized in loss from operations when estimated undiscounted future cash flows expected to result from the use of an asset group are less than its carrying amount. The impairment loss is based on the excess of the carrying value of the impaired asset group over its fair value, determined based on discounted cash flows. The Company did not record any impairment losses on long-lived assets during the years ended December 31, 2023 and 2022.

Software Development Costs

The Company incurs costs to develop computer software that is embedded in the hardware components of the Company's products. Research and development costs related to this software are expensed as incurred, except for costs of internally developed or externally purchased software that qualify for capitalization. Software development costs incurred subsequent to the establishment of technological feasibility, but prior to the general release of the product, are capitalized and, upon general release, are amortized based upon the pattern in which economic benefits related to such assets are realized. Due to the short time period between achieving technological feasibility and product release and the insignificant amount of costs incurred during such periods, the Company did not capitalize any software development costs during the years ended December 31, 2023 and 2022.

Fair Value Measurements

Certain assets and liabilities are carried at fair value under GAAP. Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. Valuation techniques used to measure fair value must maximize the use of observable inputs and minimize the use of unobservable inputs. Financial assets and liabilities carried at fair value are to be classified and disclosed in one of the following three levels of the fair value hierarchy, of which the first two are considered observable and the last is considered unobservable:

- Level 1 — Quoted prices in active markets for identical assets or liabilities.
- Level 2 — Observable inputs (other than Level 1 quoted prices), such as quoted prices in active markets for similar assets or liabilities, quoted prices in markets that are not active for identical or similar assets or liabilities, or other inputs that are observable or can be corroborated by observable market data.
- Level 3 — Unobservable inputs that are supported by little or no market activity and that are significant to determining the fair value of the assets or liabilities, including pricing models, discounted cash flow methodologies and similar techniques.

The Company's financial instruments consist primarily of cash equivalents, marketable securities, accounts receivable, accounts payable, accrued expenses and contingent consideration. The Company's cash equivalents and marketable securities, consisting of money market funds (a Level 1 measurement) and U.S. treasury notes (a Level 2 measurement), are carried at fair value, determined according to the fair value hierarchy described above (see Note 3, *Fair value measurements*). The carrying values of the Company's accounts receivable, accounts payable and accrued expenses approximate their fair values due to the short-term nature of these assets and liabilities. The carrying value of the Company's long-term debt approximates its fair value (a Level 2 measurement) at each balance sheet date due to its variable interest rate, which approximates a market interest rate. The Company's contingent consideration is measured at its fair value at each balance sheet date using unobservable inputs in the valuation methodology (a Level 3 measurement).

Marketable Securities

The Company's marketable securities are classified as available-for-sale and are carried at fair value, with the unrealized gains and losses reported as a component of accumulated other comprehensive income (loss) in stockholders' equity. Premiums and discounts on marketable securities are amortized and accreted, respectively, to earliest call date and maturity, respectively, and included in interest income in the consolidated statements of operations.

When the fair value is below the amortized cost basis of a marketable security, an estimate of expected credit losses is made. The credit-related impairment amount is recognized in the consolidated statements of operations. Credit losses are recognized through the use of an allowance for credit losses account in the consolidated balance sheet and subsequent improvements in expected credit losses are recognized as a reversal of an amount in the allowance account. If the Company has the intent to sell the security or it is more likely than not that the Company will be required to sell the security prior to recovery of its amortized cost basis, then the allowance for the credit loss is written-off and the excess of the amortized cost basis of the asset over its fair value is recorded in the consolidated statements of operations. There were no credit losses recorded for the year ended December 31, 2023.

Goodwill and Intangible Assets

Goodwill is not amortized, but is evaluated for impairment on an annual basis, or on an interim basis when events or changes in circumstances indicate that the carrying value may not be recoverable. In assessing the recoverability of goodwill, the Company must make assumptions regarding the estimated future cash flows, and other factors, to determine the fair value of these assets. If these estimates or their related assumptions change in the future, the Company may be required to record impairment charges against these assets in the reporting period in which the impairment is determined.

The Company tests goodwill for impairment at the reporting unit level, which is the operating segment, in the fourth quarter of every year. The Company has the option of performing a qualitative assessment to determine whether further impairment testing is necessary before performing the quantitative assessment. If as a result of the qualitative assessment, it is more-likely-than-not that the fair value of a reporting unit is less than its carrying amount, a quantitative impairment test will be required. The quantitative goodwill impairment test requires management to estimate and compare the fair value of the reporting unit with its carrying value. If the fair value of the reporting unit exceeds the carrying value of the net assets, goodwill is not impaired. If the fair value of the reporting unit is less than the carrying value, the difference is recorded as an impairment loss up to the amount of goodwill.

Intangible assets with a finite useful life are recorded at cost, net of accumulated amortization and are amortized on a straight-line basis over their estimated useful lives as follows:

Customer Relationships	8 years
Developed Technology	15 years
Software	3 years
Trade Name	2 years

The Company reviews other long-lived assets for impairment whenever events or changes in circumstances indicate the carrying amount of an asset or an asset group may not be recoverable. In evaluating long-lived assets for recoverability, the Company estimates the future cash flows that are expected from the use of each asset group. Impairment losses are measured and recorded for the excess of an asset's carrying value over its fair value. To determine the fair value of long-lived assets, the Company utilizes the valuation technique or techniques deemed most appropriate based on the nature of the asset or asset group, which may include the use of quoted market prices, prices for similar assets or other valuation techniques such as discounted future cash flows or earnings.

Foreign currency

The Company translates assets and liabilities of its foreign subsidiaries at rates in effect at the end of the reporting period. Revenues and expenses are translated at average rates in effect during the reporting period. Translation adjustments are included in accumulated other comprehensive income (loss).

Product Warranties

The Company offers a one-year limited warranty on most products, which is included in the selling price. The Company's standard limited warranty covers repair or replacement. The Company provides for estimated warranty expenses as a component of cost of revenue at the time product revenue is recognized. Warranty costs are estimated based on the current expected product replacement or repair cost and expected replacement or repair rates based on historical experience. The Company evaluates its warranty accrual at the end of each reporting period and makes adjustments as necessary.

Segment Information

The Company manages its operations as a single segment for the purposes of assessing performance and making operating decisions. The Company provides a suite of purpose-built handheld and desktop mass spectrometry devices for use in a broad array of markets. Operating segments are defined as components of an enterprise for which separate financial information is regularly evaluated by the Company's chief operating decision maker, or decision-making group, in deciding how to allocate resources and assess performance. The Company has determined that its chief operating decision maker is its Chief Executive Officer. See Note 18, *Segment Reporting and Geographic Data*, for disclosure of tangible assets by Geographic locations.

Revenue Recognition

The Company recognizes revenue from sales to customers under ASC 606, *Revenue from Contracts with Customers* ("ASC 606"), by applying the following five steps: (1) identification of the contract, or contracts, with a customer, (2) identification of the performance obligations in the contract, (3) determination of the transaction price, (4) allocation of the transaction price to the performance obligations in the contract and (5) recognition of revenue when, or as, performance obligations are satisfied.

For a contract with multiple performance obligations, the Company allocates the contract's transaction price to each performance obligation on a relative standalone selling price basis using the Company's best estimate of the standalone selling price of each distinct product or service in the contract. The primary method used to estimate standalone selling price is the price observed in standalone sales to customers; however, when prices in standalone sales are not available the Company may use third party pricing for similar products or services or estimate the standalone selling price, which is set by management. Allocation of the transaction price is determined at the contract's inception and is not updated to reflect changes between contract inception and when the performance obligations are satisfied.

Product and Service Revenue

The Company derives product and service revenue primarily from the sale of handheld and desktop products and related consumables and services. Revenue is recognized when control of the promised products, consumables or services is transferred to the Company's customers, in an amount that reflects the consideration the Company expects to be entitled to in exchange for those products, consumables or services (the transaction price). A performance obligation is a promise in a contract to transfer a distinct product or service to a customer and is the unit of accounting under ASC 606. For devices and consumables sold by the Company, control transfers to the customer at a point in time. To indicate the transfer of control, the Company must have a present right to payment, legal title must have passed to the customer, the customer must have the significant risks and rewards of ownership, and where acceptance is other than perfunctory, the customer must have accepted the product or service. The Company's principal terms of sale are freight on board ("FOB") shipping point, or equivalent, and, as such, the Company primarily transfers control and records revenue for product sales upon shipment. Sales arrangements with delivery terms that are not FOB shipping point are not recognized upon shipment and the transfer of control for revenue recognition is evaluated based on the associated shipping terms and customer obligations. If a performance obligation to the customer with respect to a sales transaction remains to be fulfilled following shipment (typically installation or acceptance by the customer), revenue recognition for that performance obligation is deferred until such commitments have been fulfilled. For extended warranty and support, control transfers to the customer over the term of the arrangement. Revenue for extended warranty and support is recognized based upon the period of time elapsed under the arrangement as this period represents the transfer of benefits or services under the agreement.

The Company recognizes a receivable at the point in time at which it has an unconditional right to payment. Such receivables are not contract assets. Payment terms for customer orders, including for each of the Company's primary performance obligations, are typically 30 to 90 days after the shipment or delivery of the product, and such payments typically do not include payments that are variable, dependent on specified factors or events. In limited circumstances, there exists a right of return for product if agreed to by the Company. Revenue is only recognized for those goods that are not expected to be returned such that it is probable that there will not be a significant reversal of cumulative revenue. Service arrangements commonly call for payments in advance of performing the work (e.g., extended warranty/service contracts), upon completion of the service or a mix of both. The Company does not enter into significant financing agreements or other forms of variable consideration.

Contract assets arise from unbilled amounts in customer arrangements when revenue recognized exceeds the amount billed to the customer and the Company's right to payment is not only subject to the passage of time. The Company had no contract assets related to product or service revenue as of December 31, 2023 or 2022.

Contract liabilities represent the Company's obligation to transfer goods or services to a customer for which it has received consideration (or the amount is due) from the customer. The Company has determined that its only contract liability related to product and service revenue is deferred revenue, which consists of amounts that have been invoiced but that have not been recognized as revenue. Amounts expected to be recognized as revenue within 12 months of the balance sheet date are classified as current deferred revenue and amounts expected to be recognized as revenue beyond 12 months of the balance sheet date are classified as noncurrent deferred revenue.

The following is a summary of the activity of the Company's deferred revenue related to product and service revenue (in thousands):

	Year Ended December 31, 2023	2022
Balances at beginning of period	$ 16,510	$ 14,521
Recognition of revenue included in balance at beginning of the period	(7,575)	(4,502)
Other adjustments	—	(10)
Revenue deferred during the period, net of revenue recognized	10,265	6,501
Balances at end of period	$ 19,200	$ 16,510

The amount of deferred revenue equals the transaction price allocated to unfulfilled performance obligations for the period presented. Such deferred revenue amounts related to product and service revenue are expected to be recognized in the future as follows (in thousands):

	December 31, 2023	December 31, 2022
Deferred revenue expected to be recognized in:		
One year or less	$ 10,629	$ 7,514
One to two years	5,080	4,750
Three years and beyond	3,491	4,246
	$ 19,200	$ 16,510

Contract Revenue

The Company generates revenue from short and long-term contracts associated with the design and development and delivery of detection devices or related design and support services. To date, these contracts are primarily with the U.S. government or commercial entities contracting with the U.S. government, but the Company has also had such contracts with commercial partners. The Company's contracts with the U.S. government typically are subject to the

Federal Acquisition Regulation ("FAR") and are priced based on estimated or actual costs of producing goods or providing services. The FAR provides guidance on the types of costs that are allowable in establishing prices for goods or services provided under U.S. government contracts. The pricing for non-U.S. government contracts is based on the specific negotiations with each customer.

Under the typical payment terms of U.S. government fixed-price contracts, the customer pays in accordance with the terms of the specific agreement, but generally through progress payments. If these progress payments are made in advance, these payments are recorded as a contract liability, classified as deferred revenue within the accompanying consolidated balance sheet, until the Company provides the underlying services. For U.S. government cost-type contracts, the customer generally pays for actual costs incurred within a short period of time. For contracts with commercial partners, payments are made in accordance with the terms of the specific agreement. For agreements which call for milestone payments, to the extent the Company does not conclude that it is probable that a significant reversal of cumulative revenue will occur, a contract asset is generated until the Company is permitted to bill for costs incurred, which is classified as prepaid expense and other current assets in the accompanying consolidated balance sheet. In some cases, payments received in advance under license agreements are recorded as deferred revenue and recognized over the respective contract term, absent any other performance obligations.

Generally, revenue for long-term contracts is recognized based upon the cost-to-cost measure of progress, provided that the Company meets the criteria associated with transferring control of the good or service over time such as not creating an asset with an alternative use and having an enforceable right to payment for completed performance. However, the Company evaluates the proper revenue recognition on a contract by contract basis, as each contract generally contains terms specific to the underlying agreement which result in differing performance obligations and payment terms (cost plus, fixed price agreements among others). For revenue recognized under the cost-to-cost measure of progress basis, the Company continually assesses total costs expected to be incurred and if such costs require adjustment to the measure of progress, the Company records such adjustment as a change in estimate on a cumulative catch-up basis in the period of adjustment.

The Company includes the unconstrained amount of consideration in the transaction price. The amount included in the transaction price is constrained to the amount for which it is probable that a significant reversal of cumulative revenue recognized will not occur. At the end of each subsequent reporting period, as required under ASC 606, the Company re-evaluates the estimated consideration included in the transaction price and any related constraint, and if necessary, adjusts its estimate of the overall transaction price. Any such adjustments are recorded on a cumulative catch-up basis in the period of adjustment.

Contract assets arise from unbilled amounts in customer arrangements when revenue recognized exceeds the amount billed to the customer and the Company's right to payment is not just subject to the passage of time. The Company includes contract assets within prepaid and other current assets in the accompanying consolidated balance sheet. The Company had no contract assets related to contract revenue as of December 31, 2023 and $0.4 million of contract assets related to contract revenue as of December 31, 2022.

Contract liabilities represent the Company's obligation to transfer goods or services to a customer for which it has received consideration (or the amount is due) from the customer. As of December 31, 2023, the Company had no contract liabilities. As of December 31, 2022, the Company had contract liabilities of $2.5 million, which was recognized as product revenue as the Company satisfied its performance obligations under the AVCAD production contract during the year 2023. The Company recognizes deferred revenue by first allocating from the beginning deferred revenue balance to the extent that the beginning deferred revenue balance exceeds the revenue to be recognized. Billings during the period are added to the deferred revenue balance to be recognized in future periods. As of December 31, 2023, the Company held no wholly- or partially-unsatisfied performance obligations related to contract agreements entered prior to period end.

Distribution Channels

A majority of the Company's revenue is generated by sales in conjunction with its channel partners, such as its international channel partners and, in the United States, for end customers where a government contract is required or a customer has a pre-existing relationship. When the Company transacts with a channel partner, its contractual arrangement is with the partner and not with the end-use customer. Whether the Company transacts business with and receives the order from a channel partner or directly from an end-use customer, its revenue recognition policy and resulting pattern of revenue recognition for the order are the same.

Disaggregated Revenue

The Company's product and service revenue consists of sales of devices and recurring revenue which includes consumables, accessories and the sale of service and extended warranty plans. The following table presents the Company's revenue by revenue stream (in thousands):

	Year Ended December 31,	
	2023	2022
Product and service revenue:		
Device sales revenue	$ 33,379	$ 28,757
Recurring revenue	16,480	15,718
Total product and service revenue	49,859	44,475
Contract revenue	370	2,377
Total revenue	$ 50,229	$ 46,852

The following table presents the Company's product and service revenue by device type (in thousands):

	Year Ended December 31,	
	2023	2022
Handheld revenue:		
Device sales revenue	$ 27,859	$ 19,829
Recurring revenue	10,011	9,707
Total handheld revenue	37,870	29,536
Desktop revenue:		
Device sales revenue	5,520	8,926
Recurring revenue	6,469	6,013
Total desktop revenue	11,989	14,939
Total product and service revenue	$ 49,859	$ 44,475

Revenue based on the end-user entity type for the Company's product and service revenue are presented below (in thousands):

	Year Ended December 31,	
	2023	2022
Government	$ 37,862	$ 29,964
Pharmaceutical/Biotechnology	11,340	14,241
Academia and other	657	270
Total product and service revenue	$ 49,859	$ 44,475

The following table disaggregates the Company's revenue from contracts with customers by geography, which are determined based on the customer location (in thousands):

	Year Ended December 31, 2023	Year Ended December 31, 2022
United States	$ 38,173	$ 37,594
Europe, Middle East and Africa	9,378	6,295
Asia Pacific	1,825	2,887
Americas other	853	76
	$ 50,229	$ 46,852

International sales are comprised of product and service revenue, with all contract revenue being attributable to North America.

Shipping and Handling Fees and Costs

Shipping and handling fees billed to customers for product shipments are recorded in product and service revenue in the accompanying consolidated statements of operations and comprehensive loss. Shipping and handling costs incurred for inventory purchases and product shipments are recorded in cost of revenue in the accompanying consolidated statements of operations and comprehensive loss.

Cost of Revenue

Product cost of revenue primarily consists of costs for raw material parts and associated freight, shipping and handling costs, royalties, contract manufacturer costs, salaries and other personnel costs, overhead and other direct costs related to those sales recognized as product revenue in the period.

Cost of revenue for services primarily consists of salaries and other personnel costs, travel related to services provided, facility costs associated with training, warranties and other costs of servicing equipment on a return-to-factory basis and at customer sites. License and contract cost of revenue primarily consists of salaries and other personnel costs, materials, travel and other direct costs related to those revenue recognized as license and contract in the period.

Research and Development Expenses

Research and development expenses consist primarily of employee-related expenses incurred for research activities, product development, hardware and software engineering, consultant services and other costs associated with the Company's technology platform and products, research materials and facilities, depreciation and maintenance expense.

Advertising Expense

The Company expenses costs of advertising as incurred. Advertising costs remained at $1.8 million during the years ended December 31, 2023 and 2022, respectively.

Patent Costs

All patent-related costs incurred in connection with filing and prosecuting patent applications are expensed as incurred due to the uncertainty about the recovery of the expenditure. Amounts incurred are classified as general and administrative expenses.

Stock-Based Compensation

The Company measures stock-based option awards granted to employees, consultants and directors based on their fair value on the date of grant using the Black-Scholes option-pricing model. The fair value of restricted stock units is determined based on the number of shares granted and the closing price of our common stock quoted on the Nasdaq Global Market on the date of grant. Compensation expense for those awards is recognized, net of estimated forfeitures, over the requisite service period, which is generally the vesting period of the respective award. The straight-line method of expense recognition is applied to all awards with service-only conditions, while the graded vesting method is applied to all grants with both service and performance conditions.

The Company classifies stock-based compensation expense in its consolidated statements of operations in the same manner in which the award recipient’s payroll costs are classified or in which the award recipient’s service payments are classified.

Other Comprehensive Income (Loss)

Other comprehensive income (loss) refers to revenues, expenses, gains and losses that are excluded from net loss as these amounts are recorded directly as an adjustment to shareholders' equity, net of tax. The Company's other comprehensive income was composed of foreign currency translation adjustments and unrealized gain or loss on marketable securities.

Net Income (Loss) per Share

The Company has one class of shares outstanding and basic net income (loss) per common share is computed by dividing the net income (loss) by the weighted average number of shares of common stock outstanding for the period. Diluted net income (loss) per common share is computed by dividing net income (loss) by the weighted average number of shares of common stock outstanding for the period, including potential dilutive common shares assuming the dilutive effect of any potential dilutive securities outstanding for the fiscal year. Potential dilutive securities include warrants, stock options, restricted stock units, and shares to be purchased under the Company’s employee stock purchase plan. For periods in which the Company reports a net loss, diluted net loss per common share is the same as basic net loss per common share, since dilutive common shares are not assumed to have been issued if their effect is anti-dilutive.

Business combination

Under the acquisition method of accounting, the Company generally recognizes the tangible and identifiable intangible assets acquired and liabilities assumed based on their estimated fair values on the date of acquisition. The fair values assigned, defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between willing market participants, are based on estimates and assumptions determined by management. The excess consideration over the aggregate value of tangible and intangible assets, net of liabilities assumed, is recorded as goodwill. These valuations require significant estimates and assumptions, especially with respect to intangible assets.

The Company estimates the fair value of the contingent consideration earnouts using the Monte Carlo Simulation or probability weighted scenario depending on the nature of the contingent consideration and update the fair value of the 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 that these estimates change in the future regarding the likelihood of achieving these targets, the Company may need to record material adjustments to its accrued contingent consideration. Such changes in the fair value of contingent consideration are recorded as contingent consideration expense or income in the consolidated statements of operations.

The Company uses 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. The Company bases its assumptions on estimates of future cash flows, expected growth rates, expected trends in technology, probabilities of customer renewals, etc. The Company bases 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. The Company believes the estimated purchased customer relationships, developed technology, software and trade name amounts determined represent the fair value at the date of acquisition and do not exceed the amount a third-party would pay for the assets.

Income Taxes

The Company accounts for income taxes using the asset and liability method, which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been recognized in the consolidated financial statements or in the Company's tax returns. Deferred tax assets and liabilities are determined on the basis of the differences between the financial statements and tax basis of assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to reverse. Changes in deferred tax assets and liabilities are recorded in the provision for income taxes. The Company assesses the likelihood that its deferred tax assets will be recovered from future taxable income and, to the extent it believes, based upon the weight of available evidence, that it is more likely than not that all or a portion of the deferred tax assets will not be realized, a valuation allowance is established through a charge to income tax expense. Potential for recovery of deferred tax assets is evaluated by estimating the future taxable profits expected and considering prudent and feasible tax planning strategies.

The Company accounts for uncertainty in income taxes recognized in the consolidated financial statements by applying a two-step process to determine the amount of tax benefit to be recognized. First, the tax position must be evaluated to determine the likelihood that it will be sustained upon external examination by the taxing authorities. If the tax position is deemed more-likely-than-not to be sustained, the tax position is then assessed to determine the amount of benefit to recognize in the consolidated financial statements. The amount of the benefit that may be recognized is the largest amount that has a greater than 50% likelihood of being realized upon ultimate settlement. The provision for income taxes includes the effects of any resulting tax reserves, or unrecognized tax benefits, which are considered appropriate as well as the related net interest and penalties.

In August 2022, the U.S. Inflation Reduction Act (the Act) was enacted into law. The Act includes various tax provisions, including an excise tax on stock repurchases, expanded tax credits for clean energy incentives and a corporate alternative minimum tax that generally applies to U.S. corporations with adjusted financial statement income in excess of $1.0 billion. We do not expect the Act to have a material impact on our consolidated financial statements.

Recently Adopted Accounting Pronouncements

In January 2017, the FASB issued ASU 2017-04, *Simplifying the Test for Goodwill Impairment*. The guidance removes Step 2 of the goodwill impairment test, which requires a hypothetical purchase price allocation. A goodwill impairment will now be the amount by which a reporting unit's carrying value exceeds its FV, not to exceed the carrying amount of goodwill. The guidance should be adopted on a prospective basis for the annual or any interim goodwill impairment tests beginning after December 15, 2019. Early adoption is permitted for interim or annual goodwill impairment tests performed on testing dates after January 1, 2017. The Company early adopted the guidance on November 1, 2022 and did not have a material impact on its consolidated financial statements.

In December 2019, the FASB issued ASU 2019-12, *Income Taxes (ASC 740): Simplifying the Accounting for Income Taxes* ("ASU 2019-12"), which is intended to simplify various areas related to accounting for income taxes. ASU 2019-12 removes certain exceptions to the general principles in ASC 740 and also clarifies and amends existing guidance to improve consistent application. For public entities, the guidance is effective for annual reporting periods beginning after December 15, 2020 and for interim periods within those fiscal years. For non-public entities, the guidance is effective for annual reporting periods beginning after December 15, 2021 and for interim periods within years beginning after December 15, 2022, with early adoption permitted. The Company adopted the guidance as on January 1, 2022 and the adoption did not have a material impact on its consolidated financial statements.

In June 2016, the FASB issued ASU No. 2016-13, *Financial Instruments—Credit Losses (Topic 326)*. The new standard adjusts the accounting for assets held at amortized costs basis, including marketable securities accounted for as available for sale, and trade receivables. The standard eliminates the probable initial recognition threshold and requires an entity to reflect its current estimate of all expected credit losses. The allowance for credit losses is a valuation account that is deducted from the amortized cost basis of the financial assets to present the net amount expected to be collected. For public entities except smaller reporting companies, the guidance is effective for annual reporting periods beginning after December 15, 2019 and for interim periods within those fiscal years. For non-public entities and smaller reporting companies, the guidance was effective for annual reporting periods beginning after December 15, 2021. In November 2019, the FASB issued ASU No. 2019-10, which deferred the effective date for non-public entities to annual reporting periods beginning after December 15, 2022, including interim periods within those fiscal years. Early application is allowed. The Company adopted this standard effective January 1, 2023 and deemed no material impact on our consolidated financial statements.

Recently Issued Accounting Pronouncements

The Company qualifies as "emerging growth company" as defined in the Jumpstart Our Business Startups Act of 2012 and has elected not to "opt out" of the extended transition related to complying with new or revised accounting standards, which means that when a standard is issued or revised and it has different application dates for public and nonpublic companies, the Company will adopt the new or revised standard at the time nonpublic companies adopt the new or revised standard and will do so until such time that the Company either (i) irrevocably elects to "opt out" of such extended transition period or (ii) no longer qualifies as an emerging growth company.

In November 2023, the FASB issued ASU No. 2023-07, *Segment Reporting (Topic 280).* The accounting guidance requires the Company to expand annual and interim disclosure requirements for reportable segments, primarily through enhanced disclosures about significant segment expenses. For public entities, the guidance is effective for annual reporting periods beginning after December 15, 2023 and for interim periods within fiscal years beginning after December 15, 2024. Early application is allowed. The Company is currently assessing the impact of the adoption of this guidance.

In December 2023, the FASB issued ASU No. 2023-09, *Income Taxes (Topic 740).* The accounting guidance requires public entities, on an annual basis, to provide disclosure of specific categories in their tax rate reconciliations, as well as disclosure of income taxes paid disaggregated by jurisdiction. The guidance is effective for fiscal years beginning after December 15, 2024, with early adoption permitted. The Company is currently assessing the impact of the adoption of this guidance.

3. Fair Value Measurements

The following tables present the Company's fair value hierarchy for its assets and liabilities that are measured at fair value on a recurring basis (in thousands):

	Fair Value Measurements at December 31, 2023 Using:			
	Level 1	Level 2	Level 3	Total
Assets:				
Cash equivalents - Money market funds	$ 94,165	$ —	$ —	$ 94,165
Cash equivalents - U.S. Treasury securities	—	4,964	—	4,964
Marketable securities - U.S. Treasury securities due in 3 - 6 months	—	24,641	—	24,641
Total assets measured at fair value	$ 94,165	$ 29,605	$ —	$ 123,770
Other current liabilities:				
Acquisition-related contingent consideration	$ —	$ —	$ 500	$ 500
Total liabilities measured at fair value	$ —	$ —	$ 500	$ 500

	Fair Value Measurements at December 31, 2022 Using:			
	Level 1	Level 2	Level 3	Total
Assets:				
Cash equivalents - Money market funds	$ 27,866	$ —	$ —	$ 27,866
	$ 27,866	$ —	$ —	$ 27,866
Other current liabilities:				
Acquisition-related contingent consideration	$ —	$ —	$ 343	$ 343
Acquisition-related contingent consideration - pension liability	—	—	900	900
	—	—	1,243	1,243
Other long-term liabilities:				
Acquisition-related contingent consideration	—	—	555	555
Total liabilities measured at fair value	$ —	$ —	$ 1,798	$ 1,798

Money Market Funds

Money market funds were valued by the Company based on quoted market prices, which represent a Level 1 measurement within the fair value hierarchy. There were no transfers between Level 1, Level 2 or Level 3 during the years ended December 31, 2023 or 2022.

Marketable Securities

U.S. treasury securities were valued by the Company using quoted prices in active markets for similar securities, which represent a Level 2 measurement within the fair value hierarchy.

Contingent Consideration

Acquisition-related contingent consideration is measured and reported at fair value using the Monte Carlo simulation method or probability weighted scenario based on the unobservable inputs, which are significant to the fair value and classified within Level 3 of the fair value hierarchy. The amount is contingent based on the acquired business' performance for the milestones ranging from the date of acquisition to June 30, 2024.

The unobservable inputs used in the fair value measurements include the probabilities of successful achievement of certain technological integration targets, forecasted results or targets, volatility, and discount rates. The sellers achieved two of three milestones under the share purchase and transfer agreement and the Company paid $0.5 million in August 2023 and $0.5 million in February 2024.

During the fourth quarter of 2023, the probability weighted fair value of the future earnout was determined to be zero. Accordingly, the accumulated accretion under the last milestone and the relative contingent consideration have been reduced to zero.

The following table provides a roll-forward of the fair value of the Company's contingent consideration, for which fair value is determined using Level 3 inputs (in thousands):

Balance as of December 31, 2022	$ 1,798
Accretion - earnout	356
Deduction - earnout	(249)
Contingent consideration payment	(1,405)
Balance as of December 31, 2023	$ 500

In April 2023, the Company received notice that the pension obligation had been transferred and no longer in Trace Analytics GmbH's name and therefore the Company released the $0.9 million assignment of the pension liability and paid out the sellers.

Please refer to Note 18, *Acquisition*, for further detail. Changes in the fair value of contingent consideration resulting from a change in the underlying inputs are recognized in our consolidated statements of operations until the arrangement is settled.

4. Marketable Securities

Marketable securities by security type consisted of the following (in thousands):

	December 31, 2023				
	Amortized Cost	Gross Unrealized Gain	Gross Unrealized Loss	Credit Losses	Fair Value
Marketable securities - U.S. Treasury securities	$ 24,628	$ 13	$ —	$ —	$ 24,641

The Company purchased a total of approximately $48.9 million of U.S. treasury securities during the year ended December 31, 2023. The U.S. treasury securities that matured were approximately $24.5 million and none were sold before maturity. Interest earned on sales of marketable securities is $0.8 million for the year ended December 31, 2023. The Company did not have marketable securities as of December 31, 2022.

5. Inventory

Inventory consisted of the following (in thousands):

	December 31,	
	2023	2022
Raw materials	$ 11,294	$ 8,343
Work-in-progress	1,717	2,722
Finished goods	1,927	1,448
	$ 14,938	$ 12,513

During the years ended December 31, 2023 and 2022, the Company made non-cash transfers of demonstration equipment from inventory to property and equipment of $1.0 million and $0.9 million, respectively.

6. Goodwill and Intangible Assets, net

Goodwill

As of December 31, 2023, the carrying amount of goodwill was $10.4 million. The following is a rollforward of the Company's goodwill balance (in thousands):

	Year Ended December 31, 2023
Balances at beginning of period	$ 10,050
Foreign currency impact	317
Balances at end of period	$ 10,367

The Company performed its annual impairment evaluation using both a quantitative and qualitative approach at November 1, 2023, and concluded it was more likely than not that goodwill has not been impaired. Based on the fair values of the Company's reporting unit was greater than its carrying amount and, therefore, no impairment was required. No further triggering events were identified subsequent to our annual impairment evaluation.

The Company has not recorded any cumulative impairments of goodwill.

Intangible Assets, net

Intangible assets, net consists of the following (in thousands):

	December 31, 2023			
	Cost	Accumulated Amortization	Translation adjustments	Net Book Value
Customer Relationships	$ 3,142	$ (580)	$ 240	$ 2,802
Developed Technology	4,967	(487)	395	4,875
Software	254	(108)	18	164
Trade Name	61	(45)	3	19
	$ 8,424	$ (1,220)	$ 656	$ 7,860

	December 31, 2022			
	Cost	Accumulated Amortization	Translation adjustments	Net Book Value
Customer Relationships	$ 3,142	$ (163)	$ 150	$ 3,129
Developed Technology	4,967	(137)	243	5,073
Software	254	(30)	11	235
Trade Name	61	(13)	3	51
	$ 8,424	$ (343)	$ 407	$ 8,488

Amortization expense for intangible assets was recorded in the following expense categories of its consolidated statements of operations (in thousands):

	Year Ended December 31,	
	2023	2022
Product cost of revenue	$ 428	$ 167
Selling, general and administrative expenses	449	176
	$ 877	$ 343

Estimated future amortization expense for the intangible assets as of December 31, 2023 is as following (in thousands):

2024	$ 860
2025	841
2026	775
2027	765
2028	765
Thereafter	3,854
	$ 7,860

7. Property and Equipment, Net

Property and equipment, net consisted of the following (in thousands):

	December 31, 2023	December 31, 2022
Laboratory and demonstration equipment	$ 8,267	$ 6,642
Computer equipment and software	202	186
Furniture and fixtures	372	194
Construction in progress	53	757
Leasehold improvements	395	21
	9,289	7,800
Less: Accumulated depreciation and amortization	(5,947)	(4,717)
	$ 3,342	$ 3,083

Depreciation expense amounted to $1.5 million and $1.3 million in each of the years ended December 31, 2023 and 2022, respectively.

8. Accrued Expenses

Accrued expenses consisted of the following (in thousands):

	December 31, 2023	December 31, 2022
Accrued employee compensation and benefits	$ 5,994	$ 4,909
Accrued warranty	942	1,119
Accrued professional fees	560	677
Contingent consideration	500	1,243
Accrued other	717	899
	$ 8,713	$ 8,847

Changes in the Company's product warranty obligation are as follows (in thousands):

	Year Ended December 31, 2023	Year Ended December 31, 2022
Accrual balance at beginning of period	$ 1,119	$ 1,593
Provision for new warranties	1,273	1,396
Settlements and adjustments made during the period	(1,450)	(1,870)
Accrual balance at end of period	$ 942	$ 1,119

9. Long-Term Debt

Long-term debt consisted of the following (in thousands):

	December 31, 2023	December 31, 2022
Principal amount of long-term debt	$ —	$ 15,000
Less: Current portion of long-term debt	—	—
Less: Debt discount, net of accretion	—	—
Long-term debt, net of discount and current portion	$ —	$ 15,000

Loan and Security Agreements

2021 Revolver

On March 11, 2021, the Company entered into an Amended and Restated Loan and Security Agreement (the "2021 Revolver") to replace a Loan and Security Agreement, as amended (the "2019 Loan"). This agreement created a revolving line of credit totaling $25.0 million and eliminated the existing term loan. Borrowings under the revolving line of credit bore interest at an annual rate equal to the greater of (i) one-half percent (0.5%) above the prime rate or (ii) four percent (4.0%) and were scheduled to mature on March 11, 2024. Borrowings were collateralized by substantially all of the Company's property, excluding intellectual property, which was subject to a negative pledge. The 2021 Revolver subjected the Company to various customary covenants, including requirements as to financial reporting and financial covenants (including an unrestricted minimum cash level of $10.0 million), and restrictions on the Company's ability to dispose of its business or property, to change its line of business, to liquidate or dissolve, to enter into any change in control transaction, to merge or consolidate with any other entity or to acquire all or substantially all the capital stock or property of another entity, to incur additional indebtedness, to incur liens on the Company's property, to pay any dividends or make other distributions on capital stock other than dividends payable solely in capital stock, to redeem capital stock, to enter into in-bound licensing agreements, to engage in transactions with affiliates, and to encumber the Company's intellectual property. Events of default under the 2021 Revolver included failure to make payments when due, insolvency events, failure to comply with covenants or material adverse events with respect to the Company. Upon the occurrence of an event of default and until such event of default was no longer continuing, the annual interest rate would be five percent (5.0%) above the otherwise applicable rate.

The terms of the 2021 Revolver required that the existing term loan outstanding under the 2019 Loan be repaid with an advance under the line of credit. Accordingly, on March 11, 2021, the Company used $14.5 million of proceeds from the 2021 Revolver to repay all amounts then due on the existing term loan. The Company accounted for the transaction as a debt extinguishment and recorded a loss on extinguishment of $0.2 million, which was included in interest expense in the consolidated statements of operations and comprehensive loss.

On November 2, 2022, the Company satisfied in full all of its outstanding obligations and voluntarily terminated the 2021 Revolver. The Company did not incur any early termination penalties in connection with the termination of the 2021 Revolver. The amount outstanding under the 2021 Revolver was fully repaid in October 2022 and no amounts were outstanding upon termination of the 2021 Revolver.

2022 Loan Revolver

On November 2, 2022, the Company entered into a Loan and Security Agreement (the "2022 Revolver"), by and between, the Company, as borrower, and Silicon Valley Bank ("SVB"), a division of First Citizens Bank, as lender.

The 2022 Revolver provided for a revolving line of credit of up to $35.0 million. The Company was permitted to make interest-only payments on the revolving line of credit through November 2, 2025, at which time all outstanding indebtedness would be immediately due and payable. The outstanding principal amount of any advance accrued interest at a floating rate per annum equal to the greater of (i) three and one-half percent (3.50%) and (ii) the "prime rate" as published in The Wall Street Journal for the relevant period minus one-half percent (0.50%). The Company's obligations under the 2022 Revolver were secured by substantially all of the Company's assets, excluding its intellectual property, which was subject to a negative pledge. The revolving line of credit under the 2022 Revolver was scheduled to terminate on November 2, 2025.

The 2022 Revolver also contained certain financial covenants, including a requirement that the amount of unrestricted and unencumbered cash minus advances under the 2022 Revolver, was not less than the amount equal to the greater of (i) $10.0 million or (ii) nine (9) months of cash burn. The 2022 Revolver contained customary representations and warranties, as well as certain non-financial covenants, including limitations on, among other things, the Company's ability to change the principal nature of its business, dispose of the Company's business or property, engage in any change of control transaction, merge or consolidate with any other entity or to acquire all or substantially all the capital stock or property of another entity, incur additional indebtedness or liens, pay dividends or make other distributions on capital stock, redeem the Company's capital stock, engage in transactions with affiliates or otherwise encumber the Company's intellectual property, in each case, subject to customary exceptions.

As of December 31, 2022, the outstanding principal balance under the 2022 Revolver was $15.0 million, which was repaid in full on January 4, 2023. The interest rate applicable to borrowing under the 2022 Revolver was 7.0% as of December 31, 2022.

On March 10, 2023, SVB, one of our financial institutions, was closed by the California Department of Financial Protection and Innovation, which appointed the Federal Deposit Insurance Corporation ("FDIC") as receiver.

On March 12, 2023, the U.S. Department of the Treasury, Federal Reserve Board, and FDIC released a joint statement announcing that the FDIC would complete its resolution of SVB in a manner that fully protected all depositors and that depositors would have access to all of their money starting March 13, 2023.

As of March 31, 2023, the Company had transferred substantially all its cash and cash equivalents away from SVB and deposited the funds with new financial institutions. As a result of the transfer of the Company's cash, cash equivalents and marketable securities, the Company was in default of its financial covenants under the 2022 Revolver. The Company recorded a loss on extinguishment of debt of $0.5 million in the three months ended March 31, 2023, which was included in interest expense in the condensed consolidated statements of operations.

On August 4, 2023, the Company entered into a Default Waiver and First Amendment to Loan and Security Agreement (the "Amended 2022 Revolver"), by and between, the Company, as borrower, and SVB, as lender. The Amended 2022 Revolver provides for a revolving line of credit of up to $10.0 million. The Company is permitted to make interest-only payments on the revolving line of credit through November 3, 2025, at which time all outstanding indebtedness shall be immediately due and payable. The outstanding principal amount of any advance shall accrue interest at a floating rate per annum equal to the greater of (i) four and one-half percent (4.50%) and (ii) the "prime rate" as published in The Wall Street Journal for the relevant period minus one-half percent (0.50%). The Company's obligations under the Amended 2022 Revolver are secured by substantially all of the Company's assets, excluding its intellectual property, which is subject to a negative pledge. The revolving line of credit under the Amended 2022 Revolver terminates on November 3, 2025.

Pursuant to the Amended 2022 Revolver, SVB waived filing any legal action or instituting or enforcing any rights and remedies it may have had against the Company in connection with the Company's failing to maintain all of its operating accounts, depository accounts and excess cash with SVB, as previously required prior to the effectiveness of the Amended 2022 Revolver. The Company recorded a credit of $0.3 million during the three months ended September 30, 2023 related to the previously recorded early termination penalties.

The Amended 2022 Revolver also contains certain financial covenants, including a requirement that the Company maintain $20.0 million on account at or through SVB and the amount of unrestricted and unencumbered cash minus advances under the Amended 2022 Revolver is not less than the amount equal to the greater of (i) $10.0 million or (ii) nine (9) months of cash burn. The Amended 2022 Revolver contains customary representations and warranties, as well as certain non-financial covenants, including limitations on, among other things, the Company's ability to change the principal nature of its business, dispose of the Company's business or property, engage in any change of control transaction, merge or consolidate with any other entity or to acquire all or substantially all the capital stock or property of another entity, incur additional indebtedness or liens, pay dividends or make other distributions on capital stock, redeem the Company's capital stock, engage in transactions with affiliates or otherwise encumber the Company's intellectual property, in each case, subject to customary exceptions.

10. Post-Retirement Benefit Obligations

Defined Benefit Plan

The Company maintained a foreign pension plan for a 908 Devices GmbH employee in Germany, which grants periodic post-retirement payment for one employee. In connection with recording the initial purchase accounting of 908 Devices GmbH in August 2022, the Company assumed this pension liability of $0.9 million. The Company also recorded an equal and offsetting indemnification asset in the initial purchase accounting resulting in no net impact to the overall purchase price allocation. In April 2023, the Company received notice that the pension obligation had been transferred and no longer in 908 Devices GmbH's name and therefore the Company released the $0.9 million assignment of the pension liability and paid out the sellers. See Note 3, Fair Value Measurements, and Note 18, Acquisition, for further information.

The Company did not contribute to the plan in the year ended December 31, 2023 or 2022.

11. Warrants

As of December 31, 2023 and 2022, the Company had outstanding warrants for the purchase of 92,703 shares of common stock at an exercise price of $9.17 per share, of which warrants for the purchase of 49,078 shares and 43,625 shares expire in 2027 and 2028, respectively.

12. Equity

Preferred Stock

On December 22, 2020, the Company filed a restated certificate of incorporation in the State of Delaware, which, among other things, restated the number of shares of all classes of stock that the Company has authority to issue to 105,000,000 shares, consisting of (i) 100,000,000 shares of common stock, $0.001 par value per share, and (ii) 5,000,000 shares of preferred stock, $0.001 par value per share. The preferred stock will have such rights, preferences, privileges and restrictions, including voting rights, dividend rights, conversion rights, redemption privileges and liquidation preferences, as shall be determined by the Company's board of directors upon issuance. The shares of preferred stock are currently undesignated.

Common Stock

Each share of common stock entitles the holder to one vote on all matters submitted to a vote of the Company's stockholders. Common stockholders are not entitled to receive dividends, unless declared by the board of directors.

13. Stock-Based Compensation

2012 Stock Option and Grant Plan

The Company's 2012 Stock Option and Grant Plan (the "2012 Plan") provided for the Company to sell or issue incentive stock options or nonqualified stock options, stock appreciation rights, restricted stock, restricted stock units and other stock-based awards to employees, directors, and non-employee consultants of the Company. The 2012 Plan was administered by the board of directors or, at the discretion of the board of directors, by a committee of the board of directors. The exercise prices, vesting and other restrictions were determined at the discretion of the board of directors, or its committee if so delegated. Following the effectiveness of the Company's 2020 Stock Option and Incentive Plan (the "2020 Plan") in December 2020, no future awards will be made under the 2012 Plan. Additionally, shares underlying awards under the 2012 Plan that expire or are terminated, surrendered, or canceled without the delivery of shares will be available for future awards under the 2020 Plan.

2020 Stock Option and Incentive Plan

On November 23, 2020, the Company's board of directors adopted, and on December 11, 2020, the Company's stockholders approved the 2020 Stock Option and Incentive Plan (the "2020 Stock Plan"), which became effective on December 17, 2020. The 2020 Stock Plan provides for the grant of incentive stock options, nonqualified stock options, stock appreciation rights, restricted stock, restricted stock units, unrestricted stock, unrestricted stock units, dividend equivalent rights and cash-based awards to employees, directors and consultants of the Company. The total number of shares of common stock that may be issued under the 2020 Plan is 1,843,771 shares plus the number of shares underlying awards under the 2012 Plan that expire or are terminated, surrendered, or cancelled without the delivery of shares, are forfeited to or repurchased or otherwise become available again for grant under the 2012 Plan. As of December 31, 2023, 1,506,580 shares remained available for future issuance under the 2020 Plan. The 2020 Plan provides that the number of shares reserved and available for issuance under the 2020 Plan will automatically increase on each January 1 by 4% of the outstanding number of shares of our common stock on the immediately preceding December 31 or such lesser number of shares as determined by the administrator of the 2020 Stock Plan. On January 1, 2024, the number of shares reserved and available for issuance under the 2020 Plan automatically increased by 1,300,761 shares.

In March 2023, the compensation committee of the Company's board of directors granted an aggregate of 53,794 performance-based restricted stock units, ("PSUs") under the 2020 Stock Option and Incentive Plan to the Company's chief executive officer. Each PSU is equivalent in value to one share of the Company's common stock. The maximum payout percentage for all PSUs granted by the Company is 100%.

The vesting of the shares underlying the PSUs is subject to the achievement of stock price levels pre-established by the compensation committee at the grant date. The PSUs are subject to the market and service conditions and valued using the Monte Carlo simulation model, which requires certain assumptions, including the risk-free interest rate, expected volatility, and the estimated dividend yield. The risk-free interest rate used in the Monte Carlo simulation model is based on zero-coupon yields implied by U.S. treasury issues with remaining terms similar to the performance period on the PSUs. The performance period of the PSUs represents the period of time between the PSU grant date and the end of the performance period. Expected volatility is based on historical data of the peers and certain indices over the most recent time period equal to the performance period.

2020 Employee Stock Purchase Plan

On November 23, 2020, the Company's board of directors adopted, and on December 11, 2020, the Company's stockholders approved the 2020 Employee Stock Purchase Plan (the "2020 ESPP"), which became effective on December 17, 2020. The 2020 ESPP provides that the number of shares reserved and available for issuance will automatically increase on each January 1 thereafter through January 1, 2030, by the least of (i) 307,295 shares of our common stock, (ii) 1% of the outstanding number of shares of common stock on the immediately preceding December 31, or (iii) such lesser number of shares of common stock as determined by the administrator of the 2020 ESPP. As of December 31, 2023, 772,487 shares remained available for issuance under the 2020 ESPP. During the year ended December 31, 2023 and 2022, the Company issued 93,644 shares and 56,486 shares, respectively, under the 2020 ESPP plan. On January 1, 2024, the number of shares reserved and available for issuance under the 2020 ESPP did not increase pursuant to the determination of the administrator of the 2020 ESPP.

Stock Option Valuation

The fair value of stock option grants and stock-based compensation associated with the 2020 ESPP is estimated using the Black-Scholes option-pricing model. For stock options valued, the Company estimated its expected stock volatility based on the historical volatility of a publicly traded set of peer companies due to limited company-specific historical and implied volatility information. For stock-based compensation associated with the 2020 ESPP, the Company estimated its expected stock volatility based on the volatility of its own traded stock price.

For options with service-based vesting conditions, the expected term of the Company's stock options has been determined utilizing the "simplified" method for awards that qualify as "plain-vanilla" options. The risk-free interest rate is determined by reference to the U.S. treasury yield curve in effect at the time of grant of the award for time periods equal to the expected term of the award. Expected dividend yield is based on the fact that the Company has never paid cash dividends and does not expect to pay any cash dividends in the foreseeable future.

The following table presents, on a weighted average basis, the assumptions used in the Black-Scholes option-pricing model to determine the grant-date fair value of stock options granted:

	Year Ended December 31,	
	2023	2022
Risk-free interest rate	4.1 %	2.7 %
Expected volatility	69 %	67 %
Expected dividend yield	—	—
Expected term (in years)	6	6

The following table presents, on a weighted average basis, the assumptions used in the Black-Scholes option-pricing model to determine the grant-date fair value of 2020 ESPP granted:

	Year Ended December 31,	
	2023	2022
Risk-free interest rate	5.3 %	3.2 %
Expected volatility	82 %	90 %
Expected dividend yield	—	—
Expected term (in years)	0.5	0.5

The following table summarizes the Company's option activity for the fiscal year ended December 31, 2023:

	Number of Shares	Weighted Average Exercise Price	Weighted Contractual Term	Aggregate Intrinsic Value
			(in years)	(in thousands)
Outstanding at beginning of period	2,471,365	$ 5.78	6.7	$ 10,311
Granted	411,512	8.80		
Exercised	(264,971)	1.63		
Forfeited	(190,489)	10.93		
Outstanding at end of period	2,427,417	$ 6.34	6.4	$ 14,917
Vested and expected to vest at end of period		$ 6.30	6.4	$ 14,855
Exercisable at end of period		$ 5.07	5.6	$ 12,768

The aggregate intrinsic value of stock options is calculated as the difference between the exercise price of the stock options and the fair value of the Company's common stock for those stock options that had exercise prices lower than the fair value of the Company's common stock. The aggregate intrinsic value of stock options exercised during the years ended December 31, 2023 and 2022 was $1.7 million and $10.3 million, respectively. As of December 31, 2023, total unrecognized compensation cost related to unvested stock options was $3.4 million, which is expected to be recognized over a weighted average period of 2.1 years.

The weighted average grant-date fair value of stock options granted during the years ended December 31, 2023 and 2022 was $5.77 per share and $9.61 per share, respectively.

The following table summarizes the Company's restricted stock units activity for the fiscal year ended December 31, 2023:

	Number of Shares	Weighted Average Grant Date Fair Value
Outstanding at beginning of period	1,059,529	$ 17.38
Granted	1,221,725	8.69
Vested and released	(299,845)	17.58
Forfeited	(140,728)	14.82
Unvested at end of period	1,840,681	$ 11.77

The weighted average grant date fair value for RSUs granted for the years ended December 31, 2023 and 2022 was $8.69 and $15.21, respectively. The aggregate intrinsic value of the RSUs vested and released for the years ended December 31, 2023 and 2022 was $2.5 million and $0.9 million, respectively.

The remaining unrecognized compensation expense for outstanding restricted stock units as of December 31, 2023 was $15.4 million and the weighted-average period over which this cost is expected to be recognized is 2.6 years.

The weighted average grant date fair value for PSUs granted in March 2023 was $3.99. No PSUs were vested during the year ended December 31, 2023. The remaining unrecognized compensation expense for outstanding PSUs as of December 31, 2023 was $0.1 million and the weighted-average period over which this cost is expected to be recognized is 2.1 years.

Stock-Based Compensation

The Company recorded stock-based compensation expense in the following expense categories of its consolidated statements of operations and comprehensive loss (in thousands):

	Year Ended December 31,	
	2023	2022
Cost of revenue	$ 577	$ 286
Research and development expenses	2,691	1,659
Selling, general and administrative expenses	6,519	5,262
	$ 9,787	$ 7,207

14. Leases

The Company has operating leases for real estate. Lease expiration dates range between 2025 and 2030.

The Company has leases for office space and certain equipment. All of the leases recorded on the consolidated balance sheets as ROU assets are operating leases. The Company's leases have remaining lease terms ranging from less than one year to approximately seven years. Some of the leases include options to extend the lease for up to two years and these options were not included for the purpose of determining the right-of-use assets and associated lease liabilities as the Company determined that the renewal of these leases is not reasonably certain. The leases do not include any restrictions or covenants that had to be accounted for under the lease guidance.

On January 2, 2018, the Company entered a new operating lease in Boston, Massachusetts (the "Lease"), for 37,500 rentable square feet of office space and is considered the Company's corporate headquarters. A security deposit of $0.5 million was paid to the property owner and the Company issued a warrant to purchase 43,625 shares of Series D preferred stock at a purchase price of $5.6351 per share. The initial fair value of the warrants of $0.3 million was recorded as additional rent payments, increasing the value of the ROU asset and preferred stock warrant liability.

The initial term of the lease is through October 2025. The annualized base rent will increase by 2.5% annually on the anniversary of the commencement date. The Company is obligated to pay its portion of real estate taxes and costs related to the premise, including costs of operations, maintenance, repair, replacement and management of the new leased premises.

The Company had a facility lease in North Carolina for approximately 2,000 square feet that had an expiration date of November 2020 then extended until June 2023.

In July 2022, the Company entered into a new operating lease agreement in Morrisville, North Carolina (the “New NC Lease”), to expand the Company’s research and development activities focused on its desktop offerings and enable the ability to standup an additional manufacturing site for the Company. The New NC Lease is for approximately 13,300 rentable square feet and is for a term of 88 months with total lease costs of approximately $4.0 million. The New NC Lease commenced in March 2023.

In October 2022, 908 Devices GmbH entered into a new operating lease agreement in Braunschweig, Germany, as its existing lease was expiring and to increase the existing manufacturing site and set up European base of operations for the Company. The lease in Braunschweig is for approximately 7,500 rentable square feet and commenced in January 2023. The lease in Braunschweig is for a term of 60 months with total lease costs of approximately $0.4 million.

The components of lease expense under ASC 842 were as follows (in thousands):

	Year Ended December 31, 2023	Year Ended December 31, 2022
Operating lease cost	$ 2,176	$ 2,337
Short-term lease cost	70	43
Variable lease cost	133	9
	$ 2,379	$ 2,389

Supplemental disclosure of cash flow information related to leases was as follows (in thousands):

	Year Ended December 31, 2023	Year Ended December 31, 2022
Cash paid for amounts included in the measurement of operating lease liabilities	$ 2,118	$ 1,800
Operating lease liabilities arising from obtaining right-of-use assets	$ 3,017	$ —

The weighted-average remaining lease term and discount rate were as follows:

	December 31, 2023	December 31, 2022
Weighted-average remaining lease term - operating leases (in years)	3.96	2.75
Weighted-average discount rate - operating leases	8.4 %	9.5 %

The interest rate implicit in lease contracts is typically not readily determinable and as such, the Company uses its incremental borrowing rate based on information available at the lease commencement date, which represents an internally developed rate that would be incurred to borrow, on a collateralized basis, over a similar term, an amount equal to the lease payments in a similar economic environment.

Future annual minimum lease payments under operating leases as of December 31, 2023 are as follows (in thousands):

2024	$ 2,432
2025	2,002
2026	581
2027	595
2028	509
Thereafter	838
Total future minimum lease payments	6,957
Less: imputed interest	(1,012)
Total operating lease liabilities	$ 5,945

15. Commitments and Contingencies

Operating Leases

The Company’s commitments under its leases are described in Note 14.

Royalty Arrangements

The Company has entered into royalty arrangements with two parties whereby the Company owes low- to mid-single digit royalty percentages related to revenue that is derived pursuant to in-licensed technologies. Royalty obligations are expensed when incurred or over the minimum royalty periods and have not been material.

In October 2023, the Company notified one of the parties and terminated the license arrangement as of December 31, 2023. The Company will no longer incur minimum royalty payments of $0.1 million per year.

401(k) Savings Plan

The Company has a defined-contribution savings plan under Section 401(k) of the Internal Revenue Code. This plan covers substantially all employees who meet minimum age and service requirements and allows participants to defer a portion of their annual compensation on a pre-tax basis. Company contributions to the plan may be made at the discretion of the board of directors. The Company made contributions of $0.5 million and $0.5 million for the year ended December 31, 2023 and 2022, respectively.

Contingent Consideration – Earnout and Pension Liability

The Company agreed to pay three milestone based earnouts under the Trace purchase agreement for the total potential payout of $2.0 million. Milestones are based on target revenues, and technical integration of 908 Devices GmbH (formerly Trace Analytics) systems and knowledge, and range from the closing date of August 3, 2022 to June 30, 2024. In addition, the Company withheld $0.9 million of consideration.

During 2023, the Company received notice that the pension obligation had been transferred and was no longer in Trace’s name and therefore the Company released the $0.9 million assignment of the pension liability. The Trace acquisition consideration withheld in respect of the pension plan was paid out to the sellers in April 2023. Two of three milestone based earnouts were achieved and a $0.5 million payment was made in August 2023 and a $0.5 million payment was made in February 2024.

During the fourth quarter of 2023, the probability weighted fair value of the future earnout was determined to be zero. Accordingly, the accumulated accretion under the last milestone and the relative contingent consideration have been reduced to zero. See Note 3, *Fair Value Measurements*.

Indemnification Agreements

In the ordinary course of business, the Company may provide indemnification of varying scope and terms to vendors, lessors, business partners and other parties with respect to certain matters including, but not limited to, losses arising out of breach of such agreements or from intellectual property infringement claims made by third parties. In addition, the Company has entered into indemnification agreements with its executive officers and members of its board of directors that will require the Company, among other things, to indemnify them against certain liabilities that may arise by reason of their status or services as directors or officers. The maximum potential amount of future payments the Company could be required to make under these indemnification agreements is, in many cases, unlimited. To date, the Company has not incurred any material costs as a result of such indemnifications. The Company is not currently aware of any indemnification claims and had not accrued any liabilities related to such obligations in its consolidated financial statements as of December 31, 2023 and 2022.

Legal Proceedings

The Company is not currently party to any material legal proceedings. At each reporting date, the Company evaluates whether or not a potential loss amount or a potential range of loss is probable and reasonably estimable under the provisions of the authoritative guidance that addresses accounting for contingencies. The Company expenses as incurred the costs related to such legal proceedings.

16. Net Loss

The Company's basic and diluted net loss per share was $1.13 and $1.07 for the years ended December 31, 2023 and 2022, respectively.

The Company's potential dilutive securities have been excluded from the computation of diluted net loss per share as the effect would be to reduce the net loss per share. Therefore, the weighted average number of common shares outstanding used to calculate both basic and diluted net loss per share attributable to common stockholders is the same. The Company excluded the following potential common shares, presented based on amounts outstanding at each period end, from the computation of diluted net loss per share attributable to common stockholders for the periods indicated because including them would have had an anti-dilutive effect:

	December 31,	
	2023	2022
Warrants to purchase common stock	92,703	92,703
Options to purchase common stock	2,427,417	2,471,365
Performance stock units	53,794	—
Restricted stock units	1,840,681	1,059,529
	4,414,595	3,623,597

17. Income Taxes

During the years ended December 31, 2023 and 2022, the Company recognized an income tax benefit of $0.2 million and $0, respectively. The income tax benefit recognized during the year ended December 31, 2023 primarily resulted from a reduction in the deferred tax liabilities recorded as part of our acquisition of 908 Devices GmbH.

During the years ended December 31, 2023 and 2022, the Company did not record income tax benefits for the net operating losses incurred or for the research and development tax credits generated in each year, due to its uncertainty of realizing a benefit from those items.

A reconciliation of the U.S. federal statutory income tax rate to the Company's effective income tax rate is as follows:

	Year Ended December 31,	
	2023	2022
Federal statutory income tax rate	(21.0)%	(21.0)%
State income taxes, net of federal benefit	(3.2)	(4.7)
Federal and state research and development tax credits	(5.0)	(5.1)
Nondeductible items	3.1	(1.7)
Change in valuation allowance	25.5	32.5
Effective income tax rate	(0.6)%	0.0 %

Net deferred tax liabilities consisted of the following (in thousands):

	December 31,	
	2023	2022
Deferred tax assets:		
Net operating loss carryforwards	$ 27,221	$ 23,210
Research and development tax credit carryforwards	10,557	8,722
Lease liability	1,362	1,139
Deferred Revenue	2,527	3,268
Accrued expenses and other	5,421	4,314
Capitalization under Section 174(a)	7,172	3,857
Total deferred tax assets	54,260	44,510
Deferred tax liabilities:		
Right-of-use asset	(1,394)	(1,000)
Intangible assets	(2,482)	(2,671)
Total deferred tax liabilities	(3,876)	(3,671)
Valuation allowance	(52,825)	(43,510)
Net deferred tax liabilities	$ (2,441)	$ (2,671)

As of December 31, 2023, the Company had gross federal and state operating loss carryforwards of $108.2 million and $77.4 million, respectively, which may be available to offset future taxable income and begin to expire in 2032 and 2025, respectively, of which $73.8 million of federal gross operating losses do not expire. As of December 31, 2023, the Company also had U.S. federal and state research and development tax credit carryforwards of $7.2 million and $4.1 million, respectively, which may be available to offset future tax liabilities and begin to expire in 2032 and 2030, respectively.

Utilization of the U.S. federal and state net operating loss carryforwards and research and development tax credit carryforwards may be subject to a substantial annual limitation under Sections 382 and 383 of the Internal Revenue Code of 1986, and corresponding provisions of state law, due to ownership changes that have occurred previously or that could occur in the future. These ownership changes may limit the amount of carryforwards that can be utilized annually to offset future taxable income or tax liabilities. In general, an ownership change, as defined by Section 382, results from transactions increasing the ownership of certain stockholders or public groups in the stock of a corporation by more than 50% over a three-year period.

The Company conducted a study to assess whether a change of control has occurred or whether there have been multiple changes of control since inception through March 1, 2022 and has determined that two historic ownership changes have occurred as defined by Section 382. Both ownership changes are not expected to have a material impact to the Company's net operating loss carryforwards or research and development tax credit carryforwards as these net operating losses and tax credit carryforwards may be utilized, subject to annual limitation, assuming sufficient taxable income is generated before expiration.

The Company has not conducted a study to document qualified activities for research and development tax credits generated. Such a study may result in an adjustment to the Company's research and development tax credit carryforwards; however, until a study is completed, and any adjustment is known, no amounts are being presented as an uncertain tax position.

The Company has evaluated the positive and negative evidence bearing upon its ability to realize the deferred tax assets. Management has considered the Company's history of cumulative net operating losses incurred since inception and has concluded that it is more likely than not that the Company will not realize the benefits of the deferred tax assets. Accordingly, as of December 31, 2023 and 2022, a full valuation allowance has been established against the net deferred tax assets, except for deferred tax liabilities recorded under our foreign jurisdiction, which amounted to $2.4 million and $2.7 million as of December 31, 2023 and 2022, respectively.

Changes in the valuation allowance for deferred tax assets related primarily to the increase in net operating loss carryforwards and research and development tax credit carryforwards and were as follows (in thousands):

	Year Ended December 31,	
	2023	2022
Valuation allowance as of beginning of year	$ 43,510	$ 32,631
Increases recorded to income tax provision	9,315	10,879
Valuation allowance as of end of year	$ 52,825	$ 43,510

As of December 31, 2023 and 2022, the Company had not recorded any amounts for unrecognized tax benefits. The Company's policy is to record interest and penalties related to income taxes as part of its income tax provision. As of December 31, 2023 and 2022, the Company had no accrued interest or penalties related to uncertain tax positions and no amounts had been recognized in the Company's consolidated statements of operations. The Company files income tax returns as prescribed by the tax laws of the jurisdictions in which it operates. In the normal course of business, the Company is subject to examination by federal and state jurisdictions, where applicable. The Company is open to future tax examination under statute from 2020 to the present; however, carryforward attributes that were generated prior to 2020 may still be adjusted upon examination by federal, state, or local tax authorities if they either have been or will be used in a future period. The Company has not received notice of examination by any other jurisdictions for any other tax year open under statute.

18. Acquisition

On August 3, 2022, the Company entered into a share purchase and transfer agreement and completed its acquisition of 100% of the registered share capital of 908 Devices GmbH, for total purchase price consideration of $17.3 million, comprised of (i) a $14.4 million initial cash payment, (ii) up to $2.0 million contingent cash consideration upon achievement of certain milestones over a twenty four month period and (iii) $0.9 million contingent pension liability holdback to be released upon discharging or transferring of such liability from 908 Devices GmbH.

908 Devices GmbH is a leading provider of online analysis systems for biotech applications in research, development, and production. 908 Devices GmbH's products are used for monitoring and controlling of complex processes in industrial pharmaceutical productions under continuous measurement conditions. The Company expects to integrate acquired sampling technology within future product offerings.

The Company has accounted for the acquisition of Trace as a purchase of a business under U.S. GAAP. Under the acquisition method of accounting, the assets acquired and liabilities assumed from Trace have been recorded as of the acquisition date, at their respective fair values, and consolidated with those of the Company.

The Company has allocated the purchase price to the net tangible and intangible assets based on their fair values as of August 3, 2022.

The following table presents the allocation of the acquisition date purchase consideration for the transaction including the contingent consideration and the allocation of the purchase consideration (in thousands):

Consideration Transferred:		
Cash paid	$	14,400
Net cash and working capital adjustment		113
Contingent consideration - pension liability		900
Contingent consideration - earnout		737
Total consideration transferred	$	16,150
Assets acquired and liabilities assumed:		
Cash and cash equivalents	$	638
Accounts receivable		168
Inventory		364
Prepaid expenses and other current assets		11
Property and equipment, net		32
Intangible assets		
Customer Relationships		3,142
Developed Technology		4,967
Software		254
Trade Name		61
Goodwill		9,566
Indemnification assets		917
Pension liability		(917)
Accounts payable, accrued expenses and other current liabilities		(306)
Deferred tax liability, net		(2,672)
Other liabilities		(75)
Total	$	16,150

The excess of the purchase price over the fair value of the acquired businesses' net assets represents cost and revenue synergies specific to the companies, and has been allocated to goodwill, which is not tax deductible. Intangible assets acquired have finite life and are amortized per our accounting policy. See Note 2 for the amortization periods.

Revenue and net loss related to 908 Devices GmbH’s operations was $0.8 million and $0.1 million, respectively, for the year ended December 31, 2022 and is included in the Company’s consolidated statements of operations.

The following unaudited pro forma information presents the consolidated results of operations of the Company and 908 Devices GmbH for the year ended December 31, 2022 as if the acquisition of 908 Devices GmbH had been completed on January 1, 2022 and have been calculated after applying the Company’s accounting policies. These pro forma condensed consolidated financial results have been prepared for comparative purposes only and include certain adjustments that reflect pro forma results of operations, such as consequential adjustments relating to the tax effect of these adjustments in combining the Company and Trace businesses.

The unaudited pro forma results do not reflect any operating efficiencies or potential cost savings which may result from the consolidation of the operations of the Company and 908 Devices GmbH. Accordingly, these unaudited pro forma results are presented for informational purposes only and are not necessarily indicative of the results of operations that would have been achieved had the acquisition occurred as of January 1, 2022, nor are they intended to represent or be indicative of future results of operations (in thousands):

	Year Ended December 31, 2022
Revenue (unaudited)	$ 47,982
Pre-tax loss (unaudited)	(33,191)

19. Segment Reporting and Geographic Data

The Company has determined that it operates in one segment (see Note 2).

See Note 2 for revenue by country. Long-lived assets by geography are summarized as follows (in thousands):

	December 31, 2023	December 31, 2022
Long-lived assets[(1)] by country:		
United States	$ 9,014	$ 7,852
All other countries	561	63
Total long-lived assets	$ 9,575	$ 7,915

(1) Long-lived assets exclude goodwill, other intangible assets and other assets.

20. Subsequent Event

Grant of Restricted Stock Units and Stock Options under the 2020 Plan

On March 1, 2024, the Company granted 1,073,620 restricted stock units and performance based stock units to employees under the 2020 Stock Plan. The restricted stock units vest over a four-year period. The restricted stock units were valued based on market value of the Company’s closing stock price at the date of grant and had an aggregate fair value of $7.9 million, which is being amortized as stock compensation expense over the vesting term.

On March 1, 2024, the Company granted 398,404 stock options to employees under the 2020 Stock Plan. The stock options vest over a four-year period. The stock options have an exercise price of $7.35, which was the Company’s closing stock price at the date of grant. The total fair value of these stock options at the grant date was $2.1 million using the Black-Scholes option pricing model, and the value is being amortized as stock compensation expense over the vesting term.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure.

None.

Item 9A. Controls and Procedures.

Evaluation of Disclosure Controls and Procedures

Evaluation of Disclosure Controls and Procedures. Our principal executive officer and principal financial officer, after evaluating the effectiveness of our disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) as of the end of the period covered by this Annual Report on Form 10-K, have concluded that, based on such evaluation, our disclosure controls and procedures were effective to ensure that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC's rules and forms, and is accumulated and communicated to our management, including our principal executive and principal financial officers, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure.

Changes in Internal Control over Financial Reporting. There were no changes in our internal control over financial reporting, identified in connection with the evaluation of such internal control that occurred during the quarter ended December 31, 2023 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Management's Annual Report on Internal Control over Financial Reporting. Our management is responsible for establishing and maintaining adequate internal control over financial reporting. Internal control over financial reporting is defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act, as a process designed by, or under the supervision of, our principal executive officer and principal financial officer and effected by our board of directors, management and other personnel 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. Our internal control over financial reporting includes those policies and procedures that:

- pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of our assets;
- provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that our receipts and expenditures are being made only in accordance with authorizations of management and our directors; and
- provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on the financial statements.

Under the supervision and with the participation of our management, including our principal executive officer and principal financial officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting based on the 2013 framework in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on our evaluation under that framework, our management concluded that our internal controls over financial reporting were effective as of December 31, 2023.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. 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.

Attestation Report on Internal Control over Financial Reporting. This Annual Report on Form 10-K does not include an attestation report of our independent registered public accounting firm on internal control over financial reporting due to the deferral allowed under the JOBS Act for emerging growth companies.

Item 9B. Other Information.

None of our directors or executive officers adopted or terminated a Rule 10b5-1 trading arrangement or a non-Rule 10b5-1 trading arrangement during the quarter ended December 31, 2023, as such terms are defined under Item 408(a) of Regulation S-K.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections.

Not applicable.

PART III

Item 10. Directors, Executive Officers and Corporate Governance.

The information required by this Item 10 will be included in our Definitive Proxy Statement to be filed with the Securities and Exchange Commission, or SEC, with respect to our 2024 Annual Meeting of Stockholders and is incorporated herein by reference.

Our board of directors has adopted a Code of Business Conduct and Ethics applicable to all officers, directors and employees, including our principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions. A copy of the Code is available at the Investors section of our website, located at ir.908devices.com, under “Corporate Governance—Documents & Charters.” We intend to make all required disclosures regarding any amendments to, or waivers from, any provisions of the Code at the same location of our website.

Item 11. Executive Compensation.

The information required by this Item 11 will be included in our Definitive Proxy Statement to be filed with the SEC with respect to our 2024 Annual Meeting of Stockholders and is incorporated herein by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.

The information required by this Item 12 will be included in our Definitive Proxy Statement to be filed with the SEC with respect to our 2024 Annual Meeting of Stockholders and is incorporated herein by reference.

Item 13. Certain Relationships and Related Transactions, and Director Independence.

The information required by this Item 13 will be included in our Definitive Proxy Statement to be filed with the SEC with respect to our 2024 Annual Meeting of Stockholders and is incorporated herein by reference.

Item 14. Principal Accountant Fees and Services.

The information required by this Item 14 will be included in our Definitive Proxy Statement to be filed with the SEC with respect to our 2024 Annual Meeting of Stockholders and is incorporated herein by reference.

PART IV

Item 15. Exhibit and Financial Statement Schedules

(a) 1. Financial Statements

For a list of the financial statements included herein, see Index to Consolidated Financial Statements in this Annual Report on Form 10-K, incorporated into this Item by reference.

2. Financial Statement Schedules

Financial statement schedules have been omitted because they are either not required or not applicable or the information is included in the consolidated financial statements or the notes thereto.

3. Exhibits

See the Exhibit Index in Item 15(b) below.

(b) Exhibit Index.

Exhibit Number	Description
3.1	Sixth Amended and Restated Certificate of Incorporation of the Registrant, as currently in effect (incorporated by reference to Exhibit 3.3 to the Registrant's Registration Statement on Form S-1 (File No. 333-250954) filed with the SEC on November 25, 2020)
3.2	Amended and Restated By-laws of the Registrant, as currently in effect (incorporated by reference to Exhibit 3.5 to the Registrant's Registration Statement on Form S-1 (File No. 333-250954) filed with the SEC on December 14, 2020)
4.1	Fourth Amended and Restated Stockholders Agreement among the Registrant, certain of its stockholders and its investors, dated April 12, 2019 (incorporated by reference to Exhibit 4.1 to the Registrant's Registration Statement on Form S-1 (File No. 333-250954) filed with the SEC on November 25, 2020)
4.2	Fourth Amended and Restated Registration Rights Agreement among the Registrant, certain of its stockholders and its investors, dated April 12, 2019 (incorporated by reference to Exhibit 4.2 to the Registrant's Registration Statement on Form S-1 (File No. 333-250954) filed with the SEC on November 25, 2020)
4.3	Form of Specimen Common Stock Certificate (incorporated by reference to Exhibit 4.3 to the Registrant's Registration Statement on Form S-1 (File No. 333-250954) filed with the SEC on December 14, 2020)
4.4	Warrant Agreement, dated March 15, 2017, between Hercules Technology III, L.P. and the Registrant (incorporated by reference to Exhibit 4.6 to the Registrant's Registration Statement on Form S-1 (File No. 333-250954) filed with the SEC on December 14, 2020)
4.5	Warrant Agreement, dated September 7, 2018, between PEI Investments, LLC and the Registrant (incorporated by reference to Exhibit 4.7 to the Registrant's Registration Statement on Form S-1 (File No. 333-250954) filed with the SEC on December 14, 2020)
4.6	Description of Securities (incorporated by reference to Exhibit 4.6 to the Registrant's Annual Report on Form 10-K (File No. 001-39815) filed with the SEC on March 31, 2021)
10.1#	2012 Stock Option and Grant Plan, as amended and forms of award agreements thereunder (incorporated by reference to Exhibit 10.1 to the Registrant's Registration Statement on Form S-1 (File No. 333-250954) filed with the SEC on December 14, 2020)

10.2#	2020 Stock Option and Incentive Plan and forms of award agreements thereunder (incorporated by reference to Exhibit 10.2 to the Registrant's Registration Statement on Form S-1 (File No. 333-250954) filed with the SEC on December 14, 2020)
10.3#	2020 Employee Stock Purchase Plan (incorporated by reference to Exhibit 10.13 to the Registrant's Registration Statement on Form S-1 (File No. 333-250954) filed with the SEC on December 14, 2020)
10.4#*	Amended and Restated Senior Executive Cash Incentive Bonus Plan
10.5#	Amended and Restated Non-Employee Director Compensation Policy (incorporated by reference to Exhibit 10.5 to the Registrant's Annual Report on Form 10-K (File No. 001-39815) filed with the SEC on March 11, 2022)
10.6#	Form of Director Indemnification Agreement (incorporated by reference to Exhibit 10.3 to the Registrant's Registration Statement on Form S-1 (File No. 333-250954) filed with the SEC on December 14, 2020)
10.7#	Form of Executive Officer Indemnification Agreement (incorporated by reference to Exhibit 10.4 to the Registrant's Registration Statement on Form S-1 (File No. 333-250954) filed with the SEC on December 14, 2020)
10.8#	Form of Executive Officer Employment Agreement (incorporated by reference to Exhibit 10.5 to the Registrant's Registration Statement on Form S-1(File No. 333-250954) filed with the SEC on November 25, 2020)
10.9+	Amended and Restated Exclusive License Agreement between the Registrant and The University of North Carolina at Chapel Hill, dated May 20, 2015, as amended (incorporated by reference to Exhibit 10.6 to the Registrant's Registration Statement on Form S-1 (File No. 333-250954) filed with the SEC on December 16, 2020)
10.16	Lease by Harbor Industrial Development LLC to the Registrant, dated January 2, 2018, as amended (incorporated by reference to Exhibit 10.12 to the Registrant's Registration Statement on Form S-1 (File No. 333-250954) filed with the SEC on November 25, 2020)
10.17	Loan and Security Agreement between the Registrant and Silicon Valley Bank, dated November 2, 2022 (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8 K (File No. 001 039815) filed with the SEC on November 8, 2022)
10.18#*	Form of First Amendment to Executive Officer Employment Agreement
10.19	Default Waiver and First Amendment to Loan and Security Agreement, dated as of August 4, 2023, by and between 908 Devices Inc. and Silicon Valley Bank, a division of First-Citizens Bank & Trust Company (successor by purchase to the Federal Deposit Insurance Corporation as Receiver for Silicon Valley Bridge Bank, N.A. (as successor to Silicon Valley Bank)) (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K (File No. 001-39815) filed with the SEC on August 8, 2023).
21.1*	Subsidiaries of the Registrant
23.1*	Consent of PricewaterhouseCoopers LLP, Independent Registered Public Accounting Firm, PCAOB ID 238

31.1*	Certification of Principal Executive Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2*	Certification of Principal Financial Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1**	Certification of Principal Executive Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2**	Certification of Principal Financial Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
97#*	Compensation Recovery Policy
101.INS*	Inline XBRL Instant Document
101.SCH*	Inline XBRL Taxonomy Extension Schema Document
101.CAL*	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.LAB*	Inline XBRL Taxonomy Extension Labels Linkbase Document
101.PRE*	Inline XBRL Taxonomy Extension Presentation Linkbase Document
101.DEF*	Inline XBRL Taxonomy Extension Definition Linkbase Document
104*	Cover Page Data File (the cover page XBRL tags are embedded within the iXBRL document).

# Indicates a management contract or any compensatory plan, contract or arrangement.

\+ Confidential treatment has been granted as to certain portions, which portions have been omitted and submitted separately to the SEC.

* Filed herewith.

** The certifications furnished in Exhibit 32.1 and 32.2 hereto are deemed to accompany this Annual Report on Form 10-K and will not be deemed “filed” for purposes of Section 18 of the Securities Exchange Act of 1934, as amended. Such certifications will not be deemed to be incorporated by reference into any filings under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, except to the extent that the Registrant specifically incorporates it by reference.

Item 16. Form 10–K Summary.

None.

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.

908 DEVICES INC.

Date: March 8, 2024

By: /s/ Kevin J. Knopp, Ph.D.
Kevin J. Knopp, Ph.D.
Chief Executive Officer

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 in the capacities and on the dates indicated.

Signature	Title	Date
/s/ Kevin J. Knopp, Ph.D. Kevin J. Knopp, Ph.D.	Chief Executive Officer and Director (Principal Executive Officer)	March 8, 2024
/s/ Joseph H. Griffith IV Joseph H. Griffith IV	Chief Financial Officer (Principal Financial and Accounting Officer)	March 8, 2024
/s/ E. Kevin Hrusovsky E. Kevin Hrusovsky	Chairman of the Board of Directors	March 8, 2024
/s/ Keith L. Crandell Keith L. Crandell	Director	March 8, 2024
/s/ Fenel M. Eloi Fenel M. Eloi	Director	March 8, 2024
/s/ Jeffrey P. George Jeffrey P. George	Director	March 8, 2024
/s/ Marcia Eisenberg, Ph.D. Marsha Eisenberg, Ph.D.	Director	March 8, 2024
/s/ Mark Spoto Mark Spoto	Director	March 8, 2024
/s/ Tony J. Hunt Tony J. Hunt	Director	March 8, 2024

EXHIBIT 10.4

908 DEVICES INC.
AMENDED AND RESTATED
SENIOR EXECUTIVE CASH INCENTIVE BONUS PLAN

1. Purpose

This Senior Executive Cash Incentive Bonus Plan (the "Bonus Plan") is intended to provide an incentive for superior work and to motivate eligible executives of 908 Devices Inc. (the "Company") and its subsidiaries toward even higher achievement and business results, to tie their goals and interests to those of the Company and its stockholders and to enable the Company to attract and retain highly qualified executives. The Bonus Plan is for the benefit of Covered Executives (as defined below).

2. Covered Executives

From time to time, the Compensation Committee of the Board of Directors of the Company (the "Compensation Committee") may select certain key executives (the "***C***overed Executives") to be eligible to receive bonuses hereunder. Participation in this Plan does not change the "at will" nature of a Covered Executive's employment with the Company.

3. Administration

The Compensation Committee shall have the sole discretion and authority to administer and interpret the Bonus Plan.

4. Bonus Determinations

(a) Corporate Performance Goals. A Covered Executive may receive a bonus payment under the Bonus Plan based upon the attainment of one or more performance objectives that are established by the Compensation Committee and relate to financial and operational metrics with respect to the Company or any of its subsidiaries (the "Corporate Performance Goals"), including, without limitation, the following: cash flow (including, but not limited to, operating cash flow and free cash flow); revenue; corporate revenue; earnings before interest, taxes, depreciation and amortization; net income (loss) (either before or after interest, taxes, depreciation and/or amortization); changes in the market price of the Company's common stock; economic value-added; acquisitions or strategic transactions, including licenses, collaborations, joint ventures or promotion arrangements; operating income (loss); return on capital, assets, equity, or investment; stockholder returns; return on sales; gross or net profit levels; productivity; expense efficiency; margins; operating efficiency; customer satisfaction; working capital; earnings (loss) per share of the Company's common stock; bookings, new bookings or renewals; sales or market shares; number of customers, number of new customers or customer references; operating income and/or net annual recurring revenue, any of which may be (A) measured in absolute terms or compared to any incremental increase, (B) measured in terms of growth, (C) compared to another company or companies or to results of a peer group, (D) measured against the market as a whole and/or as compared to applicable market indices and/or (E) measured on a pre-tax or post-tax basis (if applicable). Further, any Corporate Performance Goals may be used to measure the performance of the Company as a whole or a business unit or other segment of the Company, or one or more product lines or specific markets. The Corporate Performance Goals may differ from Covered Executive to Covered Executive.

(b) Calculation of Corporate Performance Goals. At the beginning of each applicable performance period, the Compensation Committee will determine whether any significant element(s) will be included in or excluded from the calculation of any Corporate Performance Goal with respect to any Covered Executive. In all other respects, Corporate Performance Goals will be calculated in accordance with the Company's financial statements, generally accepted accounting principles, or under a methodology established by the Compensation Committee at the beginning of the performance period and that is consistently applied with respect to a Corporate Performance Goal in the relevant performance period.

(c) Target; Minimum; Maximum. Each Corporate Performance Goal shall have a "target" (100 percent attainment of the Corporate Performance Goal) and may also have a "minimum" hurdle and/or a "maximum" amount.

(d) Bonus Requirements; Individual Goals. Except as otherwise set forth in this Section 4(d): (i) any bonuses paid to Covered Executives under the Bonus Plan shall be based upon objectively determinable bonus formulas that tie such bonuses to one or more performance targets relating to the Corporate Performance Goals, (ii) bonus formulas for Covered Executives shall be adopted in each performance period by the Compensation Committee and communicated to each Covered Executive at the beginning of each performance period and (iii) no bonuses shall be paid to Covered Executives unless and until the Compensation Committee makes a determination with respect to the attainment of the performance targets relating to the Corporate Performance Goals. Notwithstanding the foregoing, the Compensation Committee may adjust bonuses payable under the Bonus Plan based on achievement of one or more individual performance objectives or pay bonuses (including, without limitation, discretionary bonuses) to Covered Executives under the Bonus Plan based on individual performance goals and/or upon such other terms and conditions as the Compensation Committee may in its discretion determine.

(e) Individual Target Bonuses. The Compensation Committee shall establish a target bonus opportunity for each Covered Executive for each performance period. For each Covered Executive, the Compensation Committee shall have the authority to apportion the target award so that a portion of the target award shall be tied to attainment of Corporate Performance Goals and a portion of the target award shall be tied to attainment of individual performance objectives.

(f) Employment Requirement. Subject to any additional terms contained in a written agreement between the Covered Executive and the Company, the payment of a bonus to a Covered Executive with respect to a performance period shall be conditioned upon the Covered Executive's employment by the Company on the bonus payment date. If a Covered Executive was not employed for an entire performance period, the Compensation Committee may pro rate the bonus based on the number of days employed during such period.

5. Timing of Payment

(a) With respect to Corporate Performance Goals established and measured on a basis more frequently than annually (e.g., quarterly or semi-annually), the Corporate Performance Goals will be measured at the end of each performance period after the Company's financial reports with respect to such period(s) have been published. If the Corporate Performance Goals and/or individual goals for such period are met, payments will be made as soon as practicable following the end of such period, but not later 74 days after the end of the fiscal year in which such performance period ends.

(b) With respect to Corporate Performance Goals established and measured on an annual or multi-year basis, Corporate Performance Goals will be measured as of the end of each such performance period (e.g., the end of each fiscal year) after the Company's financial reports with respect to such period(s) have been published. If the Corporate Performance Goals and/or individual goals for any such period are met, bonus payments will be made as soon as practicable, but not later than 74 days after the end of the relevant fiscal year.

(c) For the avoidance of doubt, bonuses earned at any time in a fiscal year must be paid no later than 74 days after the last day of such fiscal year.

6. Clawback Policy; Applicable Laws

All compensation and awards under the Bonus Plan shall be subject to reduction, cancellation, forfeiture or recoupment to the extent necessary to comply with (i) any clawback, forfeiture or other similar policy adopted by the Board or committee thereof, and as in effect from time to time; and (ii) the listing standards of any national securities exchange or association on which the Company's securities are listed or as is otherwise required by the Dodd-Frank Wall Street Reform and Consumer Protection Act or other applicable laws.

7. Amendment and Termination

The Company reserves the right to amend or terminate the Bonus Plan at any time in its sole discretion.

Exhibit 10.18

FIRST AMENDMENT
TO
EXECUTIVE EMPLOYMENT AGREEMENT

THIS FIRST AMENDMENT TO EXECUTIVE EMPLOYMENT AGREEMENT (this "**Amendment**") is made and entered into effective as of [_____] (the "**Amendment Effective Date**"), by and between 908 Devices Inc., a Delaware corporation (the "**Company**"), and [_____] (the "**Executive**" and, together with the Company, the "**Parties**").

Whereas, the Company and Executive entered into that certain Executive Employment Agreement (the "**Agreement**") dated as of [_____];

Whereas, the Parties desire to amend Section 2 of the Agreement in the manner reflected herein;

Whereas, the Compensation Committee of the Board of Directors of the Company has approved the amendment of the Agreement in the manner reflected herein; and

Whereas, all capitalized terms not otherwise defined herein shall have the meanings ascribed to them in the Agreement.

Now Therefore, in consideration of the premises and mutual covenants and conditions herein, the Parties, intending to be legally bound, hereby agree as follows, effective as of the Amendment Effective Date:

1. **Clawback**. Section 2 of the Agreement is hereby amended to add the following subsection (g):

"(g) Clawback Policy; Applicable Laws. All compensation and awards under this Agreement shall be subject to reduction, cancellation, forfeiture or recoupment to the extent necessary to comply with (i) any clawback, forfeiture or other similar policy adopted by the Board or committee thereof, and as in effect from time to time; and (ii) the listing standards of any national securities exchange or association on which the Company's securities are listed or as is otherwise required by the Dodd-Frank Wall Street Reform and Consumer Protection Act or other applicable laws."

2. **Counterparts**. This Amendment may be executed in one or more facsimile, electronic or original counterparts, each of which shall be deemed an original and both of which together shall constitute the same instrument.

3. **Ratification**. All terms and provisions of the Agreement not amended hereby, either expressly or by necessary implication, shall remain in full force and effect. From and after the date of this Amendment, all references to the term "**Agreement**" in this Amendment or the original Agreement shall include the terms contained in this Amendment.

[Signature Page Follows]

IN WITNESS WHEREOF, the Parties hereto have executed this First Amendment to Executive Employment Agreement effective as of the Amendment Effective Date.

908 DEVICES INC.

By: ______________________________
Name:
Title:
Date:

EXECUTIVE

____
[Name]
Date:

Exhibit 21.1

SUBSIDIARIES OF THE REGISTRANT

Company Name	Jurisdiction
908 Devices Securities Corporation	Massachusetts
908 Devices GmbH	Germany
908 Devices (Shanghai) Technology Co., Ltd	China

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-8 (No. 333-251755, 333-263485 and 333-270574) and Form S-3 (No. 333-264828) of 908 Devices Inc. of our report dated March 8, 2024 relating to the financial statements, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers, LLP
Boston, Massachusetts
March 8, 2024

Exhibit 31.1

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER
PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Kevin J. Knopp, Ph.D., certify that:

1. I have reviewed this Annual Report on Form 10-K of 908 Devices Inc.;

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

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

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

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

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

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

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

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

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

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

Date: March 8, 2024	By:	/s/ Kevin J. Knopp, Ph.D.
		Kevin J. Knopp, Ph.D. Chief Executive Officer (Principal Executive Officer)

Exhibit 31.2

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER
PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Joseph H. Griffith IV, certify that:

1. I have reviewed this Annual Report on Form 10-K of 908 Devices Inc.;

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

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

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

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

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

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

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

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

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

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

Date: March 8, 2024

By: /s/ Joseph H. Griffith IV
Joseph H. Griffith IV
Chief Financial Officer
(Principal Financial and Accounting Officer)

Exhibit 32.1

CERTIFICATION PURSUANT TO

18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO

SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report on Form 10-K of 908 Devices Inc. (the “Company”) for the year ended December 31, 2023, as filed with the Securities and Exchange Commission on the date hereof (the “Report”), the undersigned, Kevin J. Knopp, Ph.D., Chief Executive Officer of the Company, hereby certifies, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to the best of his knowledge:

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

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

Date: March 8, 2024

By: /s/ Kevin J. Knopp, Ph.D.
Kevin J. Knopp, Ph.D.
Chief Executive Officer
(Principal Executive Officer)

Exhibit 32.2

CERTIFICATION PURSUANT TO

18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO

SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report on Form 10-K of 908 Devices Inc. (the “Company”) for the year ended December 31, 2023, as filed with the Securities and Exchange Commission on the date hereof (the “Report”), the undersigned, Joseph H. Griffith IV, Chief Financial Officer of the Company, hereby certifies, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to the best of his knowledge:

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

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

Date: March 8, 2024

By: /s/ Joseph H. Griffith IV
Joseph H. Griffith IV
Chief Financial Officer
(Principal Financial and Accounting Officer)

Exhibit 97

908 DEVICES INC.

COMPENSATION RECOVERY POLICY

Adopted as of August 2, 2023

908 Devices Inc., a Delaware corporation (the "Company"), has adopted a Compensation Recovery Policy (this "Policy") as described below.

1. Overview

The Policy sets forth the circumstances and procedures under which the Company shall recover Erroneously Awarded Compensation from Covered Persons in accordance with rules issued by the United States Securities and Exchange Commission (the "SEC") under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and the Nasdaq Stock Market. Capitalized terms used and not otherwise defined herein shall have the meanings given in Section 3 below.

2. Compensation Recovery Requirement

In the event the Company is required to prepare a Material Financial Restatement, the Company shall recover reasonably promptly all Erroneously Awarded Compensation with respect to such Material Financial Restatement.

3. Definitions

a. "Applicable Recovery Period" means the three completed fiscal years immediately preceding the Restatement Date for a Material Financial Restatement. In addition, in the event the Company has changed its fiscal year: (i) any transition period of less than nine months occurring within or immediately following such three completed fiscal years shall also be part of such Applicable Recovery Period and (ii) any transition period of nine to 12 months will be deemed to be a completed fiscal year.

b. "Applicable Rules" means any rules or regulations adopted by the Exchange pursuant to Rule 10D-1 under the Exchange Act and any applicable rules or regulations adopted by the SEC pursuant to Section 10D of the Exchange Act.

c. "Board" means the Board of Directors of the Company.

d. "Committee" means the Compensation Committee of the Board or, in the absence of such committee, a majority of independent directors serving on the Board.

e. "Covered Person" means any Executive Officer. A person's status as a Covered Person with respect to Erroneously Awarded Compensation shall be determined as of the time of receipt of such Erroneously Awarded Compensation regardless of the person's current role or status with the Company (e.g., if a person began service as an Executive Officer after the beginning of an Applicable Recovery Period, that person would not be considered a Covered Person with respect to Erroneously Awarded Compensation received before the person began service as an Executive Officer, but would be considered a Covered Person with respect to Erroneously Awarded Compensation received after the person began service as an Executive Officer where such person served as an Executive Officer at any time during the performance period for such Erroneously Awarded Compensation).

f. "Effective Date" means October 2, 2023.

g. "Erroneously Awarded Compensation" means the amount of any Incentive-Based Compensation received by a Covered Person on or after the Effective Date and during the Applicable Recovery Period that exceeds the amount that otherwise would have been received by the Covered Person had such compensation been determined based on the restated amounts in the Material Financial Restatement, computed without regard to any taxes paid. Calculation of Erroneously Awarded Compensation with respect to Incentive-Based Compensation based on stock price or total shareholder return, where the amount of Erroneously Awarded Compensation is not subject to mathematical recalculation directly from the information in a Material Financial Restatement, shall be based on a reasonable estimate of the effect of the Material Financial Restatement on the stock price or total shareholder return upon which the Incentive-Based Compensation was received, and the Company shall maintain documentation of the determination of such reasonable estimate and provide such documentation to the Exchange in accordance with the Applicable Rules. Incentive-Based Compensation is deemed received, earned, or vested when the Financial Reporting Measure is attained, not when the actual payment, grant, or vesting occurs.

h. "Exchange" means the Nasdaq Stock Market LLC.

i. "Executive Officer" means any person who served the Company in any of the following roles at any time during the performance period for Incentive-Based Compensation such person received during or after beginning service in such role: the president, principal financial officer, principal accounting officer (or if there is no such accounting officer the controller), any vice president in charge of a principal business unit, division or function (such as sales, administration or finance), any other officer who performs a policy making function, or any other person who performs similar policy making functions for the Company. Executive officers of parents or subsidiaries of the Company may be deemed executive officers of the Company if they perform such policy making functions for the Company.

j. "Financial Reporting Measures" mean measures that are determined and presented in accordance with the accounting principles used in preparing the Company's financial statements, any measures that are derived wholly or in part from such measures (including, for example, a non-GAAP financial measure), and stock price and total shareholder return.

k. "Incentive-Based Compensation" means any compensation provided, directly or indirectly, by the Company or any of its subsidiaries that is granted, earned, or vested based, in whole or in part, upon the attainment of a Financial Reporting Measure.

l. "Material Financial Restatement" means an accounting restatement of previously issued financial statements of the Company due to the material noncompliance of the Company with any financial reporting requirement under the securities laws, including any required accounting restatement to correct an error in previously-issued financial statements that is material to the previously-issued financial statements or that would result in a material misstatement if the error were corrected in the current period or left uncorrected in the current period.

m. "Restatement Date" means, with respect to a Material Financial Restatement, the earlier to occur of: (i) the date the Board, a committee of the Board or the officer or officers of the Company authorized to take such action if Board action is not required concludes, or reasonably should have concluded, that the Company is required to prepare the Material Financial Restatement or (ii) the date a court, regulator, or other legally authorized body directs the Company to prepare the Material Financial Restatement.

4. Exception to Compensation Recovery Requirement

The Company may elect not to recover Erroneously Awarded Compensation pursuant to this Policy if the Committee determines that recovery would be impracticable, and one or more of the following conditions, together with any further requirements set forth in the Applicable Rules, are met: (i) the direct expense paid to a third party to assist in enforcing this Policy would exceed the amount to be recovered, and the Company has made a reasonable attempt to recover such Erroneously Awarded Compensation or (ii) recovery would likely cause an otherwise tax-qualified retirement plan to fail to be so qualified under applicable regulations.

5. Method of Compensation Recovery

The Committee shall determine, in its sole discretion, the method for recovering Erroneously Awarded Compensation hereunder, which may include, without limitation, any one or more of the following:

a. requiring reimbursement of cash Incentive-Based Compensation previously paid;

b. seeking recovery of any gain realized on the vesting, exercise, settlement, sale, transfer, or other disposition of any equity-based awards;

c. cancelling or rescinding some or all outstanding vested or unvested equity-based awards;

d. adjusting or withholding from unpaid compensation or other offset;

e. cancelling or offsetting against planned future grants of equity-based awards; and/or

f. any other method permitted by applicable law or contract.

Notwithstanding the foregoing, a Covered Person will be deemed to have satisfied such person's obligation to return Erroneously Awarded Compensation to the Company if such Erroneously Awarded Compensation is returned in the exact same form in which it was received; provided that equity withheld to satisfy tax obligations will be deemed to have been received in cash in an amount equal to the tax withholding payment made.

6. Policy Interpretation

This Policy shall be interpreted in a manner that is consistent with the Applicable Rules and any other applicable law. The Committee shall take into consideration any applicable interpretations and guidance of the SEC in interpreting this Policy, including, for example, in determining whether a financial restatement qualifies as a Material Financial Restatement hereunder. To the extent the Applicable Rules require recovery of Incentive-Based Compensation in additional circumstances besides those specified above, nothing in this Policy shall be deemed to limit or restrict the right or obligation of the Company to recover Incentive-Based Compensation to the fullest extent required by the Applicable Rules.

7. Policy Administration

This Policy shall be administered by the Committee. The Committee shall have such powers and authorities related to the administration of this Policy as are consistent with the governing documents of the Company and applicable law. The Committee shall have full power and authority to take, or direct the taking of, all actions and to make all determinations required or provided for under this Policy and shall have full power and authority to take, or direct the taking of, all such other actions and make all such other determinations not inconsistent with the specific terms and provisions of this Policy that the Committee deems to be necessary or appropriate to the administration of this Policy. The interpretation and construction by the Committee of any provision of this Policy and all determinations made by the Committee under this policy shall be final, binding, and conclusive.

8. Compensation Recovery Repayments not Subject to Indemnification

Notwithstanding anything to the contrary set forth in any agreement with, or the organizational documents of, the Company or any of its subsidiaries, Covered Persons are not entitled to indemnification for Erroneously Awarded Compensation recovered under this Policy.