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 001-38185

PRESSURE BIOSCIENCES, INC.
(Exact Name of Registrant as Specified in its Charter)

Massachusetts	**04-2652826**
(State or Other Jurisdiction of Incorporation or Organization)	(I.R.S. Employer Identification No.)
480 Neponset St., Canton, Massachusetts	**02021**
(Address of Principal Executive Offices)	(Zip Code)

(508) 230-1828
(Registrant's Telephone Number, Including Area Code)

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

Title of Each Class	Name of Each Exchange on Which Registered
None	None

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

(Title of Class)
Common Stock, par value $.01 per share

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 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 during the preceding 12 months (or for such shorter period that registrant was required to submit and post such files.
Yes ☒ No □

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or 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 □
Non-accelerated filer ☒
Accelerated filer □
Smaller reporting company ☒
Emerging growth company □

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

Indicate by check mark whether 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. □

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 the voting and non-voting common stock held by non-affiliates of the registrant as of December 31, 2023 was $8,002,541 based on the closing price of $0.33 per share of Pressure BioSciences, Inc. common stock as quoted on the OTCQB Marketplace on that date.

As of June 4, 2024, there were 34,710,509 shares of the registrant's common stock outstanding.

Documents Incorporated by Reference

N/A.

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Introductory Comments

Throughout this Annual Report on Form 10-K, the terms "we," "us," "our," "the Company," "our Company," and "PBI," refer to Pressure BioSciences, Inc., a Massachusetts corporation, and unless the context indicates otherwise, also includes our two wholly owned subsidiaries.

Throughout this document we use the following terms: Barocycler® and PULSE®, which are registered trademarks of the Company. We also use the terms ProteoSolve™, ProteoSolveLRS™, the Power of PCT™, the PCT Shredder™, HUB440™, HUB880™, micro-Pestle™, PCT-HD™, BaroFold™, Ultra Shear Technology™, "UltraShear™", and UST™ all of which are unregistered trademarks of the Company.

PART I

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the "Securities Act") and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). In some cases, forward-looking statements are identified by terms such as "may," "will," "should," "could," "would," "expects," "plans," "anticipates," "believes," "estimates," "projects," "predicts," "potential" and similar expressions intended to identify forward-looking statements. Such statements include, without limitation, statements regarding:

- our need for, and our ability to raise, additional equity or debt financing on acceptable terms, if at all;
- our need to take additional cost reduction measures, cease operations or sell our operating assets, if we are unable to obtain sufficient additional financing;
- our belief that we will have sufficient liquidity to finance normal operations for the foreseeable future;
- the options we may pursue in light of our financial condition;
- the potential applications and revenue projections for Ultra Shear Technology (*"UltraShear"* or "*UST"*);
- the potential applications and revenue projections for the BaroFold high-pressure protein refolding and disaggregation technology;
- the amount of cash necessary to operate our business;
- the anticipated uses of grant revenue and the potential for increased grant revenue in future periods;
- our plans and expectations with respect to our continued operations;
- the expected increase in the number of Pressure Cycling Technology (*"PCT")* and UST units we believe will be installed and the expected increase in revenues from the sale of consumable products, extended service contracts, and BaroFold biopharma contract services;
- our belief that PCT has achieved initial market acceptance in the mass spectrometry and other markets;
- the expected development and success of new instrument and consumables product offerings, especially in the area of Ultra Shear Technology;
- the potential applications for our instrument and consumables product offerings;
- the expected expenses of, and benefits and results from, our research and development efforts;
- the expected benefits and results from our collaboration programs, strategic alliances and joint ventures;
- our expectation of obtaining research grants from the government in the future;
- our expectations of the results of our development activities funded by government and academic research grants;
- the potential size of the market for PCT, BaroFold, and UST applications;
- general economic conditions;
- the anticipated future financial performance and business operations of our company;
- our reasons for focusing certain resources in the PCT market for genomic, proteomic, lipidomic and small molecule sample preparation;
- the importance of mass spectrometry as a laboratory tool;
- the advantages of PCT over other current technologies as a method of biological sample preparation and protein characterization in biomarker discovery, forensics, and histology, as well as for other applications;
- the capabilities and benefits of our PCT Sample Preparation System, consumables, and other products;
- our belief that laboratory scientists will achieve results comparable with those reported to date by certain research scientists who have published or presented publicly on PCT and our other products and services;
- our ability to retain our core group of scientific, administrative, and sales personnel; and
- our ability to expand our customer base in applications of PCT, BaroFold, and UST products and services.

These forward-looking statements are only predictions and involve known and unknown risks, uncertainties and other factors that may cause our actual results, levels of activity, performance, or achievements to be materially different from any future results, levels of activity, performance, or achievements, expressed or implied, by such forward-looking statements. Also, these forward-looking statements represent our estimates and assumptions only as of the date of this Annual Report on Form 10-K. Except as otherwise required by law, we expressly disclaim any obligation or undertaking to release publicly any updates or revisions to any forward-looking statement contained in this Annual Report on Form 10-K to reflect any change in our expectations or any change in events, conditions or circumstances on which any of our forward-looking statements are based. Factors that could cause or contribute to differences in our future financial and other results include those discussed in the risk factors set forth in Part I, Item 1A of this Annual Report on Form 10-K as well as those discussed elsewhere in this Annual Report on Form 10-K. We qualify all our forward-looking statements by these cautionary statements.

ITEM 1. BUSINESS.

Overview

Pressure BioSciences, Inc. (OTCQB: PBIO) (the "Company") is a leader in the development & sale of innovative, enabling, high pressure technology-based instruments, consumables, and services for the life sciences and other industries worldwide. Our products/services are based on three patented, high-pressure platforms: (i) Ultra Shear Technology™ ("UltraShear™" or "UST™"), (ii) BaroFold Technology™ ("BaroFold™"), and (iii) Pressure Cycling Technology™ ("PCT™")

The Company was founded on the belief that its PCT platform had the potential to significantly increase the quality of sample preparation in both research and clinical settings. This premise has been well proven and PBI has been successful in installing its PCT platform in the laboratories of key opinion leaders and many other scientists worldwide. Although developed subsequently, the Company now assesses that the commercial potential for its UST platform across diverse multi-billion-dollar markets far exceeds the potential of the PCT and BaroFold platforms. Consequently, in January 2022, PBI made the critical strategy decision to immediately shift its primary business focus from PCT to its innovative UST Platform.

Products Overview

The UST Platform (8 issued patents) is based on the use of intense shear forces from ultra-high-pressure discharge (greater than 30,000 psi) through a dynamically controlled nano-gap valve under precisely controlled temperatures. UST has been shown to turn hydrophobic (water-repelling) oil-based supplements (e.g., CBD, curcumin, astaxanthin), therapeutics (e.g., prednisone), and other active ingredients (e.g., retinol) into long-term stable, effectively water-soluble, highly bioavailable, oil-in-water nanoemulsion formulations. The Company first introduced the UST Platform in May 2022 through participation in several cannabis/health & wellness meetings combined with a free-sample program. UST nanoemulsions are produced with effective commercial sterility and are extremely stable at room temperatures and offer great promise to help reduce costs of food and beverages, as well as drugs and vaccines, that require cold chain distribution and storage. The UST platform also produces nanoemulsions of extraordinary consistency and extremely low droplet size, yielding the ability to deliver their oil-soluble therapeutic and nutritional payloads with unprecedented speed and completeness of absorption and subsequent systemic bioavailability in intended recipients (human, animal, or plant). Currently the Company seeks product development collaborations and commercialization contracts across multi-billion-dollar market sectors including nutraceuticals, cosmeceuticals, food & beverages, pharmaceuticals, agrochemicals, and industrial products. Drug delivery and vaccine development groups in academia and industry are traditionally slower to adopt new technologies, but these pharmaceutical applications will also be targeted later, to take advantage of the UST Platform's capacity to manufacture low nanometer-scale lipid droplets (nanoemulsions), solid Lipid NanoParticles (LNPs), and liposomes to revolutionize drug delivery and decrease the manufacturing and distribution costs of small molecule hydrophobic drugs, RNA-based drugs, and vaccines.

The BaroFold Platform (14 issued patents) can be used to significantly improve the quality and lower the production costs of protein biotherapeutics. It employs high pressure manipulations for the disaggregation, unfolding and controlled refolding of proteins to their desired native structures at yields and efficiencies not achievable using other existing technologies. The BaroFold Platform has been shown to prevent formation of and/or remove protein aggregates in biotherapeutic drug manufacturing, thereby improving product efficacy, safety, and cost for both new-drug entities and biosimilar (follow-on biologic) products. It is scalable and practical for standard manufacturing processes.

The PCT Platform (17 issued patents) uses alternating cycles of hydrostatic pressure between ambient and ultra-high pressures to control bio-molecular interactions safely and reproducibly in sample preparation (e.g., the critical steps performed by tens of thousands of scientists worldwide prior to analytical measurements, such as biomolecule extraction from tissue samples and preparation of extracted molecules for analysis). Our focus for PCT is on making GMP-compliant, next generation PCT-based Barocycler EXTREME systems available globally to biopharmaceutical drug manufacturers for use in the design, development, characterization, and quality control of biotherapeutic drugs. We currently have over 350 PCT Systems placed in approximately 250 academic, government, pharmaceutical, and biotech research laboratories worldwide. There are currently over 300 independent publications highlighting the advantages of using the PCT Platform in scientific research & clinical laboratories.

The Pressure Cycling Technology Platform

a. Description

Pressure Cycling Technology uses alternating cycles of hydrostatic pressure between ambient and ultra-high pressures to control bio-molecular interactions safely and reproducibly in sample preparation (e.g., the critical steps performed by tens of thousands of scientists worldwide prior to analytical measurements, such as biomolecule extraction from tissue samples and preparation of extracted molecules for analysis). Our focus for PCT is on making GMP-compliant, next generation PCT-based Barocycler EXTREME system available globally to biopharmaceutical drug manufacturers for use in the design, development, characterization, and quality control of biotherapeutic drugs. We currently have over 350 PCT Systems placed in approximately 250 academic, government, pharmaceutical, food and beverage, and biotech research laboratories worldwide. There are currently over 300 independent publications highlighting the advantages of using the PCT Platform in scientific research & clinical laboratories.

The most commonly used technique worldwide for the preservation of cancer and other tissues for long-term storage and subsequent pathology evaluation is to process them into formalin-fixed, paraffin-embedded (“FFPE”) samples. A number of our customers state in their publications that the quality and analysis of FFPE tissues is highly problematic, and that PCT offers significant advantages over current processing methods for the recovery and analysis of samples processed by FFPE, including enhanced standardization, speed, biomolecule recovery, and safety.

Our customers include researchers at academic laboratories, government agencies, biotechnology companies, pharmaceutical companies, other life science institutions, and food/beverage laboratories in the Americas, Europe, Asia, Africa and Australia/Pacific. Our goal is to continue market penetration in these target areas. We also believe that there is a significant opportunity to sell and/or lease Barocycler and UST instrumentation to additional laboratories at current customer institutions.

b. Market

We focus most of our PCT research, development, and commercialization efforts on sample preparation and quality control analysis for genomic, proteomic, lipidomic, and small molecule studies. This market is comprised of academic and government research institutions, biotechnology and pharmaceutical companies, and other public and private laboratories that are engaged in studying genomic, proteomic, and small molecule biomarkers within plant and animal cells and tissues. We elected to initially focus our resources on the market of genomic, proteomic, and small molecule sample preparation because we believe it is an area that:

- is a continuously growing market;
- has a large and immediate need for better technology;
- is comprised mostly of research laboratories, which are subject to minimal governmental regulation;
- is a readily demonstrated application area for the development of our products;
- is compatible with technical core competencies in our team; and
- we currently have strong patent protection.

We believe that our existing PCT, complementary constant pressure ("CP") instruments, and related consumable products fill an important and growing need in the sample preparation market for the safe, rapid, versatile, reproducible, and more complete extraction of nucleic acids, proteins, and small molecules from a wide variety of plant and animal cells and tissues.

Biomarker Discovery - Mass Spectrometry

A biomarker is any substance (e.g., protein, DNA) that can be used as an indicator of the presence or absence of a particular disease-state or condition, and/or to predict or measure the progression and effects of therapy. Biomarkers can help in the diagnosis, prognosis, therapy selection and monitoring, prevention, surveillance, control, and cure of diseases and medical conditions.

A mass spectrometer is a laboratory instrument used in the analysis of biological samples, often focused on proteins, in life sciences research. It is frequently used to help discover biomarkers. According to a July 2023 published market report by Global Market Insights, the mass spectrometry market size was $5.4 billion in 2022 and was forecasted to reach $9.8 billion in 2032. GMI listed a number of growth drivers, including growing applications in pharmaceutical and biotechnology industries – which are our areas of strength and focus. We believe our PCT and CP-based products offer significant advantages in speed, reproducibility, and quality completeness of results, compared with current techniques used in the preparation of samples for mass spectrometry analysis.

Biomarker Discovery – Precision Medicine

Precision medicine is an approach to patient care that allows doctors to select treatments that are most likely to help patients based on a specific biomolecular understanding of their disease. The goal of precision medicine is to facilitate selection and/or development of treatments that are tailored to the unique biomolecular variations specific to each person's disease.

A significant roadblock in obtaining necessary information to advance precision medicine – specifically in proteogenomics, is sample preparation, along with the time required using conventional methods. We believe our PCT workflows address this roadblock by providing a rapid, reproducible means of extracting biomarkers from patient samples in a clinically relevant timeframe of 2 hours.

Biomarker Discovery – Cancer and Tumor Microenvironment

The most common technique used worldwide for the preservation of cancer and other tissues for subsequent pathology evaluation is formalin-fixation followed by paraffin-embedding, or FFPE. We believe that the quality and analysis of FFPE tissues is highly problematic, and that PCT offers significant advantages over current processing methods, including standardization, speed, biomolecule recovery, and safety.

Biopharmaceutical Quality Control

A critical step in biopharmaceutical manufacturing processes is quality control, involving characterization of the resulting biotherapeutics via peptide mapping and analysis of post-translational modifications. Peptide mapping can be used in drug discovery and throughout the manufacturing process for quality control between batches to produce a unique 'fingerprint' of an individual protein and to compare this with the theoretical gene-derived amino acid sequence. Using conventional methods this process can take overnight or more. We believe our PCT workflows offer a significant advantage to this process by offering a significant reduction in time and improvement in reproducibility with a GMP compliant platform. Many protein-based pharmaceuticals undergo specific enzymatic and chemical modifications (such as glycosylation, when specific carbohydrate moieties, glycans, are attached to the protein core, thus helping them remain active longer in the patient's bloodstream). Like peptide mapping, analysis of glycans, also critical quality attributes of biologic drugs, requires tedious sample preparation steps that can be significantly accelerated and rendered more reproducible by PCT workflows.

Our customers include researchers at academic laboratories, government agencies, biotechnology companies, pharmaceutical companies, food & beverage laboratories, and other life science institutions in the Americas, Europe, Asia, Africa, and Australia/Pacific. Our goal is to continue aggressive market penetration in these target areas. We also believe that there is a significant opportunity to sell and/or lease additional Barocycler instrumentation to additional laboratories within current customer organizations.

Sample Extraction Process

The process of preparing samples for genomic, proteomic, and small molecule studies includes a crucial step called sample extraction or sample disruption. This is the process of extracting nucleic acid i.e., DNA and/or RNA, proteins or small molecules from the plant or animal cells and tissues that are being studied. Sample preparation is widely regarded as a significant impediment to research and discovery and sample extraction is generally regarded as one of the key parts of sample preparation. Our current commercialization efforts are based upon our belief that pressure cycling technology provides a superior solution to sample extraction compared with other available technologies or procedures and can thus significantly improve the quality of sample preparation, and thus the quality of the test result.

c. Products

We believe our PCT and CP products allow researchers to improve scientific research studies in the life sciences field. Our products are developed with the expectation of meeting or exceeding the needs of research scientists while enhancing the safety, speed and quality that is available to them with existing sample preparation methods.

Barocycler Instrumentation

Our Barocycler product line consists of laboratory instrumentation that subjects a sample to cycles of pressure from ambient (approximately 14.5 psi) to ultra-high levels (20,000 psi or much greater) and then back to ambient, in a precisely controlled manner.

Our PCT instruments (the Barocycler 2320EXT, the HUB440, and the HUB880) use cycles of high, hydrostatic pressure to quickly and efficiently break up the cellular structures of a specimen to release proteins, nucleic acids, lipids and small molecules from the specimen into our consumable processing tubes, referred to as our PULSE Tubes and MicroTubes. Our instruments have temperature control options (on-board heating via internal heating jacket or heating and chilling via an external circulating water or oil bath), automatic fill and dispensing valves, and an integrated touchscreen for interfacing with an onboard micro-processor or computer. The microprocessor, computer, or laptop computer are capable of saving specific PCT protocols, so the researcher can achieve maximum reproducibility for the preparation of nucleic acids, proteins, lipids, or small molecules from various biological samples. Our Barocycler instruments, consumable products and application specific kits make up our PCT Sample Preparation System.

Barocycler 2320EXTREME - The Barocycler 2320EXT is the flagship of the Company's Barocycler line of PCT-based instruments. It weighs approximately 80lbs, delivers a maximum pressure of 45,000 psi, and can process up to 16 MicroTubes simultaneously. The working temperature range is 4 – 95ºC and is controlled via an on-board electric heating jacket or external circulating bath. All tests are entered and recorded on a touch screen interface. Information from each test run (pressure profile, cycle number, and temperature) is recorded and can be stored on the instrument, on a USB drive, or networked into the user's lab computer system. Pressure profiles can be manipulated in a number of ways, including static high pressure holds and pressure ramp programs. The Barocycler 2320EXT is pneumatic and requires an input air source of only 100psi to achieve and cycle at high pressure.

The Barocycler 2320EXT was developed to support the PCT-HD/PCT-SWATH application. PCT-HD enables faster, less cumbersome and higher quality processing of biopsy tissues. With homogenization, extraction, and digestion of proteins occurring in a single PCT MicroTube under high pressure, this protocol can yield analytical results in under four hours from the start of tissue processing. PCT-HD was developed by our scientists and engineers in collaboration with Professor Ruedi Aebersold and Dr. Tiannan Guo of the Institute of Molecular Systems Biology, ETH Zurich, and the University of Zurich, in Switzerland. Drs. Aebersold and Guo combined PCT-HD with SCIEX's SWATH-Mass Spectrometry – calling the resulting method "PCT-SWATH".

Barocycler HUB440 –We believe the Barocycler HUB440 is the first portable, ready to use, "plug-and-play" high pressure generator for the laboratory bench. The Barocycler HUB440 is capable of creating and controlling hydrostatic pressure from 500 psi to 58,000 psi and is designed for easy and flexible interfacing with a wide variety of user-specified pressure vessels. It is computer controlled and runs on software that was developed by us to allow data logging and sophisticated algorithms for controlling pressure and temperature. We own the rights and have a license to use the specialty LabVIEW software. We believe that over the coming years, the Barocycler HUB440 may become one of the main products in our pressure-based instrument line.

Barocycler HUB880 - The Barocycler HUB880 is a compact, portable, bench-top, ultra-high-pressure generator with vessel interface flexibility similar to the HUB440, that uses an air pressure-to-liquid pressure intensifier allowing the user to generate fluid pressure as high as 90,000 psi with input air pressure of just 126 psi. The HUB880 can be operated through a simple front panel or controlled using an optional external Data Acquisition and Control Module for dynamic pressure control. We believe that the HUB880 will be well accepted by scientists that need to achieve super high pressure, such as those working in the life science research, food safety and vaccine industries.

The Shredder SG3 – The Shredder SG3 System is a low shear mechanical homogenization system for use with tough, fibrous and other difficult-to-disrupt tissues and organisms. The Shredder SG3 System uses a variety of Shredder PULSE Tubes to directly and rapidly grind a biological sample which, when combined with selected buffers, can provide effective extraction of proteins, DNA, RNA, lipids and small molecules from tissues and organisms. The Shredder SG3 is also used to isolate intact and functional mitochondria from tissues. The Shredder SG3 features a three-position force setting lever, which enables the operator to select and apply reproducible force to the sample during the shredding process and eliminates the need for the operator to exert force for long periods when processing one or more samples.

Barocycler Consumable Products

PCT MicroTubes – PCT MicroTubes are made from a unique fluoropolymer, fluorinated ethylene propylene (FEP). FEP is highly inert and retains its integrity within an extremely wide temperature range (-200°C to 100°C), while providing important limited flexibility behavior for PCT applications. MicroTubes hold a maximum total volume of 150 microliters. PCT MicroTubes must be used with either PCT-MicroCaps or PCT-MicroPestles.

PCT-MicroCaps – PCT MicroCaps are made from polytetraflouroethylene (PTFE). The PCT MicroCaps are available in three sizes to accommodate total sample volume: 50, 100 and 150uL. 50uL MicroCaps are used with samples ≤50uL, 100uL MicroCaps are used with samples between 50-100uL, and 150uL MicroCaps are used with samples between 100-150uL.

PCT-Micro Pestle - PCT µPestles are made from polytetrafluoroethylene (PTFE), a synthetic fluoropolymer of tetrafluoroethylene, also known as Teflon (by DuPont Co). PTFE is practically inert; the only chemicals known to affect it are certain alkali metals and most highly reactive fluorinating agents. PCT µPestles, in conjunction with PCT MicroTubes, are designed to enhance the extraction of proteins, lipids, DNA, RNA and small molecules from minute amounts (0.5 – 3.0 mg) of solid tissue in extraction reagent volumes as low as 20-30 µL. PCT MicroTubes and PCT µPestles use PCT to effectively disrupt soft tissues and lyse their cells. As a result, the tissue sample trapped between the MicroTube walls and the µPestles shaft is crushed on every pressure cycle. This mechanical action, combined with the extraction ability of the buffer under high pressure, results in highly effective tissue homogenization and extraction.

PCT µPestles and PCT MicroTubes, together with a PBI Barocycler, comprise the PCT Micro-Pestle System, which provides a fast, safe, and efficient means of extraction from extremely small amounts of solid samples such as soft tissue biopsies. The PCT µPestle System can be used in any PBI Barocycler.

We believe our development of these various consumable products has helped, and will continue to help, drive the adoption of PCT within the life sciences market.

d. Competition

We compete with companies that have existing technologies for the extraction of nucleic acids, proteins, lipids, and small molecules from cells and tissues, including methods such as mortar and pestle grinding, sonication, rotor-stator homogenization, French Press, bead beating, freezer milling, enzymatic digestion, and chemical dissolution. We believe that there are a number of significant issues related to the use of these methods, including: complexity, sample containment, cross-contamination, shearing of biomolecules of interest, limited applicability to different sample types, ease-of-use, reproducibility, and cost. We believe that our PCT Sample Preparation System offers a number of significant advantages over these methods, including:

- labor reduction
- temperature control
- precision
- reproducibility
- analyte diversity
- versatility
- efficiency
- simplicity
- safety
- analyte abundance

To be competitive in the industry, we believe we must be able to clearly and conclusively demonstrate to potential customers that our products provide these improved performance capabilities. We strongly believe that our PCT Sample Preparation System is a novel and enabling system for genomic, proteomic, and small molecule sample preparation. As such, many users of current manual techniques will need to be willing to challenge their existing methods of sample preparation and invest time to evaluate a method that could change their overall workflow in the sample preparation process, prior to adopting our technology.

Further, we are aware that the cost of the PCT Sample Preparation System may be greater than the cost of many of the other methods currently employed. Consequently, we are focusing our sales efforts on those product attributes that we believe will be most important and appealing to potential customers; namely speed, versatility, analyte diversity and abundance, reproducibility, quality, and safety.

e. Manufacturing and Supply

During 2023, we manufactured and assembled the Barocycler 2320EXT, Barocycler HUB440, HUB880, the SHREDDER SG3, and most of our consumables at our South Easton, MA facility (we moved to a manufacturing facility located in Canton MA in February 2024 that is much better suited for the manufacturing work that we do). We will regularly reassess the tradeoffs between in-house assembly versus the benefits of outsourced relationships for the entire Barocycler product line, and future instruments as well.

We utilize a few contract manufacturers of certain parts for our Barocycler product line. They provide us with precision manufacturing services to meet our specific application and operational requirements.

At this time, we believe that this approach is the most cost-effective method for us to produce and market ISO Certified, CE and CSA Marked instruments.

f. Research and Development

Our research and development activities are split into two functional areas: Applications Development and Engineering.

1. *Applications Development R&D*: Our highly educated and trained staff has years of experience in molecular and cellular biology, virology, and proteomics. Our team of scientists focuses on the development and continued improvement of the PCT Sample Preparation System and on PCT-dependent genomic, proteomic, lipidomic, and small molecule sample preparation applications. Dr. Alexander Lazarev, our Chief Science Officer, meets regularly with our sales, marketing, and engineering staff to discuss market needs and trends. Our applications research and development team is responsible for the technical review of all scientific collaborations, for the support of our marketing and sales departments through the generation of internal data in a number of areas of market interest, and in the development of commercially-viable PCT-dependent products.

2. *Engineering R&D:* Our engineering research and development team is focused on the design and development of new and improved instrumentation and consumable products to support the commercialization of PCT. Our engineering department is led by Dr. Edmund Ting, our Senior Vice President of Engineering. The primary focus of our engineering group is to develop and continually improve our line of PCT-based instruments and consumables, ensure seamless production processes, help perform installations and field service, and work with our application scientists to enhance our PCT-based systems for the mass spectrometry and other markets.

Collaboration Program

Our Collaboration Program is an important element of our business strategy. Initiating a collaboration with a researcher involves the installation of a Barocycler or CP instrument for an agreed upon period of time of approximately three to twelve months, a financial commitment that is beneficial to both the collaborator and PBI, and the execution of an agreed upon work plan. Our primary objectives for entering into a collaboration agreement include:

- the development of a new application for PCT or CP in sample preparation;
- the advancement and validation of our understanding of PCT or CP within an area of life sciences in which we already offer products;
- the demonstration of the effectiveness of PCT or CP by specific research scientists, particularly Key Opinion Leaders ("*KOLs*"), who we believe can have a positive impact on market acceptance of PCT; and
- the expectation of peer-reviewed publications and/or presentations at scientific meetings by a third party, especially a KOL, on the merits of PCT or CP.

Since we initiated our collaboration program, third party researchers have cited the use of our PCT platform in over 120 peer-reviewed publications and dozens of scientific presentations. We believe that this program has provided and continues to provide us with independent and objective data about PCT from well-respected laboratories in the United States and throughout the rest of the world. We believe this program has been responsible for the sale of multiple Barocycler instruments over the past few years and will continue to help to increase the sales of instrument systems in the future.

Active Collaborations:

a. RedShiftBio Inc.
b. Thomas Conrads, Inova Schar Cancer Center
c. Christine Vogel, NYU
d. Leica Microsystems, GmbH
e. Dr.V.M. Balasubramaniam, The Ohio State University
f. University of Delaware
g. Dr. Jennifer Van Eyk, Cedars Sinai Medical Center

Other Fields of Use and Applications for PCT

Our research and development efforts have shown that, in addition to genomic, proteomic, lipidomic, and small molecule sample preparation, PCT is potentially beneficial in several other areas of the life sciences, including pathogen inactivation, protein purification, control of chemical (particularly enzymatic) reactions, and immunodiagnostics. Other applications in the sample preparation market include forensics and histology, as discussed above. Our pursuit of these markets, however, depends on several factors, including our success in commercializing PCT in the area of sample preparation, our judgment regarding the investment required to be successful in these areas, the value of these markets to PBI, and the availability of sufficient financial resources. Below is a brief explanation of each of these additional potential applications and a short description of why we believe PCT can be used to improve scientific studies in these areas.

Protein Purification

Many vaccines and drugs are comprised of proteins. These proteins need to be purified from complex mixtures as part of the manufacturing process. Current purification techniques often result in the loss of a significant amount of protein. Therefore, any method that could increase the amount of protein being recovered in the purification step, could subsequently lead to a reduction in cost to the manufacturer. We believe we have successfully generated proof-of-concept that PCT can satisfy this need. We believe that compared with current purification procedures, a process that uses PCT has the potential to increase protein recovery, increase the quality of the product, and lower production costs. We have been issued U.S. patents in this area.

Pathogen Inactivation

Biological products intended for human use, such as blood, vaccines and drugs, are put through rigorous processing protocols in an effort to minimize the potential of that product to transmit disease. These protocols may include methods to remove infectious materials such as pre-processing testing, filtration or chromatography, or methods to inactivate infectious agents that are not captured in the removal steps such as pasteurization, irradiation and solvent detergent inactivation. Notwithstanding current diligence in both the removal and inactivation steps, significant concern remains that some pathogens (e.g., bacteria, viruses, spores) capable of transmitting infection to recipients may not be removed or inactivated with current procedures. In addition, some removal and inactivation methods may not be useful because of cost, safety, ease-of-use or other practical concerns. To that end, we believe that a superior inactivation method is needed that can safely, rapidly and inexpensively inactivate pathogens in blood, vaccines and drugs without the need for chemical or other potentially toxic additives. We have successfully generated proof-of-concept that PCT can satisfy this need. We believe that compared with current procedures, a process that uses PCT has the potential to increase safety and yield, lower cost and decrease the potential side effects of current methods. We have been issued U.S. patents for this PCT-dependent inactivation technology.

Control of Chemical (Particularly Enzymatic) Reactions

Chemical reactions encompass many important interactions in nature. Methods used to control chemical reactions could have a positive effect on the quality, speed, and overall result of the reaction. The control and detection of chemical reactions is particularly useful in the biotechnology field for synthesizing and characterizing such molecules as nucleic acids and polypeptides. We believe that PCT offers distinct advantages in controlling chemical reactions over current methods, since PCT can provide precise, automated control over the timing and synchronization of chemical reactions, particularly enzymatic reactions. We have been issued U.S patents in this area.

Immunodiagnostics

Many tests used in the clinical laboratory today are based on the formation of a complex between two proteins, such as an antigen and an antibody. Such "immunodiagnostic" methods are used for the detection of infectious agents such as the human immunodeficiency virus ("*HIV*"), hepatitis viruses, West Nile virus, and others, as well as for endocrine, drug testing and cancer diagnostics. We have generated proof-of-concept that PCT may be used to control biomolecular interactions between proteins, such as antigens and antibodies. We believe this capability may provide a greater degree of sensitivity and quantitative accuracy in immunodiagnostic testing than that offered by methods that are available today. We have been issued U.S. patents in this area.

Extended Service Contracts

We offer extended service contracts on our laboratory instrumentation to all of our customers. These service contracts allow a customer who purchases a Barocycler instrument to receive on-site scheduled preventative maintenance, on-site repair and replacement of all worn or defective component parts, and telephone support, all at no incremental cost for the life of the service contract. We offer one-year and four-year extended service contracts to customers who purchase Barocycler instruments.

The BaroFold Platform

a. Description

The need for the efficient production of recombinant protein biopharmaceuticals has grown rapidly and demand for them will continue to grow because of their high specificity and efficacy. Protein drugs are being manufactured via expression in a variety of host organisms. With the rapid growth in biosimilars (less expensive versions of popular biopharmaceuticals that are manufactured and marketed after the expiration of the original patents), protein expression in bacteria is beginning to play a major role in this industry, particularly when the biological activity of the protein product is not dependent on post-translational modifications that only occur in more complex organisms.

Overexpression of proteins in bacteria often results in the accumulation of the protein product in inactive insoluble deposits inside the cells, called inclusion bodies. Inclusion bodies protect the protein of interest from degradation and present simple and convenient ways to extract and purify it. Moreover, if the protein of interest is toxic or lethal to the host cell, then inclusion body expression may be the only available production method. However, the challenge of protein production in bacterial systems most often lies in conversion of inactive and misfolded proteins in the inclusion bodies into soluble, properly folded bioactive products. This conversion process is called protein refolding.

Traditional methods of protein refolding rely on using high concentrations of chemical denaturants and detergents to unfold misshapen proteins, and to disentangle and dissolve inactive aggregated proteins and to dissolve them, followed by up to 100-fold dilution or dialysis to remove interfering chemicals and then letting the proteins refold into their desired active forms. Since chemically driven unfolding is harsh, it tends to destroy most of the tertiary (folding) protein structure, some of which could be beneficial for subsequent refolding. Moreover, dilution- or dialysis-based methods take a long time and produce very low yields of refolded protein, while most of the unfolded protein material tends to get lost into irreversible aggregation. Overall, traditional refolding methods are usually inefficient, include multiple costly steps and have very low recovery yields. Pressure-mediated disaggregation and unfolding and refolding of proteins offers an attractive pathway for achieving much higher yields of correctly folded proteins with desired efficaciousness, produced at much lower cost, versus traditional chemically driven methodologies.

Acquisition of BaroFold's PreEMT™ high-pressure protein refolding technology in December 2017

Our acquisition of the assets of BaroFold, Inc. has significantly increased PBI's intellectual property portfolio in high-pressure technologies with the addition of eight issued and several pending patents. These patents give PBI the ability to operate in several important areas for research and manufacturing in biologics: protein folding, re-folding and disaggregation. The patents also provide PBI the right to grant licenses to third parties to practice the BaroFold technology in both research laboratories and in biopharmaceutical manufacturing.

Biopharmaceutical products are typically large-molecule protein therapeutics produced via complex biological manufacturing processes that can result in undesirable protein misfolding and aggregation outcomes. Misfolded or aggregated proteins typically lack therapeutic activity and can present health risks to patients, requiring robust remediation within pharmaceutical manufacturing processes. The BaroFold technology improves the quality of manufacturing, decreases manufacturing costs (as much as $2-10M/year per commercial biologic drug), and facilitates achievement of proper activity from difficult-to-manufacture proteins.

BaroFold technology utilizes high pressure instead of, or in synergy with, chemical denaturants, offering significantly milder conditions for unfolding and disaggregation of proteins in inclusion bodies. As a result, subsequent refolding can be carried out faster, more efficiently, and in much smaller volumes. Pressure-based unfolding of proteins in inclusion bodies tends to only partially unfold the protein and preserve some beneficial structures that could help to guide the refolding process into the desired outcomes. Consequently, higher yields of active protein and faster manufacturing turn-around further lower the cost of biopharmaceutical production. Moreover, lower requirements for harsh chemical reagents in high pressure refolding processing result in the decrease or elimination of associated hazardous waste generated from chemical removal processes, leading to further cost reduction and protection of the environment.

The instruments, consumables and software used to practice the BaroFold technology (the "BaroFold Platform") can be used to significantly lower the cost, boost production yield, and improve the quality of protein therapeutics. It employs high pressure for the disaggregation and controlled refolding of proteins to their native structures at yields and efficiencies not achievable using existing technologies. The BaroFold Platform has been shown to remove protein aggregates in biotherapeutic drug manufacturing, thereby improving product efficacy and safety for both new-drug entities and biosimilar products. The BaroFold Platform can help companies create novel protein therapeutics, accelerate therapeutic protein development, manufacture follow-on biologics, and significantly optimize life-cycle management of protein therapeutics. It is scalable and practical for standard manufacturing processes. This unique technology platform can help protein-based biopharmaceutical companies create and manufacture high quality, novel protein therapeutics and lower the cost of existing formulations. Research and manufacturing licenses are available.

b. Market

According to a report entitled "Global Biopharmaceutical Market Report and Forecast 2023-2031" (Research and Markets (https://www.researchandmarkets.com/reports/5805734/global-biopharmaceuticals-market-report-forecast)), "The global biopharmaceuticals market value was USD 407.8 billion in 2022, driven by the increasing prevalence of chronic diseases, and advancements in biotechnology across the globe. The market size is anticipated to grow at a CAGR of 7.6% during the forecast period of 2023-2031 to achieve a value of USD 788.4 billion by 2031".

We believe that biopharmaceuticals offer several benefits, such as highly effective and potent action, fewer side effects, and the potential to actually cure diseases rather than merely reduce disease burden or treat the symptoms, which have significantly increased the demand for biopharmaceutical products.

The predominant majority of biopharmaceutical products are recombinant proteins. Typical examples of such proteins are vaccines, monoclonal antibodies (MAbs), growth factors (such as Erythropoietin), hormones (such as insulin or HGH), receptor ligands, recombinant enzymes (Caspase, Cathepsin, etc.), blood factors and other therapeutic and research reagent proteins. Recombinant protein production can be done in bacteria or in cell cultures derived from higher organisms. Due to significant time and cost savings, attention to protein production in bacterial hosts has recently spiked, predominantly driven by rapid growth of biosimilars, antibody-drug conjugates (ADCs) and fusion proteins that are lethal to non-bacterial host cells. A major area of challenge in the biopharmaceuticals industry results from suboptimal folding configurations and/or agglomeration of proteins during production and storage, requiring subsequent remediation via unfolding and controlled refolding of these therapeutic proteins into their optimal configurations. Following initial penetration and acceleration through conversion of market share from traditional chemical methods, the growth of the protein refolding business is expected to follow the growth trajectory of the entire biopharmaceutical market.

Our BaroFold platform technology has been shown not only to save manufacturing costs and time, but to boost protein yield and minimize protein immunogenicity, resulting in greater efficacy and safety for the patient.

Moreover, PBI's Barocycler line of products can also be utilized in accelerated protein stability testing to guide biopharmaceutical formulation development. PBI has initiated several collaborations, including a co-marketing agreement with RedShift BioAnalytics, Inc., and a research collaboration with the University of Delaware (see the Research and Development section below).

c. Products

Instruments: Barocycler 2320 EXT - a convenient screening tool for protein refolding optimization

Originally developed within the framework of our PCT platform business as a tool for biological sample preparation (as described in multiple places within this Form 10-K), our Barocycler 2320EXT instrument features a "ramp mode" in its control software that makes it ultimately suitable for performing research-scale experiments for protein refolding and disaggregation on a laboratory bench scale. Each protein molecule is biochemically unique and, while pressure is highly efficient in solubilization of practically any misfolded protein contained within inclusion bodies, a unique chemical environment may be required to persuade each unfolded protein molecule to refold into a stable biologically active state. Therefore, development of protein refolding methods requires screening experiments necessary to determine the most optimal composition of the chemical milieu for each protein of interest. The Barocycler 2320EXT is ideally suited for such experiments, providing researchers with the capability to process up to 12 specimens per batch in varying chemical environments. We believe that availability of this affordable screening tool will promote adoption of the high-pressure refolding approach among biopharmaceutical process development teams and academic researchers involved in development of protein biopharmaceuticals. The same instrument is also uniquely suited for studies of thermodynamics of protein aggregation and accelerated protein stability tests.

BaroFold Contract Services

Our BaroFold contract services can be used to significantly impact and improve the quality of large-molecule protein biotherapeutics. These services employ high pressure manipulations for the disaggregation and unfolding of proteins to their native structural states and then controlled refolding of the proteins to the desired therapeutically active state, at yields and efficiencies not achievable using existing technologies. The BaroFold Platform has been shown to eliminate protein aggregation during biotherapeutic drug manufacturing and storage, thereby improving product yield, efficacy and safety for both new-drug entities and biosimilar products. The BaroFold Platform can help companies create novel protein therapeutics, accelerate therapeutic protein development, manufacture follow-on biologics, and enable life-cycle management of protein therapeutics. It is scalable and practical for standard manufacturing processes. This unique technology platform can help protein-based biopharmaceutical companies create and manufacture high quality, novel protein therapeutics and lower the cost of existing formulations. Research and manufacturing licenses are available.

d. Customers (examples only, not current customers for confidentiality reasons)

Biopharmaceutical Companies (Roche, Novartis A.G., Sanofi, Biogen-Idec, Abbvie, Inc., Amgen, Takeda, Pfizer, Merck & Co., etc.)

Biosimilars Companies (Teva, Sandoz, Hospira, Mylan, Allergan, Biocon, Momenta., etc.)

Biopharmaceutical Contract Development and Manufacturing Organizations (Boehringer-Ingelheim, Lonza, Samsung Biologics, Catalent Pharma Solutions, Thermo Fisher Scientific, Fujifilm, etc.)

Life Science Research Reagent Manufacturers (Thermo Scientific, GE Healthcare, Danaher Corporation, Millipore-Sigma, Bio-Techne R&D Systems, etc.)

Academic Research Laboratories (U.S. and International universities and colleges) involved in development of protein pharmaceuticals, expression of recombinant proteins, protein structure analysis and biophysical characterization.

e. Competition

Over two decades, BaroFold, Inc. built an intellectual property portfolio centered around the use of hydrostatic pressure for protein refolding and disaggregation. Following BaroFold's acquisition by PBI in 2017, this portfolio, combined with the PBI patents in adjacent areas, puts PBI in a unique position worldwide to commercialize, practice and license out the right to practice high pressure protein refolding, disaggregation and accelerated stability testing. There is no direct competition to PBI that is using high pressure for these applications. Competing traditional approaches use chemicals for refolding and appear inferior in many aspects, as described above.

f. Manufacturing and Supply

Manufacturing of the Barocycler 2320EXT has been covered elsewhere within this Form 10-K, since this instrument shares its utility with applications of the PCT technology platform. The PCT MicroTube consumable line is also shared between these two application areas.

PBI currently develops GMP-compliant, pilot-scale, high-pressure systems for processing of protein batches up to 10L in volume at pressure up to 60,000 psi.

In order to provide access for our customers to manufacturing-scale high pressure equipment, PBI is currently in negotiations with several HPP (High Pressure Processing) equipment vendors supplying large pressure systems to food manufacturers. Upon successful feasibility studies conducted by customers themselves, or within the framework of BaroFold Contract Services, PBI will act as a contractor to assist protein refolding customers in scaling up the process and identifying, procuring and validating appropriate large-scale equipment for high pressure protein refolding.

g. Research and Development

The PBI team has gained access to a significant body of research data through acquisition of the assets of BaroFold, Inc. BaroFold has spent over two decades perfecting high-pressure protein refolding applications and produced many publications and patents (see below). Our team's experience in high pressure refolding is being used in Contract Service work currently offered by PBI to our biopharmaceutical customers, as described above. As an equipment vendor, PBI has a goal of taking advantage of these R&D instrument assets and turning a benchtop high pressure protein refolding solution into a convenient, popular and easily accessible workflow for thousands of laboratories worldwide. As the knowledge about this method spreads and feasibility of great economic impact of utilizing this approach at a production scale is demonstrated, PBI plans to license high pressure refolding methods to its biopharmaceutical customers.

Many protein biopharmaceuticals must be kept in solution. Any physical factors such as exposure to temperature fluctuations in storage and shipment, mechanical vibration, exposure to light, etc., could promote protein aggregation, if the biotherapeutic protein is stored in a suboptimal chemical environment. Protein aggregates tend to be highly immunogenic, i.e., causing a patient's immune system to recognize protein drug as a foreign object and destroy it, leading to undesired inflammatory response and counteracting the desired therapeutic effect. Each protein drug may require optimization of its chemical environment (formulations development) to guarantee maximal stability and shelf life.

Meanwhile, high pressure is a convenient tool for controlled protein unfolding. Partially unfolded proteins tend to aggregate more rapidly. Brief exposure of the protein drug in a specific formulation to a "pressure shock" can be used to promote aggregation, allowing researchers to screen for best formulations that prevent drug aggregation in a matter of only a few days.

Additionally, several new applications of high pressure in biopharmaceutical development are stemming from a combined BaroFold and PBI intellectual property portfolio. One of these highly promising applications, namely, pressure-assisted accelerated protein stability testing, is currently being developed by PBI's R&D team in collaboration with the Center for Biomanufacturing Science and Technology of the University of Delaware, headed by Professor Christopher J. Roberts. Conventional approaches for accelerated stability testing utilize exposure to high temperature. Since thermal effects on proteins are stochastic (i.e., random), there is little chance that every protein molecule will follow the same fate after thermal shock. Pressure exerts its effect on all protein molecules of the same type/conformation in exactly the same manner, making the pressure shock more effective in such studies. Our collaborative research program with Professor Roberts's team is directed towards development of validated workflows for high pressure accelerated stability testing.

The UST Platform

a. Description

Animals and plants are water-based life forms. As such, they do not absorb oils very effectively, orally, transdermally or in any other manner. By creating extremely small and consistently sized droplets (<100nm) of oil in water, we are able to change many of the characteristics of these oil and water nanoemulsions, including stability, transparency, and absorbability. The UST™ Platform is based on the use of intense shear forces generated from ultra-high pressure (greater than 30,000 psi) discharged through a proprietary dynamically-controlled nanometer-scale valve orifice. UST has been shown to turn hydrophobic extracts of desired oil-soluble active molecules into stable, effectively water-soluble formulations on both laboratory and small process production scales, with a clear pathway to scale up for large scale production requirements. The UST Platform offers the potential to produce stable nanoemulsions of oil soluble active products in water. Such formulations could potentially have enormous success in many markets, including pharmaceuticals, nutraceuticals (such as medically important plant oil extracts like CBD-enriched plant oil soluble in water), cosmeceuticals and personal care products, liquid foods and beverages, agrochemicals, as well as inks, paints, lubricants and other industrial products. We believe that UST has the potential to play a significant role in a number of commercially important areas, including (i) the creation of stable nanoemulsions of otherwise immiscible fluids (e.g., oils and water), (ii) manufacturing of solid state nanomaterials, and (iii) the preparation of higher quality, homogenized, extended shelf-life or room temperature stable low-acid liquid foods that cannot be effectively preserved using existing non-thermal technologies, e.g., dairy products.

UST is an emerging technology that combines intense fluid shear forces with an instant, short-lived burst of heat achieved by specialized high-pressure equipment that can produce commercially sterile, pumpable, homogeneous fluid products. The UST process can provide energetic cellular disruption that results in the inactivation of bacteria, bacterial spores, viruses, and enzymes. Depending on operating conditions, low nano-scale emulsions (nanoemulsions) of oil and water mixtures can be produced that have been shown to have improved room-temperature shelf stability, and superior sensory profiles (taste, smell, texture and appearance). Of particular importance, oil-based active components delivered in such extreme nano-emulsions in water facilitates greatly improved absorption and bioavailability in the water-based biochemistry of humans, animals and plants, allowing for lower loading quantities (and costs) of actives required in manufacture, while ensuring safer and more controlled effective dosing.

The Company received its second US patent on UST in 2021 to complement two patents in China on UST, focused on a low cost, scalable approach for product manufacturing. Subsequently, patents were also issued in Canada, Australia, and Japan. The Company believes this method can find use in various nanoemulsion and nanoparticle applications for nutraceutical, pharmaceutical (e.g., drug and vaccine delivery), biotechnology (e.g., protein recovery, biomolecule extraction), agrochemical, cosmeceutical, and food & beverage (e.g., shelf-stable “clean label” products). We plan to design, develop, manufacture, and market UST-based production instruments, services and production to the life sciences and other industries. We initiated the process to build manufacturing-scale UST systems initially at two sites, in order to address current customer demands and the belief that a large number of foods, cosmetics/skincare, nutraceuticals, pharmaceutical, and other companies will follow. Our business model for UST is focused on service contracts for product development, demonstration and optimization, followed by tolling for production at small and intermediate scales, and finally by establishment of lease and licensing arrangements with companies desiring to control and integrate UST production in-house.

b. Market

In 2019, we focused efforts on developing and demonstrating the UST protocol and seeding demonstrations for early adopters, which would provide insights into market-driven formulations, product development, and ultimately end product requirements. Our initial market focus has been on cannabis extracts, as this market’s unmet needs for nanoemulsions solutions offered high visibility and ready access to funding, versus many other important target markets that have subsequently followed for development, such as cosmetics, food and beverage, nutraceutical, pharmaceutical, and industrial fluids and lubricants. In 2020, we refined the Ultra Shear Technology™ K45 instrument (the “BaroShear”) allowing us to run samples for multiple potential customers, which demonstrated the goal of producing room-temperature-stable, nearly mono-disperse, low-droplet-size nanoemulsions, validated by excellent transparency. (Transparency is achieved when nanoemulsion droplet sizes are well below ~150nm, i.e. a fraction of the wavelength range of visible light – an important indicator of achievement of consistent and extremely low droplet size nanoemulsions.)

We also moved forward in the development of the BaroShear Mini: a bench-top, laboratory-based instrument for research, formulation, demonstrations, and small volume processing; and the BaroShear Max: a high-volume, industrial-scale, clean-in-place (CIP), production-scale instrument.

In 2022, we demonstrated that our CBD nanoemulsion was stable for more than 30 months at room temperature or refrigerated conditions, and after repeated freeze/thaw events. By May 2024, the product has remained stable for more than 42 months. We shipped the first UltraShear Max system to our partners at The Ohio State University. We also initiated the setting up two bi-coastal facilities capable of meeting the development and production needs for customers throughout the U.S. In early October 2023, we shipped our first commercial batch of nanoemulsified CBD and announced important commercial relationships in both the hemp market and the cosmeceuticals vertical.

In 2024, we plan to commercialize UST in multiple market segments, per the following UST Commercialization Plan, which is wholly dependent on the Company raising either equity or debt capital, of which a minimum of at least $2 million is earmarked to support this Commercialization Plan.

Background.

- It is widely accepted that oil-based active ingredients (vitamins, supplements, cosmeceuticals, agrochemicals, pharmaceuticals, and food/beverage) are poorly water soluble, have issues with stability, and exhibit significantly poor bioavailability.
- It is also widely accepted that true, high quality nanoemulsions of oil-based active ingredients will exhibit significantly enhanced stability, better water-solubility, and vastly improved bioavailability.
- Through our partnership with the College of Food, Agriculture, and Environmental Science at Ohio State University, we developed and patented a process (UltraShear) and machine (BaroShear) that can make the highest quality nanoemulsions of oil-based actives ingredients and water.
- CBD was chosen as the initial nanoemulsified product (Nano-CBD topical spray) because (i) it had glaringly inadequate bioavailability, (ii) the starting material was easily purchased and inexpensive, (iii) was very popular and well-known on the nutraceutical market, (iv) had high intrinsic retail value, and (v) we experienced early success with CBD as we were developing the nanoemulsification process and equipment. See the initial independent scientific assessment results on UST-processed Nano-CBD in the peer reviewed journal Medical Cannabis and Cannabinoids and in the PBIO press release announcing the peer-reviewed publication.
- PBIO has now generated data internally, with partners, and in consumer marketing studies to show that the UltraShear process results in significantly enhanced stability and bioavailability of oil-based active ingredients.
- With current oil-based products, most active ingredients (vitamins, supplements, etc.) end up being not absorbed by the body but rather excreted in urine and stool. Conversely, UltraShear nanoemulsions are far more stable and absorb 3-10x more than current non-nano and poor nano products. Manufacturers will have the benefit of vastly reduced COGS and the consumer will absorb far more of the product they purchased.

2024 Plan.

- Immediately generate brand awareness for UltraShear/UST.
- Through B2B (PBIO) and DTC (Uncle Buds), a PBIO wholly-owned subsidiary acquired in 2024, sales of PBIO's UltraShear-processed nanoemulsion products, we will introduce and spread the brand name of UltraShear Technology.
- UltraShear Nanoemulsions will be produced under cGMP by PBIO staff in PBIO's manufacturing facility in Canton, MA.
- CBD Nanoemulsions are the initial product being sold by PBIO, as per the following: (i) small 15ml and 30ml bottles to retailers who will "white label" the product for sale, and (ii) in bulk 1 liter or larger containers for dispensing by our customers into small containers for sale to the consumer market.
- A variety of additional UltraShear nanoemulsified oil-based products are currently being developed and are expected to be available in 2024 on a B2B basis through PBIO, including:
    - Astaxanthin , Curcumin, Turmeric, Acai
    - Vitamin D, Vitamin E, Vitamin K
    - Sleep Enhancers (Melatonin, CBG)
    - Cognitive (Memory) Enhancer (proprietary mixture of supplements and vitamins)
    - Immune Booster (mixture of potent antioxidants)
    - Pain Relievers (mixture of natural anti-inflammatory actives)
- UltraShear nanoemulsified products will also be available on a DTC basis through Uncle Buds on-line and Amazon sales channels.
    - All of the above products being sold B2B by PBIO will also be available through Uncle Buds DTC network.
    - Additionally, oil-based products currently being sold by Uncle Buds will be enhanced by UltraShear processing and then made available, including products for:
        - Feminine Hygiene
        - Sexual Wellness

2025 Plan (and After).

- PBIO will continue to sell B2B and DTC as per above, but we will initiate a Lease and License Model for UltraShear equipment (BaroShear machine and accessories).
- The decision to begin equipment leasing is based on the following: many companies that sell products containing oil-based active ingredients (whether pharma, cosmetics, vitamins, nutraceuticals, food & beverage, or agrochemical), such as (for example only) L'Oreal, Revlon, Maybelline, J&J, Merck, Tilray, Curaleaf, Fuji, Ortho, Genentech, etc., will likely insist that their products be processed in their own facilities. To that end, we will lease the machines per the following.

Benchtop Machines (BaroShear Mini)

- We will complete the development and make available small benchtop BaroShear Mini machines. These machines will be portable and able to be set up quickly in the customer's lab. It will produce the same products and quality as the same as the large floor model BaroShear K45 or MAX machine but will produce at a much smaller volume. However, the output will be large enough for the customer to run batches of their active oil-based molecules (CBD, THC, Retinol, Curcumin, Prednisone, Neem oil, etc.), and then evaluate the nanoemulsified product. It's the puppy dog approach…they will love the output, not want to give up the equipment, and will sign up for a larger, floor model, industrial grade machine.
- The small benchtop BaroShear model can be leased to customers who want to make their own nano or want a "test bed" machine to test their libraries of oil-based active ingredients.
- Time needed to build about 4 months. If long lead items can be bought in advance, the time to build would be reduced to about six weeks.
- PBIO is open to partner with others to fund the building of the machines and to share in the downstream lease and license income.

Industrial Scale Floor Model Machines

- We have spoken to many potential customers, and they would be highly reluctant to sign a lease for a machine that they then have to put money down for PBIO to build.
- PBIO would build the machines ahead of time, let the customer have the benchtop (puppy dog) for a month or two, and then wheel in the larger machine when they are ready to lease.
- Customer will pay up-front delivery, set-up, and training fees. They will pay a monthly lease. Finally, they will pay a royalty on sales of UltraShear Nanoemulsions of their product.
- Time needed to build a BaroShear Mini is about 6 months. If long lead items can be bought in advance, the time to build would be reduced to about 2 months.
- PBIO will be open to partner with others to fund the building of the machines and to share in the downstream lease and license income.

Additional Points to Consider

- The same basic machine can be used for any field of use: pharma, cosmetics, nutraceuticals, etc. There may be slight modifications needed for each specific use, but the machine itself can be identical.
- Consumables are required for each machine. Customers are responsible for the purchase of consumables from PBIO.
- Maintenance will be included in the monthly lease cost.
- The benchtop is an essential part of the plan. We already have designs on the product but will immediately need to get to a final first-generation design approved, as it is needed for the sales strategy…but these units will also be leased for multiple other reasons.
- PBI technical team will need to develop methods and procedures for many of the most popular oil-based actives so that when a customer wants to nanoemulsify an active, there are instructions they can follow that will shorten their evaluation time and will also help move them on the path to success…and to leasing a larger machine.

c. Products

The Ultra Shear Technology™ platform instrument prototype portfolio is currently comprised of three models for use in research, formulation, and processing of oil and water nanoemulsions.

- UltraShear Mini – bench-top instrument to be used for research, formulation, and small volume processing. Throughput of at least 1mL / minute.
- UltraShear K45 – pilot scale, floor standing instrument for throughput of at least 1L / hour.
- UltraShear Max – floor standing, fully automated, CIP industrial production system for throughput of more than 4L / minute.

d. Customers

Cannabis extracts, cosmeceutical & personal care products, liquid foods & beverages, nutraceuticals, pharmaceuticals, agrochemicals, inks, paints, lubricants and other industrial products, and researchers and processors interested in developing stable, water-soluble nanoemulsions for any application.

e. Competition - High Pressure

The following companies are either direct or indirect competitors of PBI's UST:

- Avestin / ATA Scientific – Australia
- Bee International, Easton, MA – USA
- DyHydromatics, Maynard, MA - USA
- ELVEFLOW an Elvesys brand, Paris, FRANCE
- GEA Group – Dusseldorf, Germany
- Microfluidics an IDEX Corp Company, Westwood, MA – USA

f. Manufacturing and Supply

PBI's current commercialization strategy is to initially produce UST-processed bulk nanoemulsion products for companies in a variety of markets. These concentrated products will either be used as a final form or infused into another product and packaged by our customers. The development of both the machines and processes will be handled by PBI's development and engineering team, with manufacturing at a combination of our locations, and utilizing selected Contract Manufacturing Organizations (CMO), and, ultimately, integrated into end customer operations under lease/license arrangements, where appropriate. We believe the demand for these high value concentrates will generate necessary revenues and allow us to begin production and marketing of devices for sale within 1-2 years. At that time, aftermarket service and support will initially be handled by PBI's service and repair staff. As unit placements grow, we will investigate the expansion of PBI's service and support organization or augment it with external partners.

The PBI Agrochem Platform

In July 2021, PBI established PBI Agrochem, Inc., a wholly owned agrochemicals subsidiary, in order to purchase up to $1M of "green" agrochemical products from a targeted acquisition, to allow the management of that dormant agrochemicals company to demonstrate the reestablishment of previous business relationships and sales channels, and to provide access to early agrochemical sales revenues for PBI (prior to closing the anticipated asset acquisition transaction). PBI Agrochem leased a warehouse near Sparks, NV and hired a warehouse manager to facilitate the shipping, storage and management of the "green" agrochemicals inventory. Management of the dormant agrochemicals company has not been effective in the reestablishment of sales channels and revenues to date. Based on this poor performance, on operational issues, on costs associated with this endeavor, and other concerns, the Company has written off the entire value of the inventory and other assets of PBI Agrochem and is evaluating future options for this subsidiary in 2024.

The Uncle Bud's Acquisition and Sales/Marketing Platform

In January 2024, PBI completed the acquisition of Uncle Bud's Hemp (renamed Uncle Bud's Health & Wellness), a direct-to-consumer (DTC) packaged goods company, with extensive product development, marketing, and selling experience in the DTC vertical. Uncle Bud's sells their products both online and through major retail chains.

Launched in 2018 with a trailblazing hemp-based Pain Relief product, Uncle Bud's has rapidly captured an innovative leadership role in the Hemp Seed Oil, Cannabidiol (CBD), and the broader Health & Wellness industry. The Uncle Bud's brand is revered for its unwavering commitment to domestic manufacturing excellence, setting benchmarks for its organic, preservative-free, non-GMO standards and its ethical cruelty-free practices. Uncle Bud's is dedicated to the highest-quality formulations and to continuous improvement, guided by the latest scientific research and development innovations – including the revolutionary performance breakthroughs delivered by PBIO's patented UltraShear™ processing platform. Uncle Bud's diverse product portfolio addresses an ever-broadening spectrum of consumer needs, encompassing pain relief, sophisticated skincare solutions, personal wellness and athletic recovery products, and specialized pet care items. As funding becomes available to drive their historically proven leverage in excellent returns on advertising spend (ROAS), we anticipate that Uncle Bud's will be a major contributor to our UST sales growth in 2024 and beyond.

Other

a. Sales and Marketing

Our marketing and sales functions are led by John Hollister, our Director of Sales and Marketing. Mr. Hollister oversees and directs all marketing and sales activities, including trade show attendance and sponsorship, on-line advertising, website maintenance and improvement, search engine optimization, creation and dissemination of newsletters, market research initiatives, the arrangement of on-location seminars, lectures, and demonstrations of instrumentation and consumables capabilities, and the supervision of our sales and marketing personnel. Mr. Schumacher is also responsible for the overall coordination of our collaboration programs, from initial set-up, research plan design, and training, service, and data analysis. Some of these responsibilities are shared with other departments such as Research and Development, but marketing and sales drives the collaborative process. Mr. Hollister is also responsible for the continued coordination and support of our foreign distribution partners.

Our sales and marketing efforts are centered on using the independent data developed and disseminated by our collaboration partners to help drive the installed base of our PCT Sample Preparation System, BaroFold services, and BaroShear UST platform. The development of scientific data by our partners and our internal researchers provides our sales and marketing staff with additional tools that are essential in selling existing and newly developed paradigm-shifting, high-value technologies and services. We believe that partnering with seasoned, capable equipment distribution partners in the cannabis and other laboratory and process manufacturing markets will drive lead generation and purchase orders faster than if we were to build our own sales force.

b. Marketing Strategy

We recognize that our enabling PCT, BaroFold, and UST pressure platforms are powerful, novel platform technologies. We also recognize that the power of pressure is not yet widely understood, appreciated and utilized by researchers and engineers in today's laboratories and prospective industrial partners. Our first goal is to greatly broaden the awareness of pressure and its applications among research scientists and to ensure they know that these technologies exist through our high-pressure instruments, requisite consumables, and unique services. To accomplish this expansion of knowledge about the power of pressure and the subsequent adoption of our pressure-based technology platforms, we have developed and are implementing a multi-faceted approach to marketing our products and services.

Key Opinion Leaders and Publications

To initially reach scientists, we have established collaborations with key opinion leaders (KOL) who recognized early the potential for our pressure-based platforms and who went on to report their discoveries in peer reviewed journals. Among the KOLs working with us is Dr. Ruedi Aebersold (Head of the Department of Biology, ETH, Zurich). Dr. Aebersold, a pioneer in proteomics, worked with our scientists and engineers to develop PCT-SWATH (aka PCT-HD), a superior method for the extraction and preparation of proteins from samples intended for analysis by mass spectrometry. Other KOLs include Dr. Jennifer van Eyk (Director of Advanced Clinical Biosystems Institute in the Department of Biomedical Sciences, Cedar Sinai, Los Angeles, CA) and Dr. Wayne Hubble (Jules Stein Professor at the University of California, LA). Dr. van Eyk is a recognized expert in the causes of heart disease and is using PCT in her attempt to discover cardiac disease biomarkers. Dr. Hubble, a member of the National Academy of Sciences, is a leader in the field of electron paramagnetic resonance (EPR). He uses PCT in his studies of protein-protein interactions, which are highly important in the discovery of drug targets and drug design. The publications and presentations of these and other world class scientists have been invaluable in gaining initial entry of PCT in several areas of research. In addition to publications by our numerous KOLs, there are also many additional peer reviewed publications from dozens of other scientists discussing the advantages of the PCT platform in bio-molecule sample preparation, as well as the advantages of our BaroFold technology and our UST platform. To this end, we do all we can to disseminate the work of these scientists in an effort to increase the exposure of PCT, BaroFold, and UST to the worldwide research community.

Broadcasting Our PCT, BaroFold and UST Platform Technologies and Products

1. We attend, exhibit, and present at top scientific meetings such as the American Society of Mass Spectrometry (ASMS) and both the US and International meetings of the Human Proteome Organization (HUPO). These meetings are an opportunity to present our technology and to showcase our products to scientists who require sample preparation in their research studies.

2. Routine and timely "blast" emails to scientists in our database. Topics include new PCT-related publications, announcements of meetings, product advertisements, and a quarterly newsletter. The database we use is proprietary, as it has been built from attending scientific meetings and searching the internet for relevant publications and contact information. Pardot Marketing automation software is utilized for routing email campaigns, allowing us to measure customer engagement with our landing pages, articles and emails.

3. We manage our database with SalesForce, a state-of-the-art Customer Relationship Management (CRM) system. Through SalesForce, we employ the marketing automation software Pardot to manage our email blasts. Pardot enables us to assess open rates, levels of interest, and to create automatic and constant contact with potential clients.

4. We use social media platforms like LinkedIn, Twitter and Facebook to broadcast publications, webinars, our presence at scientific meetings, and press releases.

5. We significantly upgraded our website. The upgraded website contains a state-of-the art search engine that enables researchers to rapidly find PCT-related publications and products.

6. The website contains product information, published articles, and videos of our products to foster engagement, product interest, leads, order placement, and learning.

7. Our scientists regularly present their findings and discuss our products at scientific sessions at regional, national, and international scientific conferences, and at corporate, government, and academic laboratories.

8. In addition to electronic advertising, we have used and will continue to use print media to showcase our products.

In 2024, we plan to expand our Sales and Marketing team, in order to support these efforts. This expansion will happen immediately following the raise of $2 million in equity or debt financing that is earmarked to support commercialization of the Company's product line.

c. Foreign Distribution Network

We have previously established distribution arrangements covering China, Poland, South Korea, Japan, and 24 countries in Western Europe.

On December 3, 2021, we entered into a two-year distribution agreement with Westlake Omics Biotechnology, Ltd, in Hangzhou, China, with the right to terminate the Agreement during the second year. On January 15, 2023 we terminated the distribution agreement with Westlake Omics.

On January 19, 2023, we entered into an exclusive distribution agreement for the Republic of China with PRS International Trade of Shanghai. The agreement is for two years and will expire in 2025 unless extended.

On September 30, 2023, we entered into an exclusive distribution agreement for India with Bioscreen Instrument Pvt, Ltd of Chennai, India. The agreement is for two years and will expire in 2025 unless extended.

On August 1, 2021, we entered into an exclusive distribution agreement with Bioanalytic Corporation for Poland, all EU countries, and certain non-EU countries in western Europe. The Agreement expired on December 31, 2023. We are currently in contract renewal discussions.

In September of 2016, we entered into a three-year distribution agreement with Vita Co. of Japan, pursuant to which we granted Vita Co. exclusive distribution rights to all of our PCT products in Japan. This agreement expired in 2019. We continue to maintain a distribution relationship with Vita and are in contract renewal discussions.

In January 2020, we entered into a three-year distribution agreement with SCINCO Co., LTD of South Korea, pursuant to which PBI granted SCINCO exclusive distribution rights to all of our PCT products in South Korea. The Companies are in discussion for an extension of this Agreement.

Non-Exclusive and Other Distribution Agreements

In November 2011, we entered into a distributor agreement with OROBOROS Instruments Corp. ("*OROBOROS*") of Austria, pursuant to which we granted OROBOROS non-exclusive world-wide distribution rights to our Shredder SG3 System and related products. The Agreement has not been terminated by either party.

On October 1, 2021 we renewed our ten year exclusive distribution relationship for all of the Americas with Constant Systems Ltd's, to market, sell, install, and service their entire line of cell disruption equipment and parts. The distribution agreement was not renewed at the end of the two-year distribution period.

d. Intellectual Property

We believe that protection of our intellectual property, through patents, trademarks and other trade secrets are essential to our business. Subject to the availability of sufficient financial resources, our practice is to file patent applications to protect technology, inventions, and improvements to inventions that are important to our business development. We also rely on trade secrets, know-how, and technological innovations to develop and maintain our potential competitive position.

The Company believes the UST method can find use in various nanoemulsion applications for effective delivery of desired oil-soluble components in pharmaceutical, nutraceutical, cosmeceutical, agrochemical, industrial and food/beverage (including shelf-stable "clean label") products. We plan to design, develop, manufacture, and market three different models of BaroShear UST instruments:

- a bench-top, research/formulation, low-throughput instrument that we will license for formulation development;
- a lab-or pilot scale production instrument that we will license into life science companies and other industries, and
- a production scale UST-based instrument for manufacturing applications that we will license to large-scale food, cosmetics, nutraceuticals, and other processors worldwide.

Our issued patents expire between 2024 and 2030. Any failure to obtain and maintain adequate patent protection may adversely affect our ability to enter into, or affect the terms of, any arrangement for the marketing, sale or licensing of any of our products or technology platforms. It may also allow our competitors to duplicate our products without our permission and without compensation.

Summary of patents issued and pending for PBI:

Product	Issued	Pending
PCT	21	5
UST	13	9
BF	14	2
Total	48	16

License Agreements Relating to Pressure Cycling Technology

BioMolecular Assays, Inc.

In 1996, we acquired our initial equity interest in BioSeq, Inc., which at the time was developing our original pressure cycling technology. BioSeq, Inc. acquired its pressure cycling technology from BioMolecular Assays, Inc. under a technology transfer and patent assignment agreement. In 1998, we purchased all of the remaining outstanding capital stock of BioSeq, Inc., and at such time, the technology transfer and patent assignment agreement was amended to require us to pay BioMolecular Assays, Inc., a 5% royalty on our sales of products or services that incorporate or utilize the original pressure cycling technology that BioSeq, Inc. acquired from BioMolecular Assays, Inc. We were also required to pay BioMolecular Assays, Inc. 5% of the proceeds from any sale, transfer or license of all or any portion of the original pressure cycling technology. These payment obligations were terminated March 7, 2016 .

In connection with our acquisition of BioSeq, Inc., we licensed certain limited rights to the original pressure cycling technology back to BioMolecular Assays, Inc. This license is non-exclusive and limits the use of the original pressure cycling technology by BioMolecular Assays, Inc. solely for molecular applications in scientific research and development and in scientific plant research and development. BioMolecular Assays, Inc. is required to pay us a royalty equal to 20% of any license or other fees and royalties, but not including research support and similar payments, it receives in connection with any sale, assignment, license or other transfer of any rights granted to BioMolecular Assays, Inc. under the license. BioMolecular Assays, Inc. was required to pay us these royalties until the expiration in March 2016 of the patents held by BioSeq, Inc. since 1998. We have not received any royalty payments from BioMolecular Assays, Inc. under this license.

Battelle Memorial Institute

In December 2008, we entered into an exclusive patent license agreement with the Battelle Memorial Institute ("*Battelle*"). The licensed technology is the subject of a patent application filed by Battelle in 2008 and relates to a method and a system for improving the analysis of protein samples, including through an automated system utilizing pressure and a pre-selected agent to obtain a digested sample in a significantly shorter period than current methods, while maintaining the integrity of the sample throughout the preparatory process. In addition to royalty payments on net sales of "licensed products," we are obligated to make minimum royalty payments for each year that we retain the rights outlined in the patent license agreement and we are required to have our first commercial sale of the licensed products within one year following the issuance of the patent covered by the licensed technology. After re-negotiating the terms of the contract in 2013, the minimum annual royalty was $1,200 in 2014 and $2,000 in 2015; the minimum royalties were $3,000 in 2016, $4,000 in 2017 and $5,000 in 2018 and each calendar year thereafter during the term of the agreement.

e. Developments and Accomplishments

January 1st – April 11th, 2024 Key Announcements

- April 11, 2024: Uncle Bud's to expand new Premium Collection with novel products.
- April 2, 2024: Uncle Bud's reports significant demand for new UltraShear CBD Body Revive Spray.
- February 26, 2024: Uncle Buds reports powerful growth one month following acquisition by PBIO.
- February 15: PBIO completes relocation into new facility with substantially increased manufacturing space, vastly improved efficiencies, and measurable cost savings.
- February 5: Uncle Buds to launch premium health & wellness products; strong revenue expected.
- January 22: PBIO announces closing of Uncle Bud's acquisition in all-stock transaction.
- January 18: PBIO reports on new UltraShear client with $300,000-plus product order.
- January 16: PBIO reports $252,000 order from one of the world's largest retailers.
- January 11: PBIO signs definitive agreement for the acquisition of Uncle Buds Health & Wellness.
- January 4: PBIO's BaroFold platform expected to revolutionize biopharmaceutical production with help from new AI/ML technologies.

October 1, 2023 – December 31st 2023 Key Announcements

- December 1, 2023: PBIO and Veterans Service Team launch UltraShear Best-in-Class Nano CBD Topical Spray - MMA Champ Cat Zingano now official VST ambassador.
- November 21: PBIO reports Q3 2023 financial results.
- November 2: PBIO and global contract development and manufacturing organization (CDMO) leader LONZA AG present breakthrough efficiency/economics data on PBIO's BaroFold platform at leading scientific meeting.
- October 18: PBIO announces exclusive distribution agreement with premier life sciences distributor in India.
- October 10: PBIO continues expansion of UltraShear IP portfolio with award of first Canadian patent.

f. Liquidity

Management has developed a plan to continue operations. This plan includes controlling expenses, streamlining operations, and obtaining capital through equity and/or debt financing. We have been successful in raising cash through debt and equity offerings in the past. We have efforts in place to continue to raise cash through debt and equity offerings.

Although we have successfully completed multiple equity financings and reduced expenses in the past, we cannot assure our investors that our plans to address these matters in the future will be successful. Additional financing may not be available to us on a timely basis or on terms acceptable to us, if at all. In the event we are unable to raise sufficient funds on terms acceptable to us, we may be required to:

- severely limit or cease our operations or otherwise reduce planned expenditures and forego other business opportunities, which could harm our business. The accompanying financial statements do not include adjustments that may be required in the event of the disposal of assets or the discontinuation of the business;
- obtain financing with terms that may have the effect of diluting or adversely affecting the holdings or the rights of the holders of our capital stock; or
- obtain funds through arrangements with future collaboration partners or others that may require us to relinquish rights to some or all our technologies or products.

g. Regulation

Many of our activities are subject to regulation by governmental authorities within the United States and similar bodies outside of the United States. The regulatory authorities may govern the collection, testing, manufacturing, safety, efficacy, labeling, storage, record keeping, transportation, approval, advertising, and promotion of our products, as well as the training of our employees.

Currently, our PCT commercialization efforts are focused in the area of genomic, proteomic, lipidomic, and small molecule sample preparation. We do not believe that our current Barocycler products used in sample preparation are considered "medical devices" under the United States Food, Drug and Cosmetic Act (the "*FDA Act*") and we do not believe that we are subject to the law's general control provisions that include requirements for registration, listing of devices, quality regulations, labeling and prohibitions against misbranding and adulteration. We also do not believe that we are subject to regulatory inspection and scrutiny. If, however, we are successful in commercializing PCT in applications beyond our current focus area of genomic, proteomic, lipidomic, and small molecule sample preparation, such as protein purification, pathogen inactivation and immunodiagnostics, our products may be considered "medical devices" under the FDA Act, at which point we would be subject to the law's general control provisions and regulation by the FDA that include requirements for registration listing of devices, quality regulations, labeling, and prohibitions against misbranding and adulteration. The process of obtaining approval to market these devices in the other potential applications of PCT would be costly and time consuming and could possibly prohibit us from pursuing such markets.

Some of our devices may also become subject to the European Pressure Equipment Directive, which requires certain pressure equipment to meet certain quality and safety standards. We do not believe that we are currently subject to this directive because our Barocycler instruments are below the threshold documented in the text of the directive. If our interpretation were to be challenged, we could incur significant costs defending the challenge, and we could face production and selling delays, all of which could harm our business.

We self-certify that our Barocycler instrumentation was electromagnetically compatible, or "CE" compliant, which means that our Barocycler instruments meet the essential requirements of the relevant European health, safety and environmental protection legislation. In order to maintain our CE Marking, a requirement to sell equipment in many countries of the European Union, we are obligated to uphold certain safety and quality standards.

h. Employees

On December 31, 2023, we had 15 full-time employees and 1 part-time employee. All employees enter into confidentiality agreements intended to protect our proprietary information. We believe that our relations with our employees are good. None of our employees are represented by a labor union. Our performance depends on our ability to attract and retain qualified professional, scientific and technical staff. The level of competition among employers for skilled personnel is high. Subject to our limited financial resources, we attempt to maintain employee benefit plans to enhance employee morale, professional commitment and work productivity and provide an incentive for employees to remain with us.

i. Corporate Information

We were incorporated in the Commonwealth of Massachusetts in August 1978 as Boston Biomedica, Inc. In 1996, Boston Biomedica completed a successful initial public offering and was listed on the NASDAQ market (where we maintained a listing until 2012). In September 2004, we completed the sale of Boston Biomedica's core business units and began to focus exclusively on the development and commercialization of the PCT platform. Following this change in business strategy, we changed our legal name from Boston Biomedica, Inc. to Pressure BioSciences, Inc. We began operations as PBI in February 2005, research and development activities in April 2006, early marketing and selling activities of our Barocycler instruments in late 2007, and active marketing and selling of our PCT-based instrument platform in 2012. PBI maintained its listing on NASDAQ until 2012, at which time it was down-listed to the OTCQB market. PBI continues to focus on its objective of up-listing to a major exchange such as the NASDAQ or NYSE markets as soon as reasonably possible.

j. Available Information

Our Internet website address is http://www.pressurebiosciences.com. Through our website, we make available, free of charge, reports that we file with the Securities and Exchange Commission ("*SEC*"), which include, but are not limited to, our annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and any and all amendments to such reports, as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. These SEC reports can be also accessed through the investor relations section of our website. The information found on our website is not part of this or any other report we file with or furnish to the SEC.

ITEM 1A. RISK FACTORS

This Annual Report on Form 10-K contains forward-looking statements that involve risks and uncertainties, such as statements of our objectives, expectations and intentions. The cautionary statements made in this Annual Report on Form 10-K should be read as applicable to all forward-looking statements wherever they appear in this report. Our actual results could differ materially from those discussed herein. Factors that could cause or contribute to such differences include those discussed below, as well as those discussed elsewhere in this Annual Report on Form 10-K.

RISKS RELATED TO OUR COMPANY

We have received an opinion from our independent registered public accounting firm expressing substantial doubt regarding our ability to continue as a going concern.

The audit report issued by our independent registered public accounting firm on our audited consolidated financial statements for the fiscal year ended December 31, 2023, contains an explanatory paragraph regarding our ability to continue as a going concern. The audit report states that our auditing firm determined that there was substantial doubt in our ability to continue as a going concern due to the risk that we may not have sufficient cash and liquid assets at to cover our operating and capital requirements for the next twelve-month period; and if sufficient cash cannot be obtained, we would have to substantially alter, or possibly even discontinue, operations. The accompanying consolidated financial statements do not include any adjustments that might result from the outcome of this uncertainty.

Management has developed a plan to continue operations. This plan includes continued control of expenses and obtaining equity or debt financing. Although we have successfully completed equity financings and reduced expenses in the past, we cannot assure you that our plans to address these matters in the future will be successful.

The factors described above could adversely affect our ability to obtain additional financing on favorable terms, if at all, and may cause investors to have reservations about our long-term prospects and may adversely affect our relationships with customers. There can be no assurance that our auditing firm will not issue the same opinion in the future. If we cannot successfully continue as a going concern, our stockholders may lose their entire investment.

Our revenue is dependent upon acceptance of our products by the market. The failure of such acceptance will cause us to curtail or cease operations.

Our revenue comes from the sale of our products. As a result, we will continue to incur operating losses until such time that sales of our products reach a mature level, and we are able to generate sufficient revenue from the sale of our products to meet our operating expenses. There can be no assurance that customers will adopt our technology and products, or that businesses and prospective customers will agree to pay for our products. In the event that we are not able to significantly increase the number of customers that purchase our products, or if we are unable to charge the necessary prices, our financial condition and results of operations will be materially and adversely affected.

Our business could be adversely affected if we fail to implement and maintain effective disclosure controls and procedures and internal control over financial reporting.

We concluded that as of December 31, 2023, our disclosure controls and procedures and our internal control over financial reporting were not effective. We have determined that we have limited resources for adequate personnel to prepare and file reports under the Securities Exchange Act of 1934 within the required time periods and that material weaknesses in our internal control over financial reporting exist relating to our accounting for complex equity transactions. If we are unable to implement and maintain effective disclosure controls and procedures and remediate the material weaknesses in a timely manner, or if we identify other material weaknesses in the future, our ability to produce accurate and timely financial statements and public reports could be impaired, which could adversely affect our business and financial condition. We identified a lack of sufficient segregation of duties. Specifically, this material weakness is such that the design over these areas relies primarily on detective controls and could be strengthened by adding preventive controls to properly safeguard assets. In addition, investors may lose confidence in our reported information and the market price of our common stock may decline.

We have a history of operating losses, anticipate future losses and may never be profitable.

We have experienced significant operating losses in each period since we began investing resources in PCT and CP. These losses have resulted principally from research and development, sales and marketing, and general and administrative expenses associated with the development of our PCT business and more recently our BaroFold and UST business. During the year ended December 31, 2023, we recorded a net loss available to common shareholders of $35,202,434 or ($1.51) per share, as compared with $17,803,953 or ($1.61) per share, for the corresponding period in 2022. We expect to continue to incur operating losses until sales increase substantially. We cannot be certain when, if ever, we will become profitable. Even if we were to become profitable, we might not be able to sustain such profitability on a quarterly or annual basis.

If we are unable to obtain additional financing, business operations will be harmed and if we do obtain additional financing then existing shareholders may suffer substantial dilution.

We need substantial capital to implement our sales distribution strategy for our current products and to develop and commercialize future products using our high-pressure technology products and services across all of our targeted markets. Our capital requirements will depend on many factors, including but not limited to:

- the problems, delays, expenses, and complications frequently encountered by early-stage companies;
- market acceptance of our high-pressure technology products and services;
- the success of our sales and marketing programs; and
- changes in economic, regulatory or competitive conditions in the markets we intend to serve.

We expect the net proceeds from our financing plans, along with our current cash position, will enable us to fund our operating expenses and capital expenditure requirements for at least the next 24 months, during which time we expect to achieve profitability. If we do not achieve profitability as planned, we anticipate that we will need to raise additional capital to fund our operations and to otherwise implement our overall business strategy. We currently do not have any contracts or commitments for additional financing. There can be no assurance that financing will be available in amounts or on terms acceptable to us, if at all. Any additional equity financing may involve substantial dilution to then existing shareholders.

If adequate funds are not available or if we fail to obtain acceptable additional financing, we may be required to:

- severely limit or cease our operations or otherwise reduce planned expenditures and forego other business opportunities, which could harm our business;
- obtain financing, including but not limited to via the issuance of convertible notes, with terms that may have the effect of substantially diluting or adversely affecting the holdings or the rights of the holders of our capital stock; or
- obtain funds through arrangements with future collaboration partners or others that may require us to relinquish rights to some or all of our technologies or products.

We have incurred substantial debt, which could impair our flexibility and access to capital and adversely affect our financial position, and our business would be materially adversely affected if we are unable to service our debt obligations.

As described in Note 9 to our audited financial statements, as of December 31, 2023, there were $21.3 million in convertible notes outstanding, some of which are past due. One lender holds approximately $8.9 million of this debt. In addition, as of December 31, 2023 we were making daily payments of $1,550 to service Merchant Agreements. As of March 31, 2024 we were making daily payments of $2,000 to service Merchant Agreements.

We may incur additional indebtedness from time to time to implement our sales distribution strategy for our current products and to develop and commercialize future products using our high-pressure technology products and services across all of our targeted markets.

Our substantial indebtedness may:

- require us to use a substantial portion of our cash flow from operations and / or to issue substantial amounts of shares of common stock (which may result in substantial dilution to our existing stockholders) to service our debt;
- increase our vulnerability to economic downturns and adverse competitive and industry conditions and place us at a competitive disadvantage compared to those of our competitors that are less leveraged; or
- limit our flexibility in planning for, or reacting to, changes in our business and our industry and limit our ability to pursue other business opportunities, borrow more money for operations or capital in the future, and implement our business strategies.

In addition, our cash balance is significantly less than the principal amount of our outstanding debt, and we may not generate sufficient cash flow from our operations to pay our substantial debt. Any debt financing that is available could cause us to incur substantial costs and subject us to covenants that significantly restrict our ability to conduct our business.

Our financial results depend on revenues from our high-pressure technology products and services, and from government grants.

We currently rely on revenues from PCT, BaroFold, and UST technology products and services, and from revenues derived from grants awarded to us by governmental agencies, such as the National Institutes of Health. Through 2023, we have not yet achieved product readiness for BaroFold and UST, and/or market acceptance of our product offerings, to the extent necessary to achieve revenue growth sufficient to establish profitability. Competition for government grants is very intense, and we can provide no assurance that we will continue to be awarded grants in the future. If we are unable to increase revenues from sales of our high-pressure technology products and services and government grants, our business will fail.

We may be unable to obtain market acceptance of our high-pressure technology products and services.

Many of the initial sales of our pressure cycling technology products and services have been to our collaborators, following their use of our products in studies undertaken in sample preparation for genomics, proteomics, lipidomics, and small molecules studies. Later sales have been to key opinion leaders. Our technology requires scientists and researchers to adopt a method of sample extraction that is different from existing techniques. Our PCT sample preparation system is also more costly than most existing techniques. Our ability to obtain market acceptance will depend, in part, on our ability to demonstrate to our potential customers that the benefits and advantages of our technology outweigh the increased cost of our technology compared with existing methods of sample extraction. Similar early technology introduction, trial and acceptance challenges must be surmounted for the BaroFold and UST products and services, as well. If we are unable to demonstrate the benefits and advantages of our products and technology as compared with existing technologies, we will not gain market acceptance and our business will fail.

Our business may be harmed if we encounter problems, delays, expenses, and complications that often affect companies that have not achieved significant market acceptance.

Our high-pressure technology businesses will continue to face challenges in achieving market acceptance. If we encounter problems, delays, expenses and complications, many of which may be beyond our control or may harm our business or prospects. These include:

- availability of adequate financing;
- unanticipated problems and costs relating to the development, testing, production, marketing, and sale of our products;
- delays and costs associated with our ability to attract and retain key personnel; and
- competition.

The sales cycle of our high-pressure technology products is lengthy. We have incurred and may continue to incur significant expenses and we may not generate any significant revenue related to those products.

Many of our current and potential customers have required between three and six months or more to test and evaluate our high-pressure technology products. This increases the possibility that a customer may decide to cancel its order or otherwise change its plans, which could reduce or eliminate our sales to that potential customer. As a result of this lengthy sales cycle, we have incurred and may continue to incur significant research and development, selling and marketing, and general and administrative expense related to customers from whom we have not yet generated any revenue from our products, and from whom we may never generate the anticipated revenue if a customer is not satisfied with the results of the evaluation of our products or if a customer cancels or changes its plans.

Our business could be harmed if our products contain undetected errors or defects.

We are continuously developing new and improving our existing, high-pressure technology products and we expect to do so across many areas of life sciences applications depending upon the availability of our resources. Newly introduced products can contain undetected errors or defects. In addition, these products may not meet their performance specifications under all conditions or for all applications. If, despite internal testing and testing by our collaborators, any of our products contain errors or defects or fail to meet customer specifications, then we may be required to enhance or improve those products or technologies. We may not be able to do so on a timely basis, if at all, and may only be able to do so at considerable expense. In addition, any significant reliability problems could result in adverse customer reaction, negative publicity or legal claims and could harm our business and prospects.

Our success may depend on our ability to manage growth effectively.

Our failure to manage growth effectively could harm our business and prospects. Given our limited resources and personnel, growth of our business could place significant strain on our management, information technology systems, sources of manufacturing capacity and other resources. To properly manage our growth, we may need to hire additional employees and identify new sources of manufacturing capabilities. Failure to effectively manage our growth could make it difficult to manufacture our products and fill orders, as well as lead to declines in product quality or increased costs, any of which would adversely impact our business and results of operations.

Our success is substantially dependent on the continued service of our senior management.

Our success is substantially dependent on the continued service of our senior management, specifically our Chief Executive Officer, Richard T. Schumacher. The loss of the services of any of our senior management could make it more difficult to successfully operate our business and achieve our business goals. In addition, our failure to retain existing engineering, research and development, operations, and marketing/sales personnel could harm our product development capabilities and customer and employee relationships, delay the growth of sales of our products, and result in the loss of key information, expertise, or know-how.

We may not be able to hire or retain the number of qualified personnel, particularly engineering and sales personnel, required for our business, which would harm the development and sales of our products and limit our ability to grow.

Competition in our industry for senior management, technical, sales, marketing, finance and other key personnel is intense. If we are unable to retain our existing personnel, or attract and train additional qualified personnel, either because of competition in our industry for such personnel or because of insufficient financial resources, our growth may be limited. Our success also depends in particular on our ability to identify, hire, train and retain qualified engineering and sales personnel with experience in design, development and sales of laboratory equipment.

Our failure to manage current or future alliances or joint ventures effectively may harm our business.

We have entered business relationships with four distribution partners and one co-marketing partner, and we may enter into additional alliances, joint ventures or other business relationships to further develop, market and sell our pressure cycling technology product line. We may not be able to:

- identify appropriate candidates for alliances, joint ventures or other business relationships;
- assure that any candidate for an alliance, joint venture or business relationship will provide us with the support anticipated;
- successfully negotiate an alliance, joint venture or business relationship on terms that are advantageous to us; or
- successfully manage any alliance or joint venture.

Furthermore, any alliance, joint venture or other business relationship may divert management time and resources. Entering into a disadvantageous alliance, joint venture or business relationship, failing to manage an alliance, joint venture or business relationship effectively, or failing to comply with any obligations in connection therewith, could harm our business and prospects.

We may not be successful in growing our international sales.

We cannot guarantee that we will successfully develop our international sales channels to enable us to generate significant revenue from international sales. We currently have four international distribution agreements that cover 24 countries in Europe, Asia and Australia. We have generated limited sales to date from international sales and cannot guarantee that we will be able to increase our sales. As we expand, our international operations may be subject to numerous risks and challenges, including:

- multiple, conflicting and changing governmental laws and regulations, including those that regulate high pressure equipment;
- reduced protection for intellectual property rights in some countries;
- protectionist laws and business practices that favor local companies;
- political and economic changes and disruptions;
- export and import controls;
- tariff regulations; and
- currency fluctuations.

Our operating results are subject to quarterly variation. Our operating results may fluctuate significantly from period to period depending on a variety of factors, including but not limited to the following:

- our ability to increase our sales of our pressure cycling technology products for sample preparation on a consistent quarterly or annual basis;
- the lengthy sales cycle for our products;
- the product mix of the Barocycler instruments we install in a given period, and whether the installations are completed pursuant to sales, rental or lease arrangements, and the average selling prices that we are able to command for our products;
- our ability to manage our costs and expenses;
- our ability to continue our research and development activities without incurring unexpected costs and expenses; and
- our ability to comply with state and federal regulations without incurring unexpected costs and expenses.

Our instrumentation operates at high pressures and may therefore become subject to certain regulations in the European Community. Regulation of high-pressure equipment may limit or hinder our development and sale of future instrumentation.

Our Barocycler instruments operate at high pressures. If our Barocycler instruments exceed certain pressure levels, our products may become subject to the European Pressure Equipment Directive, which requires certain pressure equipment to meet certain quality and safety standards. We do not believe that we are subject to this directive because our Barocycler instruments are currently below the threshold documented in the text of the directive. If our interpretation were to be challenged, we could incur significant costs defending the challenge, and we could face production and selling delays, all of which could harm our business.

We expect that we will be subject to regulation in the United States, such as by the Food and Drug Administration, and overseas, if and when we begin to invest more resources in the development and commercialization of PCT in applications outside of sample preparation for the research field.

Our current pressure cycling technology products in sample preparation for the research field are not regulated by the FDA. Certain applications in which we intend to develop and commercialize pressure cycling technology, such as protein purification, pathogen inactivation and immunodiagnostics, are expected to require regulatory approvals or clearances from regulatory agencies, such as the FDA, prior to commercialization, when we expand our commercialization activities outside of the research field. We expect that obtaining these approvals or clearances will require a significant investment of time and capital resources and there can be no assurance that such investments will receive approvals or clearances that would allow us to commercialize the technology for these applications.

If we are unable to protect our patents and other proprietary technology relating to our pressure cycling technology products, our business will be harmed.

Our ability to further develop and successfully commercialize our products will depend, in part, on our ability to enforce our patents, preserve our trade secrets, and operate without infringing the proprietary rights of third parties. To date, we have been awarded 26 total United States and foreign patents related to our PCT technology platform, and one US patent and two additional patents in China related to our Ultra Shear Technology. We also received eight patents with our purchase of the assets of BaroFold in December 2017.

There can be no assurance that (a) any patent applications filed by us will result in issued patents; (b) patent protection will be secured for any particular technology; (c) any patents that have been or may be issued to us will be valid or enforceable; (d) any patents will provide meaningful protection to us; (e) others will not be able to design around our patents; and (f) our patents will provide a competitive advantage or have commercial value. The failure to obtain adequate patent protection would have a material adverse effect on us and may adversely affect our ability to enter into, or affect the terms of, any arrangement for the marketing or sale of any product.

Our patents may be challenged by others.

We could incur substantial costs in patent proceedings, including interference proceedings before the United States Patent and Trademark Office, and comparable proceedings before similar agencies in other countries, in connection with any claims that may arise in the future. These proceedings could result in adverse decisions about the patentability of our inventions and products, as well as about the enforceability, validity, or scope of protection afforded by the patents.

If we are unable to maintain the confidentiality of our trade secrets and proprietary knowledge, others may develop technology and products that could prevent the successful commercialization of our products.

We rely on trade secrets and other unpatented proprietary information in our product development activities. To the extent we rely on trade secrets and unpatented know-how to maintain our competitive technological position, there can be no assurance that others may not independently develop the same or similar technologies. We seek to protect our trade secrets and proprietary knowledge, in part, through confidentiality agreements with our employees, consultants, advisors and contractors. These agreements may not be sufficient to effectively prevent disclosure of our confidential information and may not provide us with an adequate remedy in the event of unauthorized disclosure of such information. If our employees, consultants, advisors, or contractors develop inventions or processes independently that may be applicable to our products, disputes may arise about ownership of proprietary rights to those inventions and processes. Such inventions and processes will not necessarily become our property but may remain the property of those persons or their employers. Protracted and costly litigation could be necessary to enforce and determine the scope of our proprietary rights. Failure to obtain or maintain trade secret protection, for any reason, could harm our business.

If we infringe on the intellectual property rights of others, our business may be harmed.

It is possible that the manufacture, use or sale of our pressure cycling technology products or services may infringe patent or other intellectual property rights of others. We may be unable to avoid infringement of the patent or other intellectual property rights of others and may be required to seek a license, defend an infringement action, or challenge the validity of the patents or other intellectual property rights in court. We may be unable to secure a license on terms and conditions acceptable to us, if at all. Also, we may not prevail in any patent or other intellectual property rights litigation. Patent or other intellectual property rights litigation is costly and time-consuming, and there can be no assurance that we will have sufficient resources to bring any possible litigation related to such infringement to a successful conclusion. If we do not obtain a license under such patents or other intellectual property rights, or if we are found liable for infringement, or if we are unsuccessful in having such patents declared invalid, we may be liable for significant monetary damages, may encounter significant delays in successfully commercializing and developing our pressure cycling technology products, or may be precluded from participating in the manufacture, use, or sale of our pressure cycling technology products or services requiring such licenses.

We may be unable to adequately respond to rapid changes in technology and the development of new industry standards.

The introduction of products and services embodying new technology and the emergence of new industry standards may render our existing pressure cycling technology products and related services obsolete and unmarketable if we are unable to adapt to change. We may be unable to allocate the funds necessary to improve our current products or introduce new products to address our customers' needs and respond to technological change. In the event that other companies develop more technologically advanced products, our competitive position relative to such companies would be harmed.

We may not be able to compete successfully with others that are developing or have developed competitive technologies and products.

Several companies have developed, or are expected to develop, products that compete or will compete with our products. We compete with companies that have existing technologies for the extraction of nucleic acids, proteins and small molecules from cells and tissues, including but not limited to methods such as mortar and pestle, sonication, rotor-stator homogenization, French press, bead beating, freezer milling, enzymatic digestion, and chemical dissolution.

We are aware that there are additional companies pursuing new technologies with similar goals to the products developed or being developed by us. Some of the companies with which we now compete, or may compete in the future, have or may have more extensive research, marketing, and manufacturing capabilities, more experience in genomics and proteomics sample preparation, protein purification, pathogen inactivation, immunodiagnostics, and DNA sequencing and significantly greater technical, personnel and financial resources than we do, and may be better positioned to continue to improve their technology to compete in an evolving industry. To compete, we must be able to demonstrate to potential customers that our products provide improved performance and capabilities. Our failure to compete successfully could harm our business and prospects.

We will need to increase the size of our organization and may experience difficulties in managing growth.

We are a small company with a minimal number of employees. We expect to experience a period of expansion in headcount, facilities, infrastructure and overhead and anticipate that further expansion will be required to address potential growth and market opportunities. Future growth will impose significant added responsibilities on members of management, including the need to identify, recruit, maintain and integrate new managers. Our future financial performance and its ability to compete effectively will depend, in part, on its ability to manage any future growth effectively.

Provisions in our articles of organization and bylaws may discourage or frustrate stockholders' attempts to remove or replace our current management.

Our articles of organization and bylaws contain provisions that may make it more difficult or discourage changes in our management that our stockholders may consider to be favorable. These provisions include:

- a classified board of directors;
- advance notice for stockholder nominations to the board of directors;
- limitations on the ability of stockholders to remove directors; and
- a provision that allows most of the directors to fill vacancies on the board of directors.

These provisions could prevent or frustrate attempts to make changes in our management that our stockholders consider to be beneficial and could limit the price that our stockholders might receive in the future for shares of our common stock.

The costs of compliance with the reporting obligations of the Exchange Act, and with the requirements of the Sarbanes-Oxley Act of 2002 and the Dodd-Frank Wall Street Reform and Consumer Protection Act, may place a strain on our limited resources and our management's attention may be diverted from other business concerns.

As a result of the regulatory requirements applicable to public companies, we incur legal, accounting, and other expenses that are significant in relation to the size of our Company including expenses related to complying with the Sarbanes-Oxley Act of 2002 and the Dodd-Frank Wall Street Reform and Consumer Protection Act, as well as rules subsequently implemented by the SEC and OTC Markets Group, Inc. These requirements have placed and will continue to place a strain on our systems and on our management and financial resources.

Certain of our net deferred tax assets could be substantially limited if we experience an ownership change as defined in the Internal Revenue Code.

Certain of our net operating losses ("*NOLs*") give rise to net deferred tax assets. Our ability to utilize NOLs and to offset our future taxable income and/or to recover previously paid taxes would be limited if we were to undergo an "ownership change" within the meaning of Section 382 of the Internal Revenue Code (the "*Code*"). In general, an "ownership change" occurs whenever the percentage of the stock of a corporation owned by "5 percent shareholders," within the meaning of Section 382 of the Code, increases by more than 50 percentage points over the lowest percentage of the stock of such corporation owned by such "5 percent shareholders" at any time over the preceding three years.

An ownership change under Section 382 of the Code would establish an annual limitation on the amount of NOLs we could utilize to offset our taxable income in any single taxable year to an amount equal to (i) the product of a specified rate, which is published by the U.S. Treasury, and the aggregate value of our outstanding stock plus; and (ii) the amount of unutilized limitation from prior years. The application of these limitations might prevent full utilization of the deferred tax assets attributable to our NOLs. We may have or will have experienced an ownership change as defined by Section 382 through the sale of equity and, therefore, we will consider whether the sale of equity units will result in limitations of our net operating losses under Section 382 when we start to generate taxable income. However, whether a change in ownership occurs in the future is largely outside of our control, and there can be no assurance that such a change will not occur.

We continue to face risks related to Novel Coronavirus (COVID-19) which could continue to significantly disrupt our research and development, operations, sales, and financial results.

Our business was adversely impacted by the effects of the Novel Coronavirus (COVID-19). In addition to global macroeconomic effects, the Novel Coronavirus (COVID-19) outbreak and any other related adverse public health developments could continue to cause disruption to our operations, research and development, and sales activities. Our third-party manufacturers, third-party distributors, and our customers have been and will be disrupted by worker absenteeism, quarantines and restrictions on employees' ability to work, office and factory closures, disruptions to ports and other shipping infrastructure, border closures, or other travel or health-related restrictions. Depending on the magnitude of such effects on our activities or the operations of our third-party manufacturers and third-party distributors, the supply of our products will be delayed, which could adversely affect our business, operations and customer relationships. In addition, the Novel Coronavirus (COVID-19) or other disease outbreak will in the short-run and may over the longer term adversely affect the economies and financial markets of many countries, resulting in an economic downturn that will affect demand for our products and impact our operating results. There can be no assurance that any decrease in sales resulting from the Novel Coronavirus (COVID-19) will be offset by increased sales in subsequent periods. Although the magnitude of the impact of the Novel Coronavirus (COVID-19) outbreak on our business and operations remains uncertain, the continued spread of the Novel Coronavirus (COVID-19) or the occurrence of other epidemics and the imposition of related public health measures and travel and business restrictions will adversely impact our business, financial condition, operating results and cash flows. In addition, we have experienced and will experience disruptions to our business operations resulting from quarantines, self-isolations, or other movement and restrictions on the ability of our employees to perform their jobs that may impact our ability to develop and design our products in a timely manner or meet required milestones or customer commitments.

RISKS RELATED TO OWNERSHIP OF OUR SECURITIES

The holders of our Common Stock could suffer substantial dilution due to our corporate financing practices.

The holders of our common stock could suffer substantial dilution due to our corporate financing practices, which, in the past few years, have included private placements and a registered direct offering. As of December 31, 2023, there were 35,367,663 shares of common stock issued and outstanding. As of December 31, 2023 there were 75 shares of Series D Convertible Preferred Stock issued and outstanding and convertible into 6,250 shares of common stock, 8,645 shares of Series AA Convertible Preferred Stock issued and outstanding convertible into 8,645,000 shares of common stock, 1,219 shares of BB Convertible Preferred Stock and outstanding convertible into 12,190,000 shares of common stock and 401 shares of Series CC Convertible Preferred Stock and outstanding convertible into 4,010,000 shares of common stock.

As of December 31, 2023, we had issued notes and debentures convertible into common stock at $2.50 per common share and outstanding options and warrants to purchase an aggregate of 20,498,108 shares of common stock; and debt convertible into 8,684,223 shares of common stock.

If all of the outstanding shares of Series D Convertible Preferred Stock, Series AA Convertible Preferred Stock, Series BB Convertible Preferred Stock and Series CC Convertible Preferred Stock were converted into shares of common stock and all outstanding options and warrants to purchase shares of common stock were exercised and all convertible notes and debentures were converted, each as of December 31, 2023 an additional 54,033,581 shares of common stock would be issued and outstanding, summing to a total dilution of 89,401,244 common shares.. This additional issuance of shares of common stock would cause immediate and substantial dilution to our existing stockholders and could cause a significant reduction in the market price of our common stock.

From time to time, we also may increase the number of shares available for issuance in connection with our equity compensation plan, we may adopt new equity compensation plans, and we may issue awards to our employees and others who provide services to us outside the terms of our equity compensation plans. Our board of directors may fix and determine the designations, rights, preferences or other variations of each class or series of preferred stock and may choose to issue some or all of such shares to provide additional financing in the future.

The issuance of any securities for acquisition, licensing or financing efforts, upon conversion of any preferred stock or exercise of warrants, pursuant to our equity compensation plans, or otherwise may result in a reduction of the book value and market price of the outstanding shares of our common stock. If we issue any such additional securities, such issuance will cause a reduction in the proportionate ownership and voting power of all current stockholders. Further, such issuance may result in a change in control of our Company.

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

Sales of a substantial number of shares of our common stock in the public markets, which include an offering of our preferred stock or common stock could depress the market price of our common stock and impair our ability to raise capital through the sale of additional equity or equity-related securities. We cannot predict the effect that future sales of our common stock or other equity-related securities would have on the market price of our common stock.

Our share price could be volatile and our trading volume may fluctuate substantially.

The price of common stock has been and may in the future continue to be extremely volatile. Many factors could have a significant impact on the future price of our shares of common stock, including:

- our inability to raise additional capital to fund our operations, whether through the issuance of equity securities or debt;
- our failure to successfully implement our business objectives;
- compliance with ongoing regulatory requirements;
- market acceptance of our products;
- technological innovations and new commercial products by our competitors;
- changes in government regulations;
- general economic conditions and other external factors;
- actual or anticipated fluctuations in our quarterly financial and operating results; and
- the degree of trading liquidity in our shares of common stock.

A decline in the price of our shares of common stock could affect our ability to raise further working capital and adversely impact our ability to continue operations.

The relatively low price of our shares of common stock, and a decline in the price of our shares of common stock, could result in a reduction in the liquidity of our common stock and a reduction in our ability to raise capital. Because a significant portion of our operations have been and will continue to be financed through the sale of equity securities, a decline in the price of our shares of common stock could be especially detrimental to our liquidity and our operations. Such reductions and declines may force us to reallocate funds from other planned uses and may have a significant negative effect on our business plans and operations, including our ability to continue our current operations. If the price for our shares of common stock declines, it may be more difficult to raise additional capital. If we are unable to raise sufficient capital, and we are unable to generate funds from operations sufficient to meet our obligations, we will not have the resources to continue our operations.

The market price for our shares of common stock may also be affected by our ability to meet or exceed the expectations of analysts or investors. Any failure to meet these expectations, even if minor, may have a material adverse effect on the market price of our shares of common stock.

Financial Industry Regulatory Authority ("FINRA") sales practice requirements may also limit a stockholder's ability to buy and sell our common stock.

FINRA has adopted rules that require that in recommending an investment to a customer, a broker-dealer must have reasonable grounds for believing that the investment is suitable for that customer. Prior to recommending speculative low-priced securities to their non-institutional customers, broker-dealers must make reasonable efforts to obtain information about the customer's financial status, tax status, investment objectives and other information. Under interpretations of these rules, FINRA believes that there is a high probability that speculative low-priced securities will not be suitable for at least some customers. FINRA requirements make it more difficult for broker-dealers to recommend that their customers buy our common stock, which may limit your ability to buy and sell our common stock and have an adverse effect on the market for our shares.

Our Common Stock is subject to the "Penny Stock" rules of the SEC and the trading market in our securities is limited, which makes transactions in our stock cumbersome and may reduce the value of an investment in our stock.

The Securities and Exchange Commission has adopted Rule 15g-9 which establishes the definition of a "penny stock," for the purposes relevant to us, as any equity security that has a market price of less than $5.00 per share or with an exercise price of less than $5.00 per share, subject to certain exceptions. For any transaction involving a penny stock, unless exempt, the rules require:

- That a broker or dealer approve a person's account for transactions in penny stocks; and
- The broker or dealer receives from the investor a written agreement to the transaction, setting forth the identity and quantity of the penny stock to be purchased.

In order to approve a person's account for transactions in penny stocks, the broker or dealer must:

- Obtain financial information and investment experience objectives of the person; and
- Make a reasonable determination that the transactions in penny stocks are suitable for that person and the person has sufficient knowledge and experience in financial matters to be capable of evaluating the risks of transactions in penny stocks.

The broker or dealer must also deliver, prior to any transaction in a penny stock, a disclosure schedule prescribed by the Commission relating to the penny stock market, which, in highlight form:

- Sets forth the basis on which the broker or dealer made the suitability determination; and
- That the broker or dealer received a signed, written agreement from the investor prior to the transaction.

Generally, brokers may be less willing to execute transactions in securities subject to the "penny stock" rules. This may make it more difficult for investors to dispose of our common stock and cause a decline in the market value of our stock.

Disclosure also has to be made about the risks of investing in penny stocks in both public offerings and in secondary trading and about the commissions payable to both the broker-dealer and the registered representative, current quotations for the securities and the rights and remedies available to an investor in cases of fraud in penny stock transactions. Finally, monthly statements have to be sent disclosing recent price information for the penny stock held in the account and information on the limited market in penny stocks.

We have never declared or paid a cash dividend on our common stock, and we do not expect to pay cash dividends on our common stock in the foreseeable future.

Our shares of Series D Convertible Preferred Stock are entitled to certain rights, privileges and preferences over our common stock, including a preference upon a liquidation of our Company, which will reduce amounts available for distribution to the holders of our common stock.

The holders of our shares of Series D are entitled to payment prior to payment to the holders of common stock in the event of liquidation of the Company. If we are dissolved, liquidated or wound up at a time when the Series D Preferred Stock remain outstanding, the holders of the Series D Preferred Stock will be entitled to receive only an amount equal to the liquidation preference (as it may be adjusted from time to time), plus any accumulated and unpaid dividends, to the extent that we have funds legally available. Any remaining assets will be distributable to holders of our other equity securities.

Shares eligible for future sale may adversely affect the market.

From time to time, certain of our stockholders may be eligible to sell all or some of their shares of common stock by means of ordinary brokerage transactions in the open market pursuant to Rule 144 promulgated under the Securities Act, subject to certain limitations. In general, pursuant to amended Rule 144, non-affiliate stockholders may sell freely after six months subject only to the current public information requirement. Affiliates may sell after six months subject to the Rule 144 volume, manner of sale (for equity securities), current public information and notice requirements. Any substantial sales of our common stock pursuant to Rule 144 may have a material adverse effect on the market price of our common stock.

We currently do not intend to pay dividends on our common stock. As result, your only opportunity to achieve a return on your investment is if the price of our common stock appreciates.

We currently do not expect to declare or pay dividends on our common stock. In addition, in the future we may enter into agreements that prohibit or restrict our ability to declare or pay dividends on our common stock. As a result, your only opportunity to achieve a return on your investment will be if the market price of our common stock appreciates and you sell your shares at a profit.

We could issue additional common stock, which might dilute the book value of our Common Stock.

Our Board of Directors has the authority, without action or vote of our shareholders, to issue all or a part of our authorized but unissued shares. Such stock issuances could be made at a price that reflects a discount or a premium from the then-current trading price of our common stock. In addition, in order to raise capital, we may need to issue securities that are convertible into or exchangeable for our common stock. These issuances would dilute the percentage ownership interest, which would have the effect of reducing your influence on matters on which our shareholders vote and might dilute the book value of our common stock. Shareholders may incur additional dilution if holders of stock warrants or options, whether currently outstanding or subsequently granted, exercise their options, or if warrant holders exercise their warrants to purchase shares of our common stock.

ITEM 1B. UNRESOLVED STAFF COMMENTS

Not Applicable.

ITEM 2. PROPERTIES

As of February 5, 2024, our corporate office and R&D labs have been consolidated into one facility that is currently located at 480 Neponset St., Unit 10B, Canton, Massachusetts 02021. The lease agreement term is five years and contains escalating payments during the lease period. We are currently paying $11,462 per month, with the first lease payment being due on May 1, 2024.

We are previously paid $7,650 per month, on a lease extension for our former corporate office at 14 Norfolk Avenue, South Easton, Massachusetts, 02375, signed on December 31, 2022, that expired December 31, 2023. We expanded our space to include offices, warehouse, and a loading dock on the first floor starting May 1, 2017, with a monthly rent increase already reflected in the current payments.

On October 18, 2017, we signed a lease extension for our lab space in Medford, MA. The lease required monthly payments of $7,282 that started January 1, 2021, and $8,237 started January 1, 2023, subject to annual cost of living increases. The lease was terminated on February 29, 2024.

On August 9, 2021, we entered into an operating lease agreement for our warehouse space in Sparks, NV for the period from September 1, 2021, through September 30, 2026. The lease contains escalating payments during the lease period. The lease can be extended for an additional three years if the Company provides notice at least six months prior to the expiration of the current lease term.

ITEM 3. LEGAL PROCEEDINGS

We are not currently involved in any litigation that we believe could have a material adverse effect on our financial condition or results of operations. There is no action, suit, or proceeding by any court, public board, government agency, self-regulatory organization or body pending or, to the knowledge of the executive officers of our Company or our subsidiaries, threatened against or affecting our Company, our common stock, our subsidiaries or of our companies or our subsidiaries' officers or directors in their capacities as such, in which an adverse decision could have a material adverse effect.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

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

Our common stock is currently traded on the OTCQB tier of the OTC Markets under the trading symbol "PBIO."

Authorized Capital

As of December 31, 2023, we were authorized to issue 100,000,000 shares of common stock, $.01 par value, and 1,000,000 shares of preferred stock, $.01 par value. Of the 1,000,000 shares of preferred stock, 20,000 shares were designated as Series A Junior Participating Preferred Stock, 313,960 shares as Series A Convertible Preferred Stock, 279,256 shares as Series B Convertible Preferred Stock, 88,098 shares as Series C Convertible Preferred Stock, 850 shares as Series D Convertible Preferred Stock, 500 shares as Series E Convertible Preferred Stock, 240,000 shares as Series G Convertible Preferred Stock, 10,000 shares as Series H Convertible Preferred Stock, 21 shares as Series H2 Convertible Preferred Stock, 6,250 shares as Series J Convertible Preferred Stock, 15,000 shares as Series K Convertible Preferred Stock and 10,000 shares of Series AA Convertible Preferred Stock, 1,000 shares of Series BB Convertible Preferred Stock and 2,000 shares of Series CC Convertible Preferred Stock.

As of December 31, 2023, there were 35,367,663 shares of common stock issued and outstanding. Similarly, at such time, there were no shares of outstanding Series A Junior Participating Preferred Stock; Series A Convertible Preferred Stock; Series B Convertible Preferred Stock; Series C Convertible Preferred Stock; and Series E Convertible Preferred Stock, Series G Convertible Preferred Stock, Series H Convertible Preferred Stock, Series H2 Convertible Preferred Stock, Series J Convertible Preferred Stock and Series K Convertible Preferred Stock. As of December 31, 2023 there were 75 shares of Series D Convertible Preferred Stock issued and outstanding and convertible into 6,250 shares of common stock, 8,645 shares of Series AA Convertible Preferred Stock issued and outstanding convertible into 8,645,000 shares of common stock, 1,219 shares of Series BB Convertible Preferred Stock issued and outstanding convertible into 12,190,000 shares of common stock and 401 shares of Series DD Convertible Preferred Stock issued and outstanding convertible into 4,010,000 shares of common stock.

On February 28, 2023 the number of shares of Series D, Series G, Series H, Series H2, Series J and Series K Convertible Preferred Stock indicated below converted into shares of the Company's common stock.

Preferred Stock Series	Preferred Stock Owned (Shares)	Preferred Stock Post Stock Split (30-for-1 reverse) (Shares)	Conversion Factor (Preferred to Common)	**New Common Stock Owned (Shares)**
Series D Convertible Preferred Stock	225	7.50	2,500	18,750
Series G Convertible Preferred Stock	80,570	2,685.67	10	26,857
Series H Convertible Preferred Stock	10,000	333.33	100	33,333
Series H2 Convertible Preferred Stock	21	0.70	100,000	70,000
Series J Convertible Preferred Stock	3,458	115.27	1,000	115,267
Series K Convertible Preferred Stock	6,880	229.33	1,000	229,333
Total Convertible Preferred Shares	101,154			493,540

Approximate Number of Equity Security Holders

As of December 31, 2023, there were approximately 215 stockholders of record. Because shares of our common stock are held by depositaries, brokers and other nominees, the number of beneficial holders of our shares is substantially larger than the number of stockholders of record.

Dividends

We have never declared or paid any cash dividends on common stock and do not plan to pay any cash dividends on common stock in the foreseeable future.

As of December 31, 2023, dividends issued or to be issued on convertible preferred stock for the years ended December 31, 2023 and 2022 are outlined in the table below.

Dividends paid in common stock or cash For The Year Ended December 31,			Dividends Payable As Of December 31,		
	2023	2022		2023	2022
Series D	$ -	$ -	Series D	$ -	$ -
Series G	-	-	Series G	-	-
Series H	-	-	Series H	-	-
Series H2	-	-	Series H2	-	-
Series J	-	-	Series J	-	-
Series K	-	-	Series K	-	-
Series AA	1,726,935	432,764	Series AA	-	5,665,176
	$ 1,726,935	$ 432,764		$ -	$ 5,665,176

Unregistered Sales of Equity Securities and Use of Proceeds

During the year ended December 31, 2023, we issued securities that were not registered under the Securities Act, and were not previously disclosed in a Quarterly Report on Form 10-Q or a Current Report on Form 8-K as listed below. Except where noted, all the securities discussed in this Item 5 were issued in reliance on the exemption under Section 4(a)(2) of the Securities Act.

For the year ended December 31, 2023 the Company recognized 117,552 shares issued with a fair value of $81,111 for stock option exercises; issued 2,150,000 shares for services rendered with a fair value of $2,020,935; 2,552,300 shares with a fair value of $2,028,748 for debt extensions; 203,613 shares with a fair value of $509,033 for conversion of debt and interest; 2,991,940 shares for conversion of preferred stock; 729,571 shares with a fair value of $386,936 for dividends paid in kind; 11,878,135 shares with a fair value of $8,226,186 for interest paid-in-kind; 1,625,642 shares issued with debt with a fair value of $790,975, and 60,000 shares with a fair value of $150,000 for sale of common stock.

ITEM 6. SELECTED FINANCIAL DATA

Not Applicable.

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

OVERVIEW

We are a leader in the development & sale of innovative, broadly enabling, pressure-based platform solutions for the worldwide life sciences industry. Our solutions are based on the unique properties of both constant (i.e., static) and alternating (i.e., pressure cycling technology, or "PCT") hydrostatic pressure. PCT is a patented enabling technology platform that uses alternating cycles of hydrostatic pressure between ambient and ultra-high levels to safely and reproducibly control bio-molecular interactions (e.g., cell lysis, biomolecule extraction). Historically, our primary focus has been in the development of PCT-based products for biomarker and target discovery, drug design and development, biotherapeutics characterization and quality control, soil & plant biology, forensics, and counter-bioterror applications. In more recent years, major new market opportunities have emerged in the use of our pressure-based technologies in the following areas: (1) the use of our recently acquired, patented technology from BaroFold, Inc. (the "BaroFold" technology platform) to allow entry into the bio-pharma contract services sector, and (2) the use of our recently-patented, scalable, high-efficiency, pressure-based Ultra Shear Technology ("UST") platform to (i) create stable nanoemulsions of otherwise immiscible fluids (e.g., oils and water) and to (ii) prepare higher quality, homogenized, extended shelf-life or room temperature stable low-acid liquid foods that cannot be effectively preserved using existing non-thermal technologies.

On February 8, 2021, PBI announced plans to acquire the assets of a global eco-friendly agrochemical supplier. This opportunity is attractive as it has the potential of readily producing significant revenue, as well as the potential to apply the UST technology to improve some of the product line. In July 2021, a newly-formed subsidiary of PBI, PBI Agrochem, leased a warehouse in Sparks, NV, and hired a warehouse manager. See the further description of this prospective transaction in Item 1 – Business – "The PBI Agrochem Platform."

Patents

To date, we have been awarded 17 total United States and foreign patents related to our PCT technology platform, and one US patent and 9 additional patents in China related to our Ultra Shear Technology. We also received 14 patents with our purchase of the assets of BaroFold in December 2017. PBI also has 26 pending patents in the USA, Canada, Europe, Australia, China, and Taiwan.

Primary Fields of Use and Application for PCT

Sample preparation is widely regarded as a significant impediment to research and discovery and sample extraction is generally regarded as one of the key parts of sample preparation. The process of preparing samples for genomic, proteomic, lipidomic, and small molecule studies includes a crucial step called sample extraction or sample disruption. This is the process of extracting biomolecules such as nucleic acid i.e., DNA and/or RNA, proteins, lipids, or small molecules from the plant or animal cells and tissues that are being studied. Our current commercialization efforts are based upon our belief that pressure cycling technology provides a superior solution for sample extraction when compared to other available technologies or procedures and thus might significantly improve the quality of sample preparation, and thus the quality of the test result.

Within the broad field of biological sample preparation, in particular sample extraction, we focus the majority of our PCT and constant pressure ("CP") product development efforts in three specific areas: biomarker discovery (primarily through mass spectrometric analysis), forensics, and histology. We believe that our existing PCT and CP-based instrumentation and related consumable products fill an important and growing need in the sample preparation market for the safe, rapid, versatile, reproducible and quality extraction of nucleic acids, proteins, lipids, and small molecules from a wide variety of plant, animal, and microbiological cells and tissues.

Biomarker Discovery and Precision Medicine

The most commonly used technique worldwide for the preservation of cancer and other tissues for long-term storage and subsequent pathology evaluation is to process them into formalin-fixed, paraffin-embedded ("FFPE") samples. We believe that the quality and analysis of FFPE tissues is highly problematic, and that PCT offers significant advantages over current processing methods, including standardization, speed, biomolecule recovery, and safety.

Our customers include researchers at academic laboratories, government agencies, biotechnology companies, pharmaceutical companies and other life science institutions in the Americas, Europe, Asia, Africa and Australia/Pacific. Our goal is to continue aggressive market penetration in these target areas. We also believe that there is a significant opportunity to sell and/or lease additional Barocycler instrumentation to additional laboratories within current customer organizations.

If we are successful in commercializing PCT in applications beyond our current focus area of genomic, proteomic, lipidomic, and small molecule sample preparation, and if we are successful in our attempts to attract additional capital, our potential customer base could expand to include hospitals, reference laboratories, pharmaceutical manufacturing plants and other sites involved in each specific application. If we are successful in forensics, our potential customers could be forensic laboratories, military and other government agencies. If we are successful in biomarker discovery and precision medicine - specifically the extraction of biomolecules from FFPE tissues, our potential customers could be pharmaceutical companies, hospitals, and laboratories focused on drug discovery or differentiation of disease states, subtypes and susceptibility to alternative treatments.

Forensics

The detection of DNA has become a part of the analysis of forensic samples by laboratories and criminal justice agencies worldwide in their efforts to identify the perpetrators of violent crimes and missing persons. Scientists from the University of North Texas and Florida International University have reported improvements in DNA yield from forensic samples (e.g., bone and hair) when using the PCT platform in the sample preparation process. We believe that PCT may be capable of differentially extracting DNA from sperm cells and female epithelial cells captured in swabs collected from rape victims and subsequently stored in rape kits. We also believe that there are many completed rape kits that remain untested for reasons such as cost, time and quality of results. We further believe that the ability to differentially extract DNA from sperm and not epithelial cells could reduce the cost of such testing, while increasing the quality, safety and speed of the testing process.

Going Concern

The audit report issued by our independent registered public accounting firm on our audited consolidated financial statements for the fiscal year ended December 31, 2023, contains an explanatory paragraph regarding our ability to continue as a going concern. The audit report states that our auditing firm determined that there was substantial doubt in our ability to continue as a going concern due to the risk that we may not have sufficient cash and liquid assets to cover our operating and capital requirements for the next twelve-month period; and if sufficient cash cannot be obtained, we would have to substantially alter, or possibly even discontinue, operations. The accompanying consolidated financial statements do not include any adjustments that might result from the outcome of this uncertainty.

Management has developed a plan to continue operations. This plan includes continued control of expenses and obtaining equity or debt financing. Although we have successfully completed equity financings and reduced expenses in the past, we cannot assure you that our plans to address these matters in the future will be successful.

The factors described above could adversely affect our ability to obtain additional financing on favorable terms, if at all, and may cause investors to have reservations about our long-term prospects and may adversely affect our relationships with customers. There can be no assurance that our auditing firm will not issue the same opinion in the future. If we cannot successfully continue as a going concern, our stockholders may lose their entire investment.

Year Ended December 31, 2023 as compared with December 31, 2022

Products and Services Revenue

Revenue from the sale of products and services was $1,977,763 in the year ended December 31, 2023 compared with $1,729,343 in the year ended December 31, 2022, a 14 % increase. Revenue included sales of both PBI and Constant System pressure-based products, sales of BaroFold and UST Contract Services and sales of PBI Agrochem products. Sales of instrumentation increased in 2023 by $435,739 or 60%, from $723,309 in 2022 to $1,159,048 in 2023. Sales of consumables were $200,393 for the year ended December 31, 2023 compared to $257,325 for the same period in 2022, a decrease of $47,932 or 19%. Sales of BaroFold and UST Contract Services decreased by 56% from $196,000 in 2022 to $85,650 in 2023. Products, Services, and Other Revenue included $0 from non-cash transactions in the current year while the prior year included non-cash transactions of $79,901. Revenue from non-cash transactions was recognized based on the carrying value of the assets involved per ASC 845.

Cost of Products and Services

The cost of products and services was $1,178,201 for the year ended December 31, 2023, compared with $1,673,582 in 2022. Our cost of products and services decreased $495,381 for the year ended December 31, 2023 compared to the year ended December 31, 2022. This decrease was mostly attributed to the write down of $640k of Agrochem inventory in 2022.

Research and Development

Research and development expenses were $1,367,154 for 2023 compared to $968,997 in 2022, an increase of $398,157 or 41%. The increase was mostly due to an increase in stock based compensation expense from a 2023 repricing of options and stock option grants.

Selling and Marketing

Selling and marketing expenses were $730,714 in 2023 compared to $580,865 in 2022, an increase of $149,849, or 26%. The reported increase mostly due to an increase in stock based compensation expense from a 2023 repricing of options and stock option grants.

General and Administrative

General and administrative costs were $8,205,052 in the year ended December 31, 2023, as compared with $3,404,188 in 2022, an increase of $4,800,864 or 141%. The reported increase was attributable to the cost of issuable shares associated with the IR contracts, as well as an increase in stock based compensation expense from a 2023 repricing of options and stock option grants.

Operating Loss

Our operating loss was ($9,503,358) for the year ended December 31, 2023 as compared to ($4,898,289) for the prior year, an increase of $4,605,069 or 94%. This increase in operating loss was largely attributable to the increase of our general and administrative costs and decreases in revenue and gross margin in 2023.

Interest Expense

Interest expense totaled $15,581,440 for the year ended December 31, 2023 as compared to interest expense of $10,438,565 for the year ended December 31, 2022. The increase in interest expense in the year ended December 31, 2023, compared to the corresponding prior period, is attributable to an increase of common stock and warrants issued for interest and less accretion of interest and amortization of debt discounts.

Unrealized gain and loss on investment in equity securities

Unrealized loss on investments in equity securities was ($1,762) for the year ended December 31, 2023 compared to an unrealized loss of $3,662 for the year ended December 31, 2022. The reported decrease was attributable to the decrease in the market price of the Company's investment in Nexity. As of December 31, 2023, we held 100,250 shares of common stock of Nexity Global SA, (a Polish publicly traded company).

Loss on extinguishment of liabilities

In connection with payments of interest in common stock and debt extensions, we calculated a net loss on extinguishment of liabilities of $(3,970,983) in the year ended December 31, 2023 and net loss extinguishment of liabilities of ($751,335) in the year ended December 31, 2022. The increase is attributable to a reduction of common stock and warrants issued for interest.

Net Loss attributable to common stockholders

During the year ended December 31, 2023, we recorded a net loss attributable to common shareholders of $35,202,434 or ($1.51) per share, as compared with a net loss available to common shareholders of $17,803,953 or ($1.61) per share during the year ended December 31, 2022. This decrease in the loss per share is principally attributable to the 90% increase in weighted average shares outstanding in the year ended December 31, 2023 along with a smaller loss for 2022 as explained above.

LIQUIDITY AND FINANCIAL CONDITION

As of December 31, 2023, we did not have adequate working capital resources to satisfy our current liabilities. We have been successful in raising cash through debt and equity offerings in the past. We have efforts in place to continue to raise cash through debt and equity offerings.

We believe our current and projected capital raising plans, and our projected continued increases in revenue, will enable us to extend our cash resources for the foreseeable future. Although we have successfully completed equity and debt financings and reduced expenses in the past, we cannot assure you that our plans to address these matters in the future will be successful.

We believe we will need approximately $10 million in additional capital to fund our three-pronged operational plan, which was designed to help increase revenues and reach profitability, by:

A. reducing/eliminating debt and cleaning up the balance sheet;
B. funding UST development, instrument build and commercialization;
C. facilitating up-listing PBIO to a major exchange; and
D. providing a minimum of two years of operational and growth capital.

However, if we are unable to obtain such funds through sales, the capital markets or other source of financing on acceptable terms, or at all, we will likely be required to cease our operations, pursue a plan to sell our operating assets, or otherwise modify our business strategy, which could materially harm our future business prospects. These conditions raise substantive doubt about our ability to continue as a going concern.

Net cash used in operating activities was $3,186,010 for the year ended December 31, 2023 as compared with $4,478,041 for the year ended December 31, 2022.

Net cash used in investing activities for the year ended December 31, 2023 totaled $7,495 compared to $520,755 for the year ended December 31, 2022.

Net cash provided by financing activities for the year ended December 31, 2023 was $3,270,919 as compared with $4,370,350 for the year ended December 31, 2022.

Our common stock is currently traded on the OTCQB tier of the OTC Markets under the trading symbol “PBIO.”

COMMITMENTS AND CONTINGENCIES

Battelle Memorial Institute

In December 2008, we entered into an exclusive patent license agreement with the Battelle Memorial Institute (“*Battelle*”). The licensed technology is described in the patent application filed by Battelle on July 31, 2008 (US serial number 12/183,219). This application includes subject matter related to a method and a system for improving the analysis of protein samples including, through an automated system, utilizing pressure and a pre-selected agent to obtain a digested sample in a significantly shorter period of time than current methods, while maintaining the integrity of the sample throughout the preparatory process. Pursuant to the terms of the agreement, we paid Battelle a non-refundable initial fee of $35,000. In addition to royalty payments on net sales on “licensed products,” we are obligated to make minimum royalty payments for each year we retain the rights outlined in the patent license agreement; and, we are required to have our first commercial sale of the licensed products within one year following the issuance of the patent covered by the licensed technology. After re-negotiating the terms of the contract in 2013, the minimum annual royalty was $1,200 in 2014 and $2,000 in 2015; the minimum royalties were $3,000 in 2016, $4,000 in 2017 and $5,000 in 2018 and each calendar year thereafter during the term of the agreement.

Target Discovery Inc.

In March 2010, we signed a strategic product licensing, manufacturing, co-marketing, and collaborative research and development agreement with Target Discovery Inc. (“TDI”), a related party. Under the terms of the agreement, we have been licensed by TDI to manufacture and sell a highly innovative line of chemicals used in the preparation of tissues for scientific analysis (“TDI reagents”). The TDI reagents were designed for use in combination with our pressure cycling technology. The companies believe that the combination of PCT and the TDI reagents can fill an existing need in life science research for an automated method for rapid extraction and recovery of intact, functional proteins associated with cell membranes in tissue samples. We did not incur any royalty obligation under this agreement in 2022 or 2021.

In April 2012, we signed a non-exclusive license agreement with TDI to grant the non-exclusive use of our pressure cycling technology. We executed an amendment to this agreement on October 1, 2016 wherein we agreed to pay a monthly fee of $1,400 for the use of a lab bench, shared space and other utilities, and $2,000 per day for technical support services as needed. The agreement requires TDI to pay the Company a minimum royalty fee of $60,000 in 2023 and $60,000 in 2022. For the years ended December 31, 2023 and 2022, we reported expenses of $61,800 and $69,300, respectively for these arrangements.

Severance and Change of Control Agreements

Each of Mr. Schumacher, Dr. Ting, and Dr. Lazarev, executive officers of the Company, are entitled to receive a severance payment if terminated by us without cause. The severance benefits would include a payment in an amount equal to one year of such executive officer's annualized base salary compensation plus accrued paid time off. Additionally, the officer will be entitled to receive medical and dental insurance coverage for one year following the date of termination.

Pursuant to severance agreements with each of Mr. Schumacher, Dr. Ting, and Dr. Lazarev, each such executive officer is entitled to receive a change of control payment in an amount equal to one year (other than Mr. Schumacher) of such executive officer's annualized base salary compensation, accrued paid time off, and medical and dental coverage, in the event the officer is terminated as a result of a change of control of our Company. In the case of Mr. Schumacher, his payment is equal to two years of annualized base salary compensation, accrued paid time off, and two years of medical and dental coverage.

Pursuant to our equity incentive plans, any unvested stock options held by a named executive officer will become fully vested upon a change in control (as defined in the 2005 Equity Incentive Plan) of our Company.

Lease Commitments

We lease building space under non-cancelable leases in South Easton, MA, and lab space in Medford, MA and warehouse space in Sparks, NV. Rental costs are expensed as incurred. During 2023 and 2022 we incurred $203,098 and $247,298, respectively, in rent expense for the use of our corporate office, warehouse and research and development facilities.

Following is a schedule by year of future minimum rental payments required under operating leases with initial or remaining non-cancelable lease terms in excess of one year as of December 31, 2023:

2024		64,393
2025		66,969
2026		51,778
2027		-
Thereafter		-
Total future undiscounted lease payments	$	183,140
Less imputed interest		(31,451)
Present value of lease liabilities		151,689

Off-Balance Sheet Arrangements

We did not have any off-balance sheet arrangements as of December 31, 2023 and December 31, 2022.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates, assumptions, and judgments that affect the amounts reported in the financial statements, including the notes thereto. We base our estimates on historical experience and on various other assumptions that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about carrying value of assets and liabilities that are not readily apparent from other sources. Actual results could differ from those estimates. We do not consider any of our policies or estimates to be critical. Refer to Note 3 – Summary of Significant Accounting Policies to our financial statements for a complete discussion of the significant accounting policies and methods used in the preparation of our financial statements.

Management believes its application of accounting policies, and the estimates inherently required therein, are reasonable. These accounting policies and estimates are periodically reevaluated, and adjustments are made when facts and circumstances dictate a change.

Recent Accounting Standards

From time to time, new accounting pronouncements are issued by the FASB or other standard-setting bodies and adopted by the Company as of the specified effective date. The Company believes that the impact of recently issued standards that are not yet effective will not have a material impact on its financial position or results of operations upon adoption.

Fair Value Measurement (Topic 820): Fair Value Measurement of Equity Securities Subject to Contractual Sale Restrictions

ASU No. 2022-03 is effective for public business entities for fiscal years, including interim periods within those fiscal years, beginning after December 15, 2023. Early adoption is permitted. For all other entities, it is effective for fiscal years, including interim periods within those fiscal years, beginning after December 15, 2024. Early adoption is permitted for both interim and annual financial statements that have not yet been issued or made available for issuance.

These amendments clarify that a contractual restriction on the sale of an equity security is not considered part of the unit of account of the equity security and, therefore, is not considered in measuring fair value. While the Company does have equity securities, it does not have any contractual sale restrictions

Debt—Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging— Contracts in Entity's Own Equity (Subtopic 815-40): Accounting for Convertible Instruments and Contracts in an Entity's Own Equity

Summary - ASU No. 2020-06 is effective for public business entities that meet the definition of a Securities and Exchange Commission (SEC) filer, excluding entities eligible to be smaller reporting companies as defined by the SEC, for fiscal years beginning after December 15, 2021, including interim periods within those fiscal years. For all other entities, the standard will be effective for fiscal years beginning after December 15, 2023, including interim periods within those fiscal years. Early adoption will be permitted.

This ASU simplifies accounting for convertible instruments by removing major separation models required under current U.S. GAAP. Consequently, more convertible debt instruments will be reported as a single liability instrument and more convertible preferred stock as a single equity instrument with no separate accounting for embedded conversion features. The ASU removes certain settlement conditions that are required for equity contracts to qualify for the derivative scope exception, which will permit more equity contracts to qualify for it. The ASU also simplifies the diluted earnings per share (EPS) calculation in certain areas.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK.

Not Applicable

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

See Section F for the Company's audited financial statements.

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

We maintain disclosure controls and procedures that are designed to ensure that information required to be disclosed in our Securities Exchange Act of 1934 filings are recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to our management, including our President and Chief Executive Officer (Principal Executive Officer) and Chief Financial Officer (Principal Financial Officer), as appropriate, to allow timely decisions regarding required disclosure. In designing and evaluating the disclosure controls and procedures, management recognized that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives, as ours are designed to do, and management was necessarily required to apply its judgment in evaluating the cost-benefit relationship of possible controls and procedures.

As of December 31, 2023, we carried out an evaluation, under the supervision and with the participation of our management, including our principal executive officer and principal financial officer, of the effectiveness of the design and operation of our disclosure controls and procedures, as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934. Based upon that evaluation, our principal executive officer and principal financial officer concluded that our disclosure controls and procedures were not effective as of December 31, 2023 due to limited resources for adequate personnel to prepare and file reports under the Securities Exchange Act of 1934 within the required periods, and material weaknesses in our internal control over financial reporting relating to our accounting for complex equity transactions as described below under the heading "Report of Management on Internal Control over Financial Reporting". Management plans to remediate this weakness by taking the actions described below.

Report of Management on Internal Control over Financial Reporting

We are responsible for establishing and maintaining adequate internal control over financial reporting. Internal control over financial reporting is defined in Rule 13a-15(f) and 15d-15(f) under the Exchange Act, as a process designed by, or under the supervision of our principal executive and principal financial officers 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 and includes those policies and procedures that:

- pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and disposition 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 authorization of our management and 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.

Our internal control system is designed to provide reasonable assurance to our management and board of directors regarding the preparation and fair presentation of financial statements. 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 risks that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

We have assessed the effectiveness of our internal control over financial reporting as of December 31, 2023 . In making this assessment, we used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in Internal Control-Integrated Framework (2013).

Based on this assessment, management believes that, as of December 31, 2023, the Company did not maintain effective internal control over financial reporting because of the effect of material weaknesses in our internal control over financial reporting discussed below.

Public Company Accounting Oversight Board Auditing Standard No. 2 defines a material weakness as a significant deficiency, or combination of significant deficiencies, that results in there being a more than remote likelihood that a material misstatement of the annual or interim financial statements will not be prevented or detected on a timely basis. Based upon this definition, our management concluded that, as of December 31, 2023, a material weakness existed in our internal control over financial reporting related to accounting for complex equity transactions.

Specifically, we identified material weaknesses in our internal control over financial reporting related to the following matters:

- We identified a lack of sufficient segregation of duties. Specifically, this material weakness is such that the design over these areas relies primarily on detective controls and could be strengthened by adding preventative controls to properly safeguard Company assets.
- Management has identified a lack of sufficient personnel in the accounting function due to our limited resources with appropriate skills, training and experience to perform the review processes to ensure the complete and proper application of generally accepted accounting principles, particularly as it relates to valuation of warrants and other complex debt /equity transactions. Specifically, this material weakness resulted in audit adjustments to the annual consolidated financial statements and revisions to related disclosures.
- Limited policies and procedures that cover recording and reporting of financial transactions.
- Lack of multiple levels of review over the financial reporting process

Our plan to remediate those material weaknesses is as follows:

- Improve the effectiveness of the accounting group by augmenting our existing resources with additional consultants or employees to assist in the analysis and recording of complex accounting transactions, and to simultaneously achieve desired organizational structuring for improved segregation of duties. We plan to mitigate this identified deficiency by hiring an independent consultant once we generate significantly more revenue or raise significant additional working capital.
- Improve expert review and achieve desired segregation procedures by strengthening cross approval of various functions including quarterly internal audit procedures where appropriate.

Changes in Internal Control Over Financial Reporting

There have been no changes in our internal control over financial reporting that occurred during the year ended December 31, 2023 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

ITEM 9B. OTHER INFORMATION

None.

ITEM 9C. DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS

Not applicable.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Directors

The following table sets forth information about the individuals who serve as our directors as of December 31, 2023.

Name	Age	Position	Board Committees	Term of office expires:
Richard T. Schumacher	73	President, Chief Executive Officer, Interim Chief Financial Officer, Treasurer, Clerk and Director	None	2023 (re-elected in 2024 to 2026)
Jeffrey N. Peterson	68	Chairman of the Board	Audit, Compensation, Nominating	2024
Dr. Mickey Urdea	71	Director	Scientific Advisory Board	2024
Vito J. Mangiardi	75	Director	Audit, Compensation, Nominating	2025
Kevin A. Pollack	53	Director	Audit, Compensation, Nominating	2025

The following noteworthy experience, qualifications, attributes and skills for each Board member, together with the biographical information for each nominee described below, led to our conclusion that the person should serve as a director in light of our business and structure:

Mr. Richard T. Schumacher, the founder of the Company, has served as a director of the Company since the Company's formation. He has served as the Company's Chief Executive Officer since April 16, 2004 and President since September 14, 2004. He previously served as Chief Executive Officer and Chairman of the Board of the Company from 1992 to February 2003. From July 9, 2003 until April 14, 2004, he served as a consultant to the Company pursuant to a consulting agreement. He served as President of the Company from August 1978 to August 1999. Mr. Schumacher served as the Director of Infectious Disease Services for Clinical Sciences Laboratory, a New England-based medical reference laboratory, from 1986 to 1988. From 1972 to 1985, Mr. Schumacher was a research scientist and clinical laboratory director at the Center for Blood Research, a nonprofit medical research institute associated with Harvard Medical School. Mr. Schumacher received a B.S. in Zoology from the University of New Hampshire.

Mr. Jeffrey N. Peterson has served as a director of the Company since July 2011 and as Chairman of the Board starting in 2012. Since 1999, he has served as the Chief Executive Officer of TargetDiscovery, Inc. ("TDI"), a personalized medicine diagnostics (PMDx) and analytical testing solutions company. Mr. Peterson also serves as Chairman and CEO of TDI's majority-owned subsidiary, Veritomyx, Inc., a high-performance SaaS (cloud computing) scientific signal-processing company, and as a board member of MassWerx, Inc., a related company also serving the diagnostics and analytical testing markets. Mr. Peterson served as Chairman of the Board of Imaging3 (OTCQB: IGNG), an innovative medical and industrial imaging company, from March 2018 through July 2019. Prior to incorporating and founding TDI, Mr. Peterson served as CEO of Sharpe, Peterson, Ocheltree & Associates, an international business development consulting firm assisting Fortune 500 and many smaller firms in business expansion and strategy. Prior to that, he spent 9 years in key management roles in Abbott Laboratories' Diagnostics and International (Pharmaceuticals, Hospital Products, Nutritionals, and Consumer) businesses, last serving as CEO and General Manager of Abbott South Africa. Mr. Peterson's experience prior to Abbott Laboratories included 11 years with General Electric's Engineered Materials and Plastics businesses, spanning roles in strategic planning, business development, technology licensing, marketing and sales, operations, quality control and R&D. Mr. Peterson holds BSChE and MSChE (Chemical Engineering) degrees from MIT, as well as 6 issued US patents. He served as Chair Emeritus of the BayBio Institute, a non-profit organization serving the life science community, and on the Board of BayBio, a trade association for the life sciences industry in Northern California. He served as a cofounder of the Coalition for 21st Century Medicine, and of BIO's Personalized Medicine & Diagnostics Working Group. He served on the Board of Advisors for the Center for Professional Development and Entrepreneurship at the University of Texas MD Anderson Cancer Center. He currently serves on the Advisory Board of the California Technology Council.

Mr. Vito J. Mangiardi has served as a director of the Company since July 2012. Mr. Mangiardi is an accomplished senior executive with proven experience as a President, CEO and COO in the Life Sciences and Bio-Energy product and service sectors. He is a strong P&L performer and corporate strategist in General Management, Operations, Sales/Marketing, and Science. Mr. Mangiardi has held positions as a Research Chemist for Bio-Rad Laboratories, Inc.; Sales & Marketing Director for Baxter Travenol, Inc.; Executive VP and COO for Quintiles Transnational Corp.; President and CEO of Diagnostics Laboratories, Inc., Clingenix, Inc., and Bilcare, Inc.; and President of AAI Pharma, Inc. More recently he was the COO/Deputy Director of Operations and Production at the University of California Lawrence Berkeley National Laboratory Joint Genome Institute. Mr. Mangiardi has experience with three start-ups, two midsize, and several mature companies, and has international experience leading and managing organizations on four continents. He has vast experience in leading alliances, acquisitions, due diligence, and post-acquisition assimilation. Mr. Mangiardi has been on the Board of Directors of three companies and has proven success in working with both national and international investment groups to raise funds. Mr. Mangiardi earned a BS in Biology/Chemistry from Eastern Illinois University and two MBA degrees from Golden Gate University - in General Management and in Marketing. Mr. Mangiardi is listed as an inventor in four patents and various publications in protein separation techniques in the area of metabolism, thyroid, anemia/hematology and cancer, and is a member of numerous professional organizations. Mr. Mangiardi is the founding partner, President and CEO of Marin Bay Partners, LLC (MBP), a consulting firm focused on life sciences, pharmaceutical development and clinical diagnostics.

Mr. Kevin A. Pollack has served as a director of the Company since July 2012. From 2017 to 2018, Mr. Pollack served as an advisor to Opiant Pharmaceuticals, Inc. (OPNT-NASDAQ), a pharmaceutical company with a mission to create best-in-class medicines for the treatment of addictions and drug overdose. He previously served as its Chief Financial Officer and as a member of its Board of Directors from 2012 until 2017. He also has served as President of Short Hills Capital LLC. Previously, Mr. Pollack worked in asset management at Paragon Capital LP, focusing primarily on U.S.-listed companies, and as an investment banker at Banc of America Securities LLC, focusing on corporate finance and mergers and acquisitions. Mr. Pollack started his career at Sidley Austin LLP (formerly Brown & Wood LLP) as a securities attorney focusing on corporate finance and mergers and acquisitions. He served on the Board of Directors of Taronis Fuels, Inc. 2019 to 2021 and served on the Board of Directors of BBHC, Inc. from 2012 until 2020. Mr. Pollack graduated magna cum laude from the Wharton School of the University of Pennsylvania and received a dual J.D./M.B.A. from Vanderbilt University, where he graduated with Beta Gamma Sigma honors.

Dr. Michael S. Urdea has served as a director of the Company since February 8, 2013. Dr. Urdea founded and is a Partner for Halteres Associates, a biotechnology consulting firm. He also founded and served as Chief Executive Officer of Tethys Biosciences, a proteomics-based diagnostics company involved in preventative personalized medicine. Additionally, Dr. Urdea is a founder and the Chairman of Catalysis Foundation for Health, an organization addressing gaps in global healthcare caused by inefficiencies in disease diagnosis and monitoring. He serves as an expert consultant to the life sciences industry and is on the scientific advisory boards and boards of directors of several biotechnology, diagnostics, and philanthropic organizations. Prior to his current business activities, Dr. Urdea founded the Nucleic Acid Diagnostics group at Chiron Corporation, and with colleagues, invented branched DNA molecules for amplification of signal in nucleic acid complexes. Application of this technology resulted in the first commercial products for quantification of human hepatitis B, hepatitis C, and human immunodeficiency viruses (HBV, HCV, and HIV, respectively). He then became business head of the Molecular Diagnostics Group and Chief Scientific Officer at Bayer Diagnostics. He continues to serve as a diagnostics industry, product development and scientific advisor to numerous organizations and companies. He has also worked with the Bill and Melinda Gates Foundation as co-chair of two of the Grand Challenges grant review committees and served as a member of its Diagnostic Forum heading the Technology Committee. Dr. Urdea is an author on nearly 200 peer-reviewed scientific publications, nearly 300 abstracts and international scientific presentations, and more than 100 issued and pending patents. He received his BS in Biology and Chemistry from Northern Arizona University in Flagstaff and his Ph.D. in Biochemistry from Washington State University. In 2022, he also received an honorary Ph.D. from Northern Arizona University.

Executive Officers

Our executive officers are appointed by, and serve at the discretion of, our board of directors. The following table sets forth information about our executive officers.

Name	Age	Position
Richard T. Schumacher	73	President, Chief Executive Officer, Interim Chief Financial Officer, Treasurer, Clerk and Director
Edmund Ting, Ph.D.	70	Senior Vice President of Engineering
Alexander Lazarev, Ph.D.	61	Chief Science Officer

Mr. Richard T. Schumacher biography can be found under the Directors heading.

Dr. Edmund Ting joined us as Senior Vice President of Engineering on April 24, 2006. Prior to joining us, Dr. Ting served as the Chief Research Officer of Avure Technologies, a leading worldwide manufacturer of high-pressure hydrostatic processing equipment for the food and materials processing industry, where he worked from 2001 to 2006. From 1990 to 2001, Dr. Ting was employed by Flow International Corporation, a world leader in the ultrahigh pressure waterjet cutting technology market, and the parent company of Avure Technologies until November 2005. Dr. Ting last held the position of Vice President of Engineering Research and Development at Flow International Corporation. From 1984 to 1990, Dr. Ting was a research scientist and then a group leader at Grumman Aerospace Corporation. Dr. Ting earned a Bachelor of Science degree in mechanical engineering from Northeastern University and a Science Doctorate in materials science and engineering from the Massachusetts Institute of Technology.

Dr. Alexander Lazarev has served as our Chief Science Officer since 2019. Prior to that, he serviced as our Vice President of Research and Development since 2007, and he served as our Director of Research and Development, since joining us in 2006. Prior to joining us, Dr. Lazarev worked as a Visiting Scientist at the Barnett Institute of Chemical and Biological Analysis at Northeastern University in 2005 and served as a Director of New Technology Development at Proteome Systems, Inc., where he was involved in research and development of innovative proteomic analysis applications from 2001 until early 2006. From 1998 to 2001, Dr. Lazarev was employed as Senior Scientist at the Proteomics Division of Genomic Solutions, Inc. Prior to his employment at Genomic Solutions, Inc., Dr. Lazarev was employed in an analytical contract service startup company, PhytoChem Technologies, Inc., which was founded as a spin-off from ESA, Inc. in 1997. Previously, Dr. Lazarev held various scientific positions at the Ohio State University School of Medicine and the Uniformed Services University of Health Sciences. Most of his scientific career has been dedicated to development of methods and applications for biochemical analysis. Since 2005, Dr. Lazarev has been elected as an Executive Board member of the MASSEP.org, a non-profit scientific discussion forum dedicated to the promotion and improvement of chromatography and other analytical technologies. Dr. Lazarev earned his undergraduate and graduate degrees at the University of Kazan, Russian Federation.

Code of Ethics

Pursuant to Section 406 of the Sarbanes-Oxley Act of 2002, we have adopted a Code of Ethics for senior financial officers that applies to our principal executive officer, principal financial officer, principal accounting officer, controller, and other persons performing similar functions. A copy of the code of ethics is posted on and may be obtained free of charge from our internet website at http://www.pressurebiosciences.com. If we make any amendments to this Code of Ethics or grant any waiver, including any implicit waiver, from a provision of this Code of Ethics to our principal executive officer, principal financial officer, principal accounting officer, controller, or other persons performing similar functions, we will disclose the nature of such amendment or waiver, the name of the person to whom the waiver was granted and the date of waiver in a Current Report on Form 8-K.

Corporate Governance

Term of Office

Our directors are appointed for a three-year term to hold office until the annual general meeting of our shareholders or until removed from office in accordance with our bylaws. Our officers are appointed by our board of directors and hold office until removed by the board.

Board Independence

The Board of Directors has reviewed the qualifications of each of Messrs. Mangiardi, Peterson, Urdea and Pollack, constituting more than a majority of the Company's current directors, and has affirmatively determined that each individual is, or at the time of their service was, "independent" as such term is defined under the current listing standards of the Nasdaq Stock Market. The Board of Directors has determined that none of these directors has a material relationship with the Company that would interfere with the exercise of independent judgment. In addition, each member of the Audit Committee is independent as required under Section 10A(m)(3) of the Securities Exchange Act of 1934, as amended (the "Exchange Act").

Code of Ethics

Pursuant to Section 406 of the Sarbanes-Oxley Act of 2002, the Company has adopted a Code of Ethics for Senior Financial Officers that applies to the Company's principal executive officer, principal financial officer, principal accounting officer, controller, and other persons performing similar functions. A copy of the code of ethics is posted on and may be obtained free of charge from the investor relations portion of the Company's website at www.pressurebiosciences.com. If the Company makes any amendments to its Code of Ethics or grants any waiver, including any implicit waiver, from a provision of this Code of Ethics to the Company's principal executive officer, principal financial officer, principal accounting officer, controller, or other persons performing similar functions, the Company will disclose the nature of such amendment or waiver, the name of the person to whom the waiver was granted and the date of waiver in a Current Report on Form 8-K.

Audit Committee

The Audit Committee was established in accordance with Section 3(a)(58)(A) of the Securities Exchange Act of 1934. Messrs. Pollack (chairman), Mangiardi and Peterson are currently the members of the Audit Committee.

The Board of Directors has determined that Mr. Pollack qualifies as an "audit committee financial expert" as defined in Item 407(d)(5) of Regulation S-K and is "independent" as defined by SEC and OTC Market rules.

The Audit Committee operates pursuant to a written charter (the "*Audit Committee Charter*"), a current copy of which is publicly available on the investor relations portion of the Company's website at www.pressurebiosciences.com. Under the provisions of the Audit Committee Charter, the primary functions of the Audit Committee are to assist the Board of Directors with the oversight of (i) the Company's financial reporting process, accounting functions, and internal controls, and (ii) the qualifications, independence, appointment, retention, compensation, and performance of the Company's independent registered public accounting firm. The Audit Committee is also responsible for the establishment of "whistle-blowing" procedures, and the oversight of other compliance matters.

Compensation Committee

The Board of Directors has a Compensation Committee, consisting of Messrs. Peterson, Pollack and Mangiardi. The Compensation Committee's duties include (i) reviewing and approving our executive compensation, (ii) reviewing the recommendations of the president and chief executive officer regarding the compensation of our executive officers, (iii) evaluating the performance of the president and chief executive officer, (iv) overseeing the administration and approval of grants of stock options and other equity awards under our equity incentive plans, and (v) recommending compensation for our board of directors and each committee thereof for review and approval by the board of directors. The Compensation Committee operates pursuant to a written charter, a current copy of which is publicly available on the investor relations portion of our website at www.pressurebiosciences.com.

Involvement in Certain Legal Proceedings

To the best of our knowledge, none of our directors or executive officers has, during the past ten years:

- been convicted in a criminal proceeding or been subject to a pending criminal proceeding (excluding traffic violations and other minor offenses);
- had any bankruptcy petition filed by or against the business or property of the person, or of any partnership, corporation, or business association of which he was a general partner or executive officer, either at the time of the bankruptcy filing or within two years prior to that time;
- been subject to any order, judgment, or decree, not subsequently reversed, suspended, or vacated, of any court of competent jurisdiction or federal or state authority, permanently or temporarily enjoining, barring, suspending or otherwise limiting, his involvement in any type of business, securities, futures, commodities, investment, banking, savings and loan, or insurance activities, or to be associated with persons engaged in any such activity;
- been found by a court of competent jurisdiction in a civil action or by the Securities and Exchange Commission or the Commodity Futures Trading Commission to have violated a federal or state securities or commodities law, and the judgment has not been reversed, suspended, or vacated;
- been the subject of, or a party to, any federal or state judicial or administrative order, judgment, decree, or finding, not subsequently reversed, suspended or vacated (not including any settlement of a civil proceeding among private litigants), relating to an alleged violation of any federal or state securities or commodities law or regulation, any law or regulation respecting financial institutions or insurance companies including, but not limited to, a temporary or permanent injunction, order of disgorgement or restitution, civil money penalty or temporary or permanent cease-and-desist order, or removal or prohibition order, or any law or regulation prohibiting mail or wire fraud or fraud in connection with any business entity; or
- been the subject of, or a party to, any sanction or order, not subsequently reversed, suspended or vacated, of any self-regulatory organization (as defined in Section 3(a)(26) of the Exchange Act), any registered entity (as defined in Section 1(a)(29) of the Commodity Exchange Act), or any equivalent exchange, association, entity or organization that has disciplinary authority over its members or persons associated with a member.

Except as set forth in our discussion below in "Certain Relationships and Related Transactions," none of our directors or executive officers has been involved in any transactions with us or any of our directors, executive officers, affiliates or associates which are required to be disclosed pursuant to the rules and regulations of the Commission.

ITEM 11. EXECUTIVE COMPENSATION

Executive Officer Compensation

Summary Compensation Table

The Summary Compensation Table below sets forth the total compensation paid or earned for the fiscal years ended December 31, 2023 and 2022 for: (i) each individual serving as our chief executive officer ("*CEO*") or acting in a similar capacity during any part of fiscal 2022; and (ii) the other two most highly paid executive officers (collectively, the "*Named Executive Officers*") who were serving as executive officers as of December 31, 2023.

Name and Principal Position	Fiscal Year	Salary[1]	Bonus	Stock Awards[2]	Option Awards[3]	Non-Qualified Deferred Compensation Earning	All other Compensation[4]	Total
Richard T. Schumacher	2023	$ 309,161	$ -	$ -	$ 55,895	$ -	$ 10,835	$ 375,891
President, CEO	2022	309,185	-		-	-	11,350	320,535
Edmund Ting, Ph.D.	2023	207,480	-	-	12,085	-	7,792	227,357
Senior Vice President of Engineering	2022	207,536	-	-	-	-	7,627	215,163
Alexander Lazarev, Ph.D.	2023	200,072	-	-	12,085	-	1.875	212,159
Vice President of Research and Development	2022	200,089	-		-	-	2,183	202,272

(1) Salary refers to base salary compensation paid through our normal payroll process. No bonus was paid to any named executive officer for 2023 or 2022.

(2) No Stock awards issued to the company's officers in 2023.

(3) Amounts shown do not reflect compensation received by the Named Executive Officers. Instead, the amounts shown are the aggregate grant date fair value as determined pursuant to FASB ASC 718, Compensation-Stock Compensation. Please refer to Note 3, xiii, "Accounting for Stock-Based Compensation" in the accompanying Notes to Consolidated Financial Statements for the fiscal year ended December 31, 2023, for the relevant assumptions used to determine the valuation of stock option grants.

(4) "All Other Compensation" includes our Company match to the executives' 401(k) contribution and premiums paid on life insurance for the executives. All of these benefits are available to all of our employees. In the case of Mr. Schumacher, "All Other Compensation" also includes $8,379 in premiums we paid for a life insurance policy to which Mr. Schumacher's wife is the beneficiary. "All Other Compensation" for Dr. Ting includes $6,000 paid to Dr. Ting in lieu of his participation in the medical benefit plan offered by the Company.

Outstanding Equity Awards at Fiscal Year End

The following table sets forth certain information regarding outstanding stock options awards for each of the Named Executive Officers as of December 31, 2023.

	Option Awards			
Name	Number of Securities Underlying Unexercised Options Exercisable	Number of Securities Underlying Unexercised Options Unexercisable [1]	Option Exercise Price	Option Expiration Date
Richard T. Schumacher	10,000	-	$ 0.25	7/18/2028
President, CEO	422,668	-	$ 0.25	12/19/2028
	204,859	222,673	$ 0.25	1/19/2033
	98,659	239,602	$ 0.25	10/19/2033
Edmund Y. Ting, Ph.D	21,185	-	$ 0.25	7/18/2028
Senior Vice President of Engineering	85,555	-	$ 0.25	12/19/2028
	61,266	66,594	$ 0.25	1/19/2033
	26,907	65,346	$ 0.25	10/19/2033
Alexander V. Lazarev, Ph.D	17,835	-	$ 0.25	7/18/2028
Vice President of Research & Development	73,505	-	$ 0.25	12/19/2028
	68,645	74,615	$ 0.25	1/19/2033
	26,907	65,346	$ 0.25	10/19/2033

(1) All unvested stock options listed in this column were granted to the Named Executive Officer pursuant to our 2013 and 2021 Equity Incentive Plan. On December 19, 2019, all outstanding options were repriced and re-issued pursuant to this plan, and on October 18, 2023, all outstanding options were again repriced and re-issued pursuant to this plan. All options expire ten years after the date of grant. Unvested stock options become fully vested and exercisable upon a change of control of our company.

Retirement Plan

All employees, including the named executive officers, may participate in our 401(k) Plan. Under the 401(k) Plan, employees may elect to make before tax contributions of up to 60% of their base salary, subject to current Internal Revenue Service limits. The 401(k) Plan does not permit an investment in our common stock. We match employee contributions up to 50% of the first 2% of the employee's earnings. Our contribution is 100% vested immediately.

Severance Arrangements

Each of Mr. Schumacher, Dr. Ting, Dr. and Lazarev, executive officers of the Company, are entitled to receive a severance payment if terminated by us without cause. The severance benefits would include a payment in an amount equal to one year of such executive officer's annualized base salary compensation plus accrued paid time off. Additionally, the officer will be entitled to receive medical and dental insurance coverage for one year following the date of termination.

Change-in-Control Arrangements

Pursuant to severance agreements with each of Mr. Schumacher, Dr. Ting, and Dr. Lazarev, each such executive officers, is entitled to receive a change of control payment in an amount equal to one year (other than Mr. Schumacher) of such executive officer's annualized base salary compensation, accrued paid time off, and medical and dental coverage, in the event of their termination upon a change of control of our Company. In the case of Mr. Schumacher, his payment is equal to two years of annualized base salary compensation, accrued paid time off, and two years of medical and dental coverage.

Pursuant to our equity incentive plans, any unvested stock options held by a named executive officer will become fully vested upon a change in control (as defined in the 2005 Equity Incentive Plan) of our Company.

Director Compensation and Benefits

The following table sets forth certain information regarding compensation earned or paid to our directors during year ended December 31, 2023.

Name	Fees Earned [1]	Stock Awards	Option Awards	Total
Vito J. Mangiardi	$ 70,000	$ -	$ 10,474	$ 80,474
Jeffrey N. Peterson	107,500	-	21,350	128,850
Kevin A. Pollack	72,500	-	11,279	83,779
Michael S. Urdea, Ph. D.	50,000	-	9,668	59,668

Our non-employee directors receive the following compensation for service as a director:

(1) Each director currently earns a quarterly stipend of $10,000 for attending meetings of the full board of directors (whether telephonic or in-person) and fees ranging from $5,000 to $20,000 for chairing and attending committee meetings in 2021. Mr. Peterson currently earns $20,000 per quarter as chairman of the board of directors. There is no limit to the number of board of directors or committee meetings that may be called. None of these fees were paid during the year ended December 31, 2023.

The following table shows the total number of outstanding stock options as of December 31, 2023 that have been issued as director compensation. The Company did not issue any stock options as director compensation in 2022.

Name	**Aggregate Number of Stock Options Outstanding**
Vito J. Mangiardi	283,273
Jeffrey N. Peterson	577,440
Kevin A. Pollack	305,063
Michael S. Urdea, Ph. D.	261,482

Report from Compensation Committee

General

Messrs. Peterson, Pollack and Mangiardi are currently the members of the Compensation Committee. The Compensation Committee operates pursuant to a written charter, a current copy of which is publicly available on the investor relations portion of our website at www.pressurebiosciences.com. The primary functions of the Compensation Committee include (i) reviewing and approving our executive compensation, (ii) reviewing the recommendations of the president and chief executive officer regarding the compensation of our executive officers, (iii) evaluating the performance of the president and chief executive officer, (iv) overseeing the administration and approval of grants of stock options and other equity awards under our equity incentive plans, and (v) recommending compensation for our board of directors and each committee thereof for review and approval by the board of directors.

The Compensation Committee may form and delegate authority to one or more subcommittees as it deems appropriate from time to time under the circumstances (including (a) a subcommittee consisting of a single member and (b) a subcommittee consisting of at least two members, each of whom qualifies as a “non-employee director,” as such term is defined from time to time in Rule 16b-3 promulgated under the Securities Exchange Act of 1934, and an “outside director,” as such term is defined from time to time in Section 162(m) of the Internal Revenue Code of 1986, as amended, and the rules and regulations there under).

Compensation Objectives

In light of the relatively early stage of commercialization of our products, we recognize the importance of attracting and retaining key employees with sufficient experience, skills, and qualifications in areas vital to our success, such as operations, finance, sales and marketing, research and development, engineering, and individuals who are committed to our short- and long-term goals. The Compensation Committee has designed our executive compensation programs with the intent of attracting, motivating, and retaining experienced executives and, subject to our limited financial resources, rewarding them for their contributions by offering them a competitive base salary, potential for annual cash incentive bonuses, and long-term equity-based incentives, typically in the form of stock options. The Compensation Committee strives to balance the need to retain key employees with financial prudence given our history of operating losses, limited financial resources and the early stage of our commercialization.

Executive Officers and Director Compensation Process

The Compensation Committee considers and determines executive compensation according to an annual objective setting and measurement cycle. Specifically, corporate goals for the year are initially developed by our executive officers and are then presented to our board of directors and Compensation Committee for review and approval. Individual goals are intended to focus on contributions that facilitate the achievement of the corporate goals. Individual goals are first proposed by each executive officer, other than the president and CEO, then discussed by the entire senior executive management team and ultimately compiled and prepared for submission to our board of directors and the Compensation Committee, by the president and chief executive officer. The Compensation Committee sets and approves the goals for the president and chief executive officer. Generally, corporate and individual goals are set during the first quarter of each calendar year. The objective setting process is coordinated with our annual financial planning and budgeting process so our board of directors and Compensation Committee can consider overall corporate and individual objectives in the context of budget constraints and cost control considerations. Annual salary increases, bonuses, and equity awards, such as stock option grants, if any, are tied to the achievement of these corporate and individual performance goals as well as our financial position and prospects.

Under the annual performance review program, the Compensation Committee evaluates individual performance against the goals for the recently completed year. The Compensation Committee's evaluation generally occurs in the first quarter of the following year. The evaluation of each executive (other than the president and chief executive officer) begins with a written self-assessment submitted by the executive to the president and chief executive officer. The president and chief executive officer then prepares a written evaluation based on the executive's self-assessment, the president and chief executive officer's evaluation, and input from others within the Company. This process leads to a recommendation by the president and chief executive officer for a salary increase, bonus, and equity award, if any, which is then considered by the Compensation Committee. In the case of the president and chief executive officer, the Compensation Committee conducts his performance evaluation and determines his compensation, including salary increase, bonus, and equity awards, if any. We generally expect, but are not required, to implement salary increases, bonuses, and equity awards, for all executive officers, if and to the extent granted, by April 1 of each year.

Non-employee director compensation is set by our board of directors upon the recommendation of the Compensation Committee. In developing its recommendations, the Compensation Committee is guided by the following goals: compensation should be fair relative to the required services for directors of comparable companies in our industry and at our Company's stage of development; compensation should align directors' interests with the long-term interest of stockholders; the structure of the compensation should be simple, transparent, and easy for stockholders to understand; and compensation should be consistent with the financial resources, prospects, and competitive outlook for the Company.

In evaluating executive officer and director compensation, the Compensation Committee considers the practices of companies of similar size, geographic location, and market focus. In order to develop reasonable benchmark data the Compensation Committee has referred to publicly available sources such as www.salary.com and the BioWorld Survey. While the Compensation Committee does not believe benchmarking is appropriate as a stand-alone tool for setting compensation due to the unique aspects of our business objectives and current stage of development, the Compensation Committee generally believes that gathering this compensation information is an important part of its compensation-related decision making process.

The Compensation Committee has the authority to hire and fire advisors and compensation consultants as needed and approve their fees. No advisors or compensation consultants were hired or fired in fiscal 2021. The Compensation Committee is also authorized to delegate any of its responsibilities to sub committees or individuals as it deems appropriate. The Compensation Committee did not delegate any of its responsibilities in fiscal 2021.

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

Beneficial Ownership Information

The following table sets forth certain information as of May 29, 2024 concerning the beneficial ownership of common stock for: (i) each director and director nominee, (ii) each Named Executive Officer in the Summary Compensation Table under "Executive Compensation" above, (iii) all executive officers and directors as a group, and (iv) each person (including any "group" as that term is used in Section 13(d)(3) of the Exchange Act) known by us to be the beneficial owner of 5% or more of our common stock. The address for each of the persons below who are beneficial owners of 5% or more of our common stock is our corporate address at 14 Norfolk Avenue, South Easton, MA 02375.

Beneficial ownership has been determined in accordance with the rules of the SEC and is calculated based on 34,710,509 shares of our common stock issued and outstanding as of June 4, 2024. Shares of common stock subject to options, warrants, preferred stock or other securities convertible into common stock that are currently exercisable or convertible, or exercisable or convertible within 60 days of May 29, 2024, are deemed outstanding for computing the percentage of the person holding the option, warrant, preferred stock, or convertible security but are not deemed outstanding for computing the percentage of any other person.

Except as indicated by the footnotes below, we believe, based on the information furnished to us, that the persons and entities named in the table below have sole voting and investment power with respect to all shares of common stock that they beneficially own.

Name of Beneficial Owner	Common Shares Owned	Convertible Securities that can be converted into Common Shares	Total Beneficial Ownership	Percent of Class
Richard T. Schumacher(1)	55,535	800,368	855,903	3.3%
Jeffrey N. Peterson(2)	70,558	572,023	642,581	2.5%
Kevin A. Pollack(3)	33,873	274,379	308,252	1.2%
Michael S. Urdea(4)	30,287	240,380	270,667	1.1%
Vito J. Mangiardi(5)	15,479	225,446	240,925	0.9%
Edmund Y. Ting, Ph.D.(6)	815	194,913	195,728	0.8%
Alexander V. Lazarev, Ph.D.(7)	14,782	239,812	254,594	1.0%
All Executive Officers and Directors as a Group	221,329	2,547,321	2,768,650	10.8%

1) Convertible securities include: (i) 736,186 shares of Common Stock issuable upon exercise of options within 60 days; (ii) 32,091 shares of Common Stock issuable upon the exercise of warrants, and (iii) 32,091 shares of common stock issuable upon conversion of Series AA Convertible Preferred Stock. Does not include 672 shares of Common Stock held by Mr. Schumacher's minor son as Mr. Schumacher's wife exercises all voting and investment control over such shares.

2) Convertible securities include: (i) 441,623 shares of Common Stock issuable upon exercise of options within 60 days; (ii) 65,200 shares of Common Stock issuable upon the exercise of warrants, and (iii) 65,200 shares of common stock issuable upon conversion of Series AA Convertible Preferred Stock.

3) Convertible securities include: (i) 233,311 shares of Common Stock issuable upon exercise of options within 60 days; (ii) 20,534 shares of Common Stock issuable upon the exercise of warrants, and (iii) 20,534 shares of common stock issuable upon conversion of Series AA Convertible Preferred Stock.

4) Convertible securities include: (i) 199,980 shares of Common Stock issuable upon exercise of options within 60 days; (ii) 20,200 shares of Common Stock issuable upon the exercise of warrants, and (iii) 20,200 shares of common stock issuable upon conversion of Series AA Convertible Preferred Stock.

5) Convertible securities include: (i) 216,646 shares of Common Stock issuable upon exercise of options within 60 days; (ii) 4,400 shares of Common Stock issuable upon the exercise of warrants, and (iii) 4,400 shares of common stock issuable upon conversion of Series AA Convertible Preferred Stock.

6) Convertible securities are 194,913 shares of Common Stock issuable upon exercise of options within 60 days.

7) Convertible securities include: (i) 186,892 shares of Common Stock issuable upon exercise of options within 60 days; (ii) 26,460 shares of Common Stock issuable upon the exercise of warrants, and (iii) 26,400 shares of common stock issuable upon conversion of Series AA Convertible Preferred Stock.

Equity Compensation Plan Information

We maintain several equity compensation plans for employees, officers, directors and other entities and individuals whose efforts contribute to our success. The table below sets forth certain information as of our fiscal year ended December 31, 2023 regarding the shares of our common stock available for grant or granted under our equity compensation plans.

Plan Category	Number of securities to be issued upon exercise of outstanding options	Weighted-average exercise price of outstanding options	Number of securities available for future issuance under equity compensation plans
Equity compensation plan approved by security holders - 2013 Equity Incentive Plan	3,000,000	$ 0.72	-
Equity compensation plan approved by security holders - 2021 Equity Incentive Plan	3,000,000	-	915,005

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS; AND DIRECTOR INDEPENDENCE [CANDY]

The following is a summary of transactions since January 1, 2020 to which we have been or will be a party in which the amount involved exceeded or will exceed $15,296 (one percent of the average of our total assets at year-end for our last two completed fiscal years) and in which any of our directors, executive officers or beneficial holders of more than 5% of any class of our capital stock, or any immediate family member of, or person sharing a household with, any of these individuals, had or will have a direct or indirect material interest, other than compensation arrangements that are described under the section captioned “Executive Compensation.”

In March 2010, we signed a strategic product licensing, manufacturing, co-marketing, and collaborative research and development agreement with Target Discovery Inc. (“*TDI*”), a related party. Under the terms of the agreement, we have been licensed by TDI to manufacture and sell a highly innovative line of chemicals used in the preparation of tissues for scientific analysis (“*TDI reagents*”). The TDI reagents were designed for use in combination with our pressure cycling technology. The respective companies believe that the combination of PCT and the TDI reagents can fill an existing need in life science research for an automated method for rapid extraction and recovery of intact, functional proteins associated with cell membranes in tissue samples. We did not incur any royalty obligation under this agreement in 2017 or 2016. We executed an amendment to this agreement on October 1, 2016 wherein we agreed to pay a monthly fee of $1,400 for the use of a lab bench, shared space and other utilities, and $2,000 per day for technical support services as needed. Mr. Jeffrey N. Peterson, the chief executive officer of TDI, has served as a director of the Company since July 2011 and as Chairman of the Board starting in 2012. For the years ended December 31, 2022 and 2023, we reported expenses of $69,300 and $61,800, respectively for these arrangements.

Related Party Notes

During the year ended December 31, 2023, we received short-term non-convertible loans of $184,800 from related parties and made payments of $185,000 for an ending principal balance of $648,500, which includes an unamortized debt discount of $0.

During the year ended December 31, 2022, we received short-term non-convertible loans of $958,100 from related parties and made payments of $315,300, for an ending balance of $634,885, which includes an unamortized debt discount of $7,915.

Board Independence

Our board of directors has reviewed the qualifications of each of Messrs. Peterson, Mangiardi, Pollack, and Dr. Urdea constituting more than a majority of our directors and has affirmatively determined that each individual is "independent" as such term is defined under the current listing standards of the OTC Markets. The board of directors has determined that none of these directors has a material relationship with us that would interfere with the exercise of independent judgment. In addition, each member of the Audit Committee is independent as required under Section 10A(m)(3) of the Securities Exchange Act of 1934, as amended (the "Exchange Act").

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

The Audit Committee appointed MaloneBailey LLP, an independent registered public accounting firm, to audit the Company's consolidated financial statements for the fiscal year ended December 31, 2023.

Independent Registered Public Accounting Fees

The following is a summary of the fees billed to the Company by MaloneBailey LLP, the Company's independent registered public accounting firm, respectively for the fiscal year ended December 31, 2023 and 2022 :

	Fiscal 2023 Fees	Fiscal 2022 Fees
Audit Fees	$ 205,805	$ 174,000
Audit-Related Fees	-	-
Tax and Other Fees	-	-
	$ 205,805	$ 174,000

Audit Fees. Consists of fees billed for professional services performed for the audit of our annual financial statements, the review of interim financial statements, and related services that are normally provided in connection with registration statements, including the registration statement for our public offering.

Audit-Related Fees. Consists of aggregate fees billed for assurance and related services that are reasonably related to the performance of the audit or review of the Company's consolidated financial statements and are not reported under "Audit Fees."

Audit Committee Policy on Pre-Approval of Services

The Audit Committee's policy is to pre-approve all audit and permissible non-audit services provided by the independent registered public accounting firm. These services may include audit services, audit-related services, tax services, and other services. Pre-approval is generally provided for up to one year. The Audit Committee may also pre-approve particular services on a case-by-case basis.

PART IV

Item 15. Exhibits and Financial Statement Schedules – Filed Herewith as Schedule F-1

Exhibit Number	Exhibit Description	Incorporated by Reference			Filed or Furnished Herewith
		Form	Exhibit	Filing Date	
3.1	Restated Articles of Organization of the Company.	S-1	3.1	10/08/1996	
3.2	Articles of Amendment to Restated Articles of the Organization of the Company	10-Q	3.1	11/23/2004	
3.3	Articles of Amendment to Restated Articles of the Organization of the Company	8-K	3.1	02/18/2009	
3.4	Articles of Amendment to Restated Articles of the Organization of the Company	8-K	3.1	04/12/2011	
3.5	Articles of Amendment to Restated Articles of the Organization of the Company	8-K	3.1	11/10/2011	
3.6	Articles of Amendment to Restated Articles of the Organization of the Company	8-K	3.1	01/04/2013	
3.7	Articles of Amendment to Restated Articles of the Organization of the Company	8-K	3.1	02/13/2013	
3.8	Articles of Amendment to Restated Articles of the Organization of the Company	8-K	3.1	12/12/2013	
3.9	Articles of Amendment to Restated Articles of the Organization of the Company	8-K	3.1	02/05/2014	
3.10	Articles of Amendment to Restated Articles of the Organization of the Company	8-K	3.1	12/31/2014	
3.11	Articles of Amendment to Restated Articles of the Organization of the Company	8-K	3.1	07/28/2015	
3.12	Amended Certificate of Designation of Series AA Convertible Preferred Stock, filed February 14, 2019.	8-K	3.1	02/15/2019	
3.13	Amendment to Amended and Restated By-Laws of the Company	10-K	3.3	10/08/1996	
3.14	Amendment to Amended and Restated By-Laws of the Company	10-K	3.3	3/31/2003	
4.1	Specimen Certificate for Shares of the Company's common stock	10-KSB	4.1	04/22/2005	

Exhibit Number	Exhibit Description	Incorporated by Reference			Filed or Furnished Herewith
		Form	Exhibit	Filing Date	
4.2	Description of securities registered under Section 12 of the Exchange Act of 1934	10-K	4.2	4/5/2022	
4.3	Form of Warrant Held by Convertible Note Holders	10-K	4.3	4/5/2022	
4.4	Form of Convertible Note Currently Outstanding	10-K	4.4	4/5/2022	
4.5	Form of Convertible Note Currently Outstanding	10-K	4.5	4/5/2022	
10.1	2013 Equity Incentive Plan.*	S-8	4.1	4/24/2015	
10.2	2021 Equity Incentive Plan.*	10-K	10.1	4/5/2022	
21.1	List of Subsidiaries	10-K	10.2	4/5/2022	
23.1	Consent of Independent Registered Public Accounting Firm (Malone Bailey LLP)				X
31.1	Principal Executive Officer Certification Pursuant to Item 601(b)(31) of Regulation S-K, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.				X
31.2	Principal Financial Officer Certification Pursuant to Item 601(b)(31) of Regulation S-K, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.				X
32.1	Principal Executive Officer Certification Pursuant to Item 601(b)(32) of Regulation S-K, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.**				X
32.2	Principal Financial Officer Certification Pursuant to Item 601(b)(32) of Regulation S-K, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.**				X
101.INS	Inline XBRL Instance Document				
101.SCH	Inline XBRL Taxonomy Extension Schema Document				
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document				
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document				
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document				
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document				
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)				

*Management contract or compensatory plan or arrangement.

**In accordance with SEC Release 33-8238, Exhibits 32.1 and 32.2 are furnished and not filed.

SIGNATURES

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

Date: June 7, 2024

Pressure BioSciences, Inc.

By: */s/ Richard T. Schumacher*
Richard T. Schumacher
President and 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 and in the capacity and on the dates indicated.

Name	Capacity	Date
/s/ Richard T. Schumacher Richard T. Schumacher	President, Chief Executive Officer, Interim Chief Financial Officer, Treasurer, Clerk and Director (Principal Executive Officer, Principal Financial Officer and Principal Accounting Officer)	June 7, 2024
/s/ Jeffrey N. Peterson Jeffrey N. Peterson	Chairman of the Board of Directors	June 7, 2024
/s/ Mickey Urdea Michael S. Urdea, Ph.D.	Director	June 7, 2024
/s/ Vito Mangiardi Vito J. Mangiardi	Director	June 7, 2024
/s/ Kevin Pollack Kevin A. Pollack	Director	June 7, 2024

SCHEDULE F-1 FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors of
Pressure Biosciences, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Pressure Biosciences, Inc. and its subsidiaries (collectively, the "Company") as of December 31, 2023 and 2022, and the related consolidated statements of operations, stockholders' deficit, and cash flows for the years then ended, and the related notes (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2023 and 2022, and the results of their operations and their cash flows for the years then ended, in conformity with accounting principles generally accepted in the United States of America.

Going Concern Matter

The accompanying financial statements have been prepared assuming that the Company will continue as a going concern. As discussed in Note 2 to the financial statements, the Company has suffered recurring losses from operations and has a working capital deficit that raises substantial doubt about its ability to continue as a going concern. Management's plans in regard to these matters are also described in Note 2. The financial statements do not include any adjustments that might result from the outcome of this uncertainty.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the 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 in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the 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 financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective, or complex judgments. We determined that there are no critical audit matters.

/s/ MaloneBailey, LLP
www.malonebailey.com
We have served as the Company's auditor since 2015.
Houston, Texas
June 7, 2024

PRESSURE BIOSCIENCES, INC. AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS
DECEMBER 31, 2023 AND 2022

	December 31, 2023	December 31, 2022
ASSETS		
CURRENT ASSETS		
Cash and cash equivalents	$ 81,279	$ 3,865
Accounts receivable	151,234	295,374
Inventories, net of $1,021,812 and $982,973 reserve, respectively	304,909	686,383
Prepaid expenses and other current assets	222,633	257,527
Total current assets	760,055	1,243,149
Investment in equity securities	61,876	63,638
Property and equipment, net	84,930	103,351
Right of use asset leases	142,815	282,095
Intangible assets, net	-	317,308
TOTAL ASSETS	$ 1,049,676	$ 2,009,541
LIABILITIES AND STOCKHOLDERS' DEFICIT		
CURRENT LIABILITIES		
Accounts payable	$ 1,320,432	$ 637,238
Accrued employee compensation	191,578	167,247
Accrued professional fees and other	2,860,509	2,497,762
Accrued interest and dividends payable	5,306,353	10,803,983
Deferred revenue	233,850	58,242
Convertible debt, net of unamortized debt discounts of $645,471 and $455,517, respectively	20,683,841	17,823,669
Other debt, net of unamortized discounts of $0 and $0, respectively	1,264,162	1,638,969
Related party, net of unamortized debt discount of $0 and $7,915, respectively	648,500	634,885
Right of use operating lease liability	66,895	142,171
Series BB convertible preferred stock liability	1,000,000	-
Total current liabilities	33,576,120	34,404,166
LONG TERM LIABILITIES		
Long term debt	161,864	150,000
Right of use operating lease liability long term	60,961	139,924
Deferred revenue	4,560	1,822
TOTAL LIABILITIES	33,803,505	34,695,912
COMMITMENTS AND CONTINGENCIES (Notes 8)		
STOCKHOLDERS' DEFICIT		
Series D, G, H, H2, J, K, AA, BB and CC Convertible Preferred Stock, $.01 par value (Note 10)	102	1,098
Common stock, $.01 par value; 100,000,000 shares authorized; 35,367,663 and 13,682,910 shares issued and outstanding on December 31, 2023 and December 31, 2022, respectively	353,677	136,829
Warrants to acquire common stock	35,684,321	31,995,762
Additional paid-in capital	100,236,710	69,006,145
Accumulated deficit	(169,028,639)	(133,826,205)
TOTAL STOCKHOLDERS' DEFICIT	(32,753,829)	(32,686,371)
TOTAL LIABILITIES AND STOCKHOLDERS' DEFICIT	$ 1,049,676	$ 2,009,541

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

PRESSURE BIOSCIENCES, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS
FOR THE YEARS ENDED DECEMBER 31, 2023 AND 2022

	For the Year Ended December 31,	
	2023	**2022**
Revenue:		
Products, services, other	$ 1,977,763	$ 1,729,343
Total revenue	1,977,763	1,729,343
Costs and expenses:		
Cost of products and services	1,178,201	2,014,004
Research and development	1,367,154	969,532
Selling and marketing	730,714	401,444
General and administrative	8,205,052	3,242,652
Total operating costs	11,481,121	6,627,632
Operating loss	(9,503,358)	(4,898,289)
Other (expense) income:		
Interest expense, net	(15,581,440)	(10,438,565)
Unrealized (loss) gain on investment in equity securities	(1,762)	3,662
Loss on extinguishment of liabilities	(3,970,983)	(751,335)
Other expense	(256,755)	7,849
Total other expense	(19,810,940)	(11,178,389)
Net loss	(29,314,298)	(16,076,678)
Deemed dividends on extension of warrants	(3,626,950)	-
Preferred stock dividends	(2,261,186)	(1,727,275)
Net loss attributable to common shareholders	$ (35,202,434)	$ (17,803,953)
Basic and diluted net loss per share attributable to common shareholders	$ (1.51)	$ (1.61)
Weighted average common shares outstanding used in the basic and diluted net loss per share calculation	23,336,620	11,058,356

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

PRESSURE BIOSCIENCES, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' DEFICIT
FOR THE YEARS ENDED DECEMBER 31, 2023 AND 2022

	Combined Preferred Stock		Common Stock		Stock	Additional Paid In	Accumulated	
	Shares	Amount	Shares	Amount	Warrants	Capital	Deficit	Total
BALANCE, December 31, 2021	**109,878**	**$ 1,099**	**9,120,526**	**$ 91,206**	**31,715,154**	**$ 64,261,048**	**$ (118,277,468)**	**$ (22,208,961)**
Early adoption of ASU 2020-06	-	-	-	-	-	(2,728,243)	2,255,216	(473,027)
Stock-based compensation	-	-	-	-	-	215,098	-	215,098
Stock option exercise	-	-	25,279	253	-	17,190	-	17,443
Series AA Preferred Stock dividend	-	-	-	-	-	-	(1,727,275)	(1,727,275)
Issuance of common stock for services	-	-	255,500	2,555	-	389,620	-	392,175
Warrants issued for debt extension	-	-	-	-	132,537	-	-	132,537
Common stock issued for debt extension	-	-	1,423,800	14,238	-	2,184,623	-	2,198,861
Conversion of debt and interest for common stock	-	-	181,918	1,819	-	465,273	-	467,092
Conversion of preferred stock for common stock	(4)	(1)	4,400	44	-	(43)	-	-
Issuance of common stock for dividends paid-in-kind	-	-	236,221	2,361	-	383,939	-	386,300
Issuance of common stock for interest paid-in-kind	-	-	1,766,266	17,663	-	2,925,476	-	2,943,139
Stock issued with debt	-	-	659,000	6,590	-	867,264	-	873,854
Sale of common stock for cash	-	-	10,000	100	-	24,900	-	25,000
Warrants issued for services	-	-	-	-	54,495	-	-	54,495
Warrants issued with debt	-	-	-	-	93,576	-	-	93,576
Net loss	-	-	-	-	-	-	(16,076,678)	(16,076,678)
BALANCE, December 31, 2022	**109,874**	**$ 1,098**	**13,682,910**	**$ 136,829**	**$ 31,995,762**	**$ 69,006,145**	**$ (133,826,205)**	**$ (32,686,371)**

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

Continued on next page.

	Combined Preferred Stock		Common Stock		Stock	Additional Paid In	Accumulated	
	Shares	Amount	Shares	Amount	Warrants	Capital	Deficit	Total
BALANCE, December 31, 2022	**109,874**	**$ 1,098**	**13,682,910**	**$ 136,829**	**$ 31,995,762**	**$ 69,006,145**	**$ (133,826,205)**	**$ (32,686,371)**
Stock option exercise	-	-	117,552	1,176	-	79,935	-	81,111
Stock-based compensation	-	-	-	-	-	2,636,443	-	2,636,443
Series AA Preferred Stock dividend	-	-	-	-	-	-	(1,726,935)	(1,726,935)
Series CC Preferred Stock dividend	-	-	-	-	-	-	(534,251)	(534,251)
Series AA Preferred Stock Warrant Extension	-	-	-	-	3,626,950	-	(3,626,950)	-
Issuance of common stock for services	-	-	2,150,000	21,500	-	1,999,435	-	2,020,935
Issuance of common stock warrants for services	-	-	-	-	61,609	-	-	61,609
Common stock issued for debt extension	-	-	2,552,300	25,523	-	2,003,225	-	2,028,748
Conversion of debt and interest for common stock	-	-	203,613	2,036	-	506,997	-	509,033
Conversion of preferred stock for common stock	(101,399)	(1,012)	2,991,940	29,920	-	(28,908)	-	-
Conversion of debt and interest for preferred stock	401	4	-	-	-	10,017,208	-	10,017,212
Conversion of common stock to preferred stock	62	1	(624,000)	(6,240)	-	6,239	-	-
Issuance of common stock for dividends paid-in-kind	-	-	729,571	7,296	-	379,640	-	386,936
Issuance of common stock for interest paid-in-kind	-	-	11,878,135	118,781	-	8,107,405	-	8,226,186
Stock issued with debt	-	-	1,625,642	16,256	-	774,719	-	790,975
Sale of Common Stock	-	-	60,000	600	-	149,400	-	150,000
Issuance of preferred stock for services	233	2	-	-	-	1,360,865	-	1,360,867
Preferred stock for debt extension	822	8	-	-	-	2,674,522	-	2,674,530
Preferred stock issued with debt	128	1	-	-	-	563,440	-	563,441
Net loss	-	-	-	-	-	-	(29,314,298)	(29,314,298)
BALANCE, December 31, 2023	**10,121**	**$ 102**	**35,367,663**	**$ 353,677**	**$ 35,684,321**	**$ 100,236,710**	**$ (169,028,639)**	**$ (32,753,829)**

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

PRESSURE BIOSCIENCES, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
FOR THE YEARS ENDED DECEMBER 31, 2023 AND 2022

	For the Year Ended December 31,	
	2023	**2022**
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net loss	$ (29,314,298)	$ (16,076,678)
Adjustments to reconcile net loss to net cash used in operating activities:		
Gain on loan forgiveness	(1,129,679)	(10,000)
Non-cash lease expense	139,280	113,470
Common stock and warrants issued for interest	8,226,186	2,943,139
Preferred stock issued for interest	602,616	-
Preferred stock issued for services	1,360,867	-
Depreciation and amortization	112,454	119,788
Accretion of interest and amortization of debt discount	2,507,055	1,777,863
Common stock and warrants issued for debt extension	2,028,748	2,331,398
Preferred stock issued for debt extension	3,071,914	-
Allowance for inventory reserve	121,891	641,815
Stock-based compensation expense	2,636,443	215,098
(Gain) loss on investment in equity securities	1,762	(3,662)
Common stock and warrants issued for services	2,082,544	446,670
Impairment on intangible assets	230,770	-
Changes in operating assets and liabilities:		
Accounts receivable	144,140	(140,628)
Inventories	259,583	(180,644)
Prepaid expenses and other assets	34,894	165,090
Accounts payable	683,194	109,314
Accrued employee compensation	24,331	49,567
Operating lease liability	(154,239)	(113,470)
Deferred revenue and other accrued expenses	3,143,534	3,133,829
Net cash used in operating activities	(3,186,010)	(4,478,041)
CASH FLOWS FROM INVESTING ACTIVITIES:		
Purchases of property plant and equipment	(7,495)	(20,755)
Net cash used in investing activities	(7,495)	(20,755)
CASH FLOWS FROM FINANCING ACTIVITIES:		
Sale of common stock	150,000	25,000
Proceeds from stock option exercises	81,111	17,443
Net proceeds from convertible debt	5,456,960	4,907,222
Net proceeds from non-convertible debt - third party	2,614,761	2,710,000
Net proceeds from related party	181,700	866,350
Payments on convertible debt	(2,742,409)	(1,522,494)
Payments on debt - related party	(185,000)	(315,300)
Payments on non-convertible debt	(2,286,204)	(2,317,871)
Net cash provided by financing activities	3,270,919	4,370,350
NET INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS	77,414	(128,446)
CASH AND CASH EQUIVALENTS AT BEGINNING OF YEAR	3,865	132,311
CASH AND CASH EQUIVALENTS AT END OF PERIOD	$ 81,279	$ 3,865

	For the Year Ended December 31,	
	2023	**2022**
SUPPLEMENTAL INFORMATION		
Interest paid in cash	$ 1,475,864	$ 1,378,647
NON CASH TRANSACTIONS:		
ASU 2020-06 adoption	-	473,027
Common stock issued with debt	790,975	873,854
Conversion of preferred stock for common stock	29,920	44
Conversion of common stock for preferred stock	6,240	-
Preferred stock issued with debt	563,441	-
Preferred Shares Liability	1,000,000	-
Discount from warrants issued with debt	-	93,576
Common stock issued in lieu of cash for dividend	386,936	386,300
Conversion of nonconvertible debt to convertible	691,500	-
Preferred stock dividends	2,261,186	1,727,275
Conversion of debt, interest, preferred stock dividend for preferred stock	10,017,212	-
Conversion of debt and interest into common stock	509,033	467,092
Extension of warrants for Series AA preferred stock	3,626,950	-

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

PRESSURE BIOSCIENCES, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(1) Business Overview

Pressure BioSciences, Inc. (OTCQB: PBIO) (the "Company") is a leader in the development & sale of innovative, enabling, high pressure technology-based instruments, consumables, and services for the life sciences and other industries worldwide. Our products/services are based on three patented, high-pressure platforms: (i) Ultra Shear Technology™ ("UltraShear™" or "UST™"), (ii) BaroFold Technology™ ("BaroFold™"), and (iii) Pressure Cycling Technology™ ("PCT™")

The Company was founded on the belief that its PCT platform had the potential to significantly increase the quality of sample preparation in both research and clinical settings. This premise has been well proven and PBI has been successful in installing its PCT platform in the laboratories of key opinion leaders worldwide. Although developed subsequently, the Company now assesses that the commercial potential for its UST platform across diverse multi-billion-dollar markets far exceeds the potential of the PCT platform. Consequently, in January 2022, PBI made the critical strategy decision to immediately shift its primary business focus from PCT to its innovative UST Platform.

(2) Going Concern

We have experienced negative cash flows from operations since our inception. As of December 31, 2023, we did not have adequate working capital resources to satisfy our current liabilities and as a result we have substantial doubt about our ability to continue as a going concern. We have been successful in raising debt and equity capital in the past and as described in Notes 9 and 10. In addition, we raised debt and equity capital after December 31, 2023 as described in Note 11. We have financing efforts in place to continue to raise cash through debt and equity offerings. Although we have successfully completed financings and reduced expenses in the past, we cannot assure you that our plans to address these matters in the future will be successful. These financial statements do not include any adjustments that might result from this uncertainty.

The conditions described above could adversely affect our ability to obtain additional financing on favorable terms, if at all, and may cause investors to have reservations about our long-term prospects and may adversely affect our relationships with customers. If we cannot successfully continue as a going concern, our stockholders may lose their entire investment.

(3) Summary of Significant Accounting Policies

i. Principles of Consolidation

The consolidated financial statements include the accounts of Pressure BioSciences, Inc., and its wholly owned subsidiaries PBI BioSeq, Inc and PBI Agrochem, Inc. All intercompany accounts and transactions have been eliminated in consolidation.

ii. Use of Estimates

To prepare our consolidated financial statements in conformity with accounting principles generally accepted in the United States of America, we are required to make significant estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. In addition, significant estimates were made in deferred tax assets, the costs associated with fulfilling our warranty obligations for the instruments that we sell, and the estimates employed in our calculation of fair value of stock options awarded. We base our estimates on historical experience and on various other assumptions that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results could differ from the estimates and assumptions used.

iii Recent Accounting Pronouncement

In June 2016, the FASB issued ASU 2016-13, Financial Instruments - Credit Losses, which requires measurement and recognition of expected credit losses for financial assets held. We adopted this new accounting guidance effective January 1, 2023. The adoption did not have a material impact on our consolidated financial statements and disclosures and did not significantly impact the Company's accounting policies or estimation methods related to the allowance for doubtful accounts. The Company does not have any reserve for doubtful accounts due to its customers being distributors, universities, research organizations and government agencies. In the past several years, all its customers have paid in full without any need for a write-down.

In August 2020, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) No. 2020-06, Accounting for Convertible Instruments and Contracts in an Entity's Own Equity, as part of its overall simplification initiative to reduce costs and complexity of applying accounting standards while maintaining or improving the usefulness of the information provided to users of financial statements. Among other changes, the new guidance removes the beneficial conversion separation model for convertible debt. As a result, after adopting the guidance, entities will no longer account for beneficial conversion features in equity. The guidance is effective for public business entities, other than small reporting company's financial statements starting January 1, 2022, with early adoption permitted. The Company is a small reporting company and early adopted the new guidance on January 1, 2022 using the modified retrospective approach and recorded a cumulative effect of adoption equal to a $2,728,243 decrease in additional paid in capital and a $2,255,216 decrease in accumulated deficit, which results in an increase in total stockholder's deficit of $473,027.

iv. Revenue Recognition

We recognize revenue in accordance with FASB ASC 606, *Revenue from Contracts with Customers,* and *ASC 340-40, Other Assets and Deferred Costs—Contracts with Customers*. Revenue is measured based on a consideration specified in a contract with a customer, and excludes any sales incentives and amounts collected on behalf of third parties. We enter sales contracts that may consist of multiple distinct performance obligations where certain performance obligations of the sales contract are not delivered in one reporting period. We measure and allocate revenue according to ASC 606-10.

We identify a performance obligation as distinct if both the following criteria are true: the customer can benefit from the good or service either on its own or together with other resources that are readily available to the customer and the entity's promise to transfer the good or service to the customer is separately identifiable from other promises in the contract. Determining the standalone selling price ("SSP") and allocation of consideration from a contract to the individual performance obligations, and the appropriate timing of revenue recognition, is the result of significant qualitative and quantitative judgments. Management considers a variety of factors such as historical sales, usage rates, costs, and expected margin, which may vary over time depending upon the unique facts and circumstances related to each performance obligation in making these estimates. While changes in the allocation of the SSP between performance obligations will not affect the amount of total revenue recognized for a particular contract, any material changes could impact the timing of revenue recognition, which would have a material effect on our financial position and result of operations. This is because the contract consideration is allocated to each performance obligation, delivered or undelivered, at the inception of the contract based on the SSP of each distinct performance obligation.

Taxes assessed by a governmental authority that are both imposed on and concurrent with a specific revenue-producing transaction, that are collected by the Company from a customer, are excluded from revenue.

Shipping and handling costs associated with outbound freight after control over a product has transferred to a customer are accounted for as a fulfillment cost and are in included in cost of revenues as consistent with treatment in prior periods.

Our current Barocycler instruments require a basic level of instrumentation expertise to set-up for initial operation. To support a favorable first experience for our customers, upon customer request, and for an additional fee, we will send a highly trained technical representative to the customer site to install Barocyclers that we sell, lease, or rent through our domestic sales force. The installation process includes uncrating and setting up the instrument, followed by introductory user training. Our sales arrangements do not provide our customers with a right of return. Any shipping costs billed to customers are recognized as revenue.

Most of our instrument and consumable contracts contain pricing that is based on the market price for the product at the time of delivery. Our obligations to deliver product volumes are typically satisfied and revenue is recognized when control of the product transfers to our customers. Concurrent with the transfer of control, we typically receive the right to payment for the shipped product and the customer has significant risks and rewards of ownership of the product. Payment terms require customers to pay shortly after delivery and do not contain significant financing components.

Revenue from scientific services customers is recognized upon completion of each stage of service as defined in service agreements.

We apply ASC 845, “Accounting for Non-Monetary Transactions”, to account for products and services sold through non-cash transactions based on the fair values of the products and services involved, where such values can be determined. Non-cash exchanges would require revenue to be recognized at recorded cost or carrying value of the assets or services sold if any of the following conditions apply:

a) The fair value of the asset or service involved is not determinable.
b) The transaction is an exchange of a product or property held for sale in the ordinary course of business for a product or property to be sold in the same line of business to facilitate sales to customers other than the parties to the exchange.
c) The transaction lacks commercial substance.

We recognize revenue for non-cash transactions at recorded cost or carrying value of the assets or services sold, which were nominal in 2023 and 2022.

We account for lease agreements of our instruments in accordance with ASC 842, Leases. We record revenue over the life of the lease term and we record depreciation expense on a straight-line basis over the thirty-six-month estimated useful life of the Barocycler instrument. The depreciation expense associated with assets under lease agreement is included in the “Cost of PCT products and services” line item in our accompanying consolidated statements of operations. Many of our lease and rental agreements allow the lessee to purchase the instrument at any point during the term of the agreement with partial or full credit for payments previously made. We pay all maintenance costs associated with the instrument during the term of the leases.

Revenue from government grants is recorded when expenses are incurred under the grant in accordance with the terms of the grant award.

Deferred revenue represents amounts received from grants and service contracts for which the related revenues have not been recognized because one or more of the revenue recognition criteria have not been met. Revenue from service contracts is recorded ratably over the length of the contract.

Disaggregation of revenue

In the following table, revenue is disaggregated by primary geographical market, major product line, and timing of revenue recognition.

[REFER TO 10K TABLES WORK BOOK – REV DETAIL TAB]

In thousands of US dollars ($)	Year Ended December 31,	
Primary geographical markets	**2023**	**2022**
North America	1,366	1,191
Europe	136	144
Asia	476	394
	1,978	1,729

In thousands of US dollars ($)	Year Ended December 31,	
Major products/services lines	**2023**	**2022**
Hardware	1,160	761
Consumables	209	257
Contract research services	86	196
Agrochem Products	181	165
Sample preparation accessories	133	132
Technical support/extended service contracts	156	174
Shipping and handling	45	42
Other	8	2
	1,978	1,729

In thousands of US dollars ($)	Year Ended December 31,	
Timing of revenue recognition	**2023**	**2022**
Transferred at a point in time	1,736	1,359
Transferred over time	242	370
	1,978	1,729

Contract Balances

In thousands of US dollars ($)	December 31, 2023	December 31, 2022
Receivables, which are included in 'Accounts Receivable'	151	295
Contract liabilities (deferred revenue)	34	60

Transaction price allocated to the remaining performance obligations

The following table includes estimated revenue expected to be recognized in the future related to performance obligations that are unsatisfied (or partially unsatisfied) at the end of the reporting period.

In thousands of US dollars ($)	2024	2025	Total
Extended warranty service	29	5	34

All consideration from contracts with customers is included in the amounts presented above.

Contract Costs

The Company recognizes the incremental costs of obtaining contracts as an expense when incurred if the amortization period of the assets that the Company otherwise would have recognized is one year or less. These costs are included in selling, general, and administrative expenses. The costs to obtain a contract are recorded immediately in the period when the revenue is recognized either upon shipment or installation. The costs to obtain a service contract are considered immaterial when spread over the life of the contract so the Company records the costs immediately upon billing.

v. Cash and Cash Equivalents

Our policy is to invest available cash in short-term, investment grade interest-bearing obligations, including money market funds, and bank and corporate debt instruments. Securities purchased with initial maturities of three months or less are valued at cost plus accrued interest, which approximates fair value, and are classified as cash equivalents.

vi. Research and Development

Research and development costs, which are comprised of costs incurred in performing research and development activities including wages and associated employee benefits, facilities, consumable products and overhead costs that are expensed as incurred. In support of our research and development activities we utilize our Barocycler instruments that are capitalized as fixed assets and depreciated over their expected useful life.

vii. Inventories

Inventories are valued at the lower of cost (average cost) or net realizable value. The cost of Barocyclers consists of the cost charged by the contract manufacturer. The cost of manufactured goods includes material, freight-in, direct labor, and applicable overhead. The composition of inventory as of December 31, is as follows:

	2023	2022
Raw materials	$ 63,950	$ 188,587
Finished goods	1,262,771	1,480,769
Inventory reserve	(1,021,812)	(982,973)
Total	$ 304,909	$ 686,383

viii. Property and Equipment

Property and equipment are stated at cost, less accumulated depreciation. For financial reporting purposes, depreciation is recognized using the straight-line method, allocating the cost of the assets over their estimated useful lives of three years for certain laboratory equipment, from three to five years for management information systems and office equipment, and three years for all PCT finished units classified as fixed assets.

ix. Intangible Assets

We have classified as intangible assets, costs associated with the fair value of acquired intellectual property. Intangible assets, including patents, are being amortized on a straight-line basis over nine years. We perform an annual review of our intangible assets for impairment. We capitalize any costs to renew or extend the term of our intangible assets. When impairment is indicated, any excess of carrying value over fair value is recorded as a loss. The Company recognized impairment of $230,770 and none for the year ended December 31, 2023 and 2022, respectively. As of December 31, 2023, and 2022, the outstanding balance for intangible assets was $0 and $317,308, respectively.

x. Long-Lived Assets

The Company's long-lived assets are reviewed for impairment in accordance with the guidance of the FASB ASC 360-10-05, *Property, Plant, and Equipment*, whenever events or changes in circumstances indicate that the carrying amount of the asset may not be recoverable. Recoverability of an asset to be held and used is measured by a comparison of the carrying amount of an asset to the future undiscounted cash flows expected to be generated by the asset. If such asset is considered to be impaired, the impairment to be recognized is measured by the amount by which the carrying amount of the asset exceeds its fair value.

xi. Concentrations

Credit Risk

Our financial instruments that potentially subject us to concentrations of credit risk consist primarily of cash, cash equivalents and trade receivables. We have cash investment policies which, among other things, limit investments to investment-grade securities. We perform ongoing credit evaluations of our customers, and the risk with respect to trade receivables is further mitigated by the fact that many of our customers are government institutions and university labs. Allowances are provided for estimated amounts of accounts receivable which may not be collected. At December 31, 2023, we determined that no allowance against accounts receivable was necessary.

The following table illustrates the level of concentration of the below two groups within revenue as a percentage of total revenues during the years ended December 31:

	2023	2022
Top Five Customers	43%	24%
Federal Agencies	4%	0%

One customer, our Chinese distributor, accounted for greater than 10% of the total 2023 revenue recorded.

The following table illustrates the level of concentration of the below two groups within accounts receivable as a percentage of total accounts receivable balance as of December 31:

	2023	2022
Top Five Customers	96%	93%
Federal Agencies	0%	0%

Three customers accounted for greater than 10% of the total accounts receivable balance at December 31, 2023.

Investment in Equity Securities

As of December 31, 2023 and 2022, we held 100,250 shares of common stock of Nexity Global SA, (a Polish publicly traded company). On October 23, 2020 Everest Investments S.A. changed its name to Nexity Global S.A. Nexity is and Everest was listed on the Warsaw Stock Exchange.

We had exchanged 33,334 shares of our common stock for the 100,250 shares we had held in Everest (before the Nexity Merger). We account for this investment in accordance with ASC 320 "Investments — Debt and Equity Securities." ASC 320 requires equity investments with readily determinable fair values to be measured at fair value with changes in fair value recognized in net income.

As of December 31, 2023, our consolidated balance sheet reflected the fair value, determined on a recurring basis based on Level 1 inputs, of our investment in Nexity to be $61,876. We recorded $(1,762) as unrealized loss during the year ended December 31, 2023 for changes in market value.

As of December 31, 2022, our consolidated balance sheet reflected the fair value, determined on a recurring basis based on Level 1 inputs, of our investment in Nexity to be $63,638. We recorded $3,662 as unrealized gain during the year ended December 31, 2022 for changes in market value.

xii. Computation of Loss per Share

Basic loss per share is computed by dividing loss available to common shareholders by the weighted average number of common shares outstanding. Diluted loss per share is computed by dividing loss available to common shareholders by the weighted average number of common shares outstanding plus additional common shares that would have been outstanding if dilutive potential common shares had been issued. For purposes of this calculation, convertible preferred stock, common stock dividends, warrants to acquire preferred stock convertible into common stock, and warrants and options to acquire common stock, are all considered common stock equivalents in periods in which they have a dilutive effect and are excluded from this calculation in periods in which these are anti-dilutive. The following table illustrates our computation of loss per share for the years ended December 31:

	2023	2022
Numerator:		
Net loss attributable to common shareholders	$ (35,202,434)	$ (17,803,953)
Denominator for basic and diluted loss per share:		
Weighted average common shares outstanding	23,336,620	11,058,356
Loss per common share - basic and diluted	$ (1.51)	$ (1.61)

The following table presents securities that could potentially dilute basic loss per share in the future. For all periods presented, the potentially dilutive securities were not included in the computation of diluted loss per share because these securities would have been anti-dilutive for the years ended December 31:

	2023	2022
Stock options	4,920,754	1,307,822
Convertible debt	8,684,223	6,915,754
Common stock warrants	15,577,354	16,278,769
Convertible preferred stock:		
Series D Convertible Preferred	6,250	25,000
Series G Convertible Preferred	-	26,857
Series H Convertible Preferred	-	33,334
Series H2 Convertible Preferred	-	70,000
Series J Convertible Preferred	-	115,267
Series K Convertible Preferred	-	229,334
Series AA Convertible Preferred	8,645,000	8,645,000
Series BB Convertible Preferred	12,190,000	-
Series CC Convertible Preferred	4,010,000	-
	54,033,581	33,647,137

xiii. Accounting for Income Taxes

We account for income taxes under the asset and liability method, which requires recognition of deferred tax assets, subject to valuation allowances, and liabilities for the expected future tax consequences of events that have been included in the consolidated financial statements or tax returns. Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting and income tax purposes. The Company considers many factors when assessing the likelihood of future realization of our deferred tax assets, including recent cumulative earnings experience by taxing jurisdiction, expectations of future taxable income or loss, the carry-forward periods available to us for tax reporting purposes, and other relevant factors. A valuation allowance is established if it is more likely than not that all or a portion of the net deferred tax assets will not be realized. If substantial changes in the Company's ownership should occur, as defined in Section 382 of the Internal Revenue Code, there could be significant limitations on the amount of net loss carry forwards that could be used to offset future taxable income.

Tax positions must meet a "more likely than not" recognition threshold at the effective date to be recognized. At December 31, 2023 and 2022, the Company did not have any uncertain tax positions. No interest and penalties related to uncertain tax positions were accrued on December 31, 2023 and 2022.

xiv. Accounting for Stock-Based Compensation

We maintain equity compensation plans under which incentive stock options and non-qualified stock options are granted to employees, independent members of our Board of Directors and outside consultants. We recognize equity compensation expense over the requisite service period using the Black-Scholes formula to estimate the fair value of the stock options on the date of grant. Employee and non-employee awards are accounted for under ASC 718 where the awards are valued at grant date.

Determining Fair Value of Stock Option Grants

Valuation and Amortization Method - The fair value of each option award is estimated on the date of grant using the Black-Scholes pricing model based on certain assumptions. The estimated fair value of employee stock options is amortized to expense using the straight-line method over the vesting period, which generally is over three years.

Expected Term - The Company uses the simplified calculation of expected life, described in the FASB ASC 718, *Compensation-Stock Compensation*, as the Company does not currently have sufficient historical exercise data on which to base an estimate of expected term. Using this method, the expected term is determined using the average of the vesting period and the contractual life of the stock options granted.

Expected Volatility - Expected volatility is based on the Company's historical stock volatility data over the expected term of the award.

Risk-Free Interest Rate - The Company bases the risk-free interest rate used in the Black-Scholes valuation method on the implied yield currently available on U.S. Treasury zero-coupon issues with an equivalent remaining term.

Forfeitures - As required by FASB ASC 718, *Compensation-Stock Compensation*, the Company records stock-based compensation expense only for those awards that are expected to vest. The Company estimated a forfeiture rate of 5% for awards granted based on historical experience and future expectations of options vesting. We used this historical rate as our assumption in calculating future stock-based compensation expense.

The following table summarizes the assumptions we utilized for grants of stock options to the three sub-groups of our stock option recipients during the year ended December 31, 2023 (there were no options granted in 2022):

Assumptions	CEO, other Officers and Employees
Expected life	6.0(yrs)
Expected volatility	155.02%
Risk-free interest rate	0.62%
Forfeiture rate	5.00%
Expected dividend yield	0.0%

We recognized stock-based compensation expense of $2,636,443 and $215,098 for the years ended December 31, 2023 and 2022, respectively. The following table summarizes the effect of this stock-based compensation expense within each of the line items within our accompanying consolidated statements of operations for the years ended December 31:

	2023	2022
Research and development	$ 536,244	$ 79,891
Selling and marketing	155,142	24,687
General and administrative	1,945,057	110,520
Total stock-based compensation expense	$ 2,636,443	$ 215,098

During the years ended December 31, 2023 and December 31, 2022, the total fair value of stock options awarded was $4,090,508 and $0, respectively.

As of December 31, 2023, total unrecognized compensation cost related to the unvested stock-based awards was $373,532 which is expected to be recognized over weighted average period of 2.04 years.

As of December 31, 2022, total unrecognized compensation cost related to the unvested stock-based awards was $15,312, which is expected to be recognized over weighted average period of 1.09 years.

xv. Advertising

Advertising costs are expensed as incurred. We incurred $342 in 2023 and $487 in 2022 for advertising.

xvi. Fair Value of Financial Instruments

Due to their short maturities, the carrying amounts for cash and cash equivalents, accounts receivable, accounts payable, accrued expenses and debt approximate their fair value. The carrying amount of long-term debt approximates fair value due to interest rates that approximate prevailing market rates.

xvii. Fair Value Measurements

The Company follows the guidance of FASB ASC Topic 820, "*Fair Value Measurements and Disclosures*" ("*ASC 820*") as it related to financial assets and financial liabilities that are recognized or disclosed at fair value in the consolidated financial statements on a recurring basis.

The Company generally defines fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date (exit price). The Company uses a three-tier fair value hierarchy, which classifies the inputs used in measuring fair values. These tiers include: Level 1, defined as observable inputs such as quoted prices for identical instruments in active markets; Level 2, defined as inputs other than quoted prices in active markets that are either directly or indirectly observable; and Level 3, defined as unobservable inputs in which little or no market data exists, therefore requiring an entity to develop its own assumptions.

Financial assets and liabilities are classified in their entirety based on the lowest level of input that is significant to the fair value measurement. The Company has determined that its financial assets are currently classified within Level 1. The Company does not have any financial liabilities that are required to be measured on a recurring basis at December 31, 2023 and 2022.

The following tables set forth the Company's financial assets that were accounted for at fair value on a recurring basis as of December 31, 2023:

		Fair value measurements at December 31, 2023 using:		
	December 31, 2023	Quoted prices in active markets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)
Equity Securities	$ 61,876	61,876	-	-
Total Financial Assets	$ 61,876	$ 61,876	$ -	$ -

The following tables set forth the Company's financial assets that were accounted for at fair value on a recurring basis as of December 31, 2022:

		Fair value measurements at December 31, 2022 using:		
	December 31, 2022	Quoted prices in active markets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)
Equity Securities	$ 63,638	$ 63,638	-	-
Total Financial Assets	$ 63,638	$ 63,638	$ -	$ -

(4) Property and Equipment, net

Property and equipment as of December 31, 2023 and 2022 consisted of the following components:

	December 31,	
	2023	2022
Laboratory and manufacturing equipment	$ 381,627	$ 374,132
Office equipment	194,999	194,999
Leasehold improvements	25,248	25,248
PCT collaboration, demonstration and leased systems	53,098	53,098
Total property and equipment	654,972	647,477
Less accumulated depreciation	(570,042)	(544,126)
Net book value	$ 84,930	$ 103,351

Depreciation expense for the years ended December 31, 2023 and 2022 was $25,916 and $33,250, respectively.

(5) Intangible Assets

Intangible assets as of December 31, 2023, reflect the purchase price attributable to patents received in connection with the acquisition of assets of BaroFold Corp. Acquired BaroFold patents are being amortized to expense on a straight line basis at the rate of $80,000 per year over their estimated remaining useful lives of approximately 9 years. The estimated aggregate amortization expense for each of approximately four succeeding fiscal years is $80,000 annually. We performed a review of our intangible assets for impairment. When impairment is indicated, any excess of carrying value over fair value is recorded as a loss. An impairment analysis of intangible assets was performed as of December 31, 2023. We have concluded that there is an impairment of intangible assets for $230,770. Intangible assets at December 31, 2023 and 2022 consisted of the following:

	December 31,	
	2023	**2022**
BaroFold Patents	$ 750,000	$ 750,000
Less accumulated amortization and impairment	(750,000)	(432,692)
Net book value	$ -	$ 317,308

Amortization expense for each of the years ended December 31, 2023 and 2022 was $86,538 for both years.

(6) Retirement Plan

We provide all our employees with the opportunity to participate in our retirement savings plan. Our retirement savings plan has been qualified under Section 401(k) of the Internal Revenue Code. Eligible employees are permitted to contribute to the plan through payroll deductions within statutory limitations and subject to any limitations included in the plan. During 2023 and 2022 we contributed $10,792 and $12,777, respectively, in the form of discretionary Company-matching contributions.

(7) Income Taxes

Tax positions must meet a “more likely than not” recognition threshold at the effective date to be recognized. On December 31, 2023 and 2022, the Company did not have any uncertain tax positions. No interest and penalties related to uncertain tax positions were accrued at December 31, 2023, and 2022. Our tax returns for fiscal years 2022, 2021 and 2020 are open to examination.

Significant items making up the deferred tax assets and deferred tax liabilities as of December 31, 2023 and 2022 are as follows:

	2023	2022
Long term deferred taxes:		
Inventory reserve	$ 300,254	$ 268,548
Other accruals	1,170,640	99,362
Other	89,474	15,715
Non-cash, stock-based compensation, nonqualified	2,533,983	872,967
Impairments	167,656	104,609
Operating loss carry forwards and tax credits	36,324,508	31,026,899
Less: valuation allowance	(40,586,515)	(32,388,100)
Total net deferred tax assets	$ -	$ -

A valuation allowance is established if it is more likely than not that all or a portion of the deferred tax asset will not be realized. Accordingly, we established a valuation allowance in 2023 and 2022 for the full amount of our deferred tax assets for the uncertainty of realization. We believe that based on our projection of future taxable operating income for the foreseeable future, it is more likely than not that we will not be able to realize the benefit of the deferred tax asset at December 31, 2023.

We have net operating loss carry-forwards for federal income tax purposes of approximately $129,304,842 as of December 31, 2023. Included in these numbers are loss carry-forwards that were obtained through the acquisition of BioSeq, Inc. and are subject to Section 382 NOL limitations. These net operating loss carry-forwards expire at various dates from 2024 through 2038 Under the Tax Reform Act, NOL's generated after December 31, 2017 can offset only 80% of a corporation's taxable income in any year. With limited exceptions, NOL's generated after 2017, $91,016,166 cannot be carried back, but they can be carried forward indefinitely.

We have research and development tax credit carryforwards for federal income tax purposes of approximately $2,288,308 as of December 31, 2023 and research and development tax credit carryforwards for state income tax purposes of approximately $381,425 as of December 31, 2023. The federal credit carryforwards expire at various dates from 2022 through 2037. The state credit carryforwards expire at various dates from 2023 through 2034.

The following table reconciles the U.S. Federal statutory tax rate to the Company's effective tax rate:

	2023	2022
Statutory U.S. Federal tax rate	21%	21%
Permanent differences	(0)	(0)
State tax expense	(0)	(0)
Refundable AMT and R&D tax credit	(0)	(0)
Valuation allowance	(21)	(21)
Effective tax rate	0%	0%

(8) Commitments and Contingencies

Operating Leases

The Company accounts for its leases under ASC 842. The Company has elected to apply the short-term lease exception to leases of one year or less.

Through the end of 2023, our corporate office was located at 14 Norfolk Avenue, South Easton, Massachusetts, 02375. We were paying $7,650 per month, on a lease extension, signed on December 5, 2022 that expired on December 31, 2023. We expanded our space to include offices, warehouse and a loading dock on the first floor starting May 1, 2017 with a monthly rent increase already reflected in the current payments.

We extended our lease for our space in Medford, MA (the "Medford Lease") from December 30, 2020 to December 30, 2023. The lease required monthly payments of $7,282 subject to annual cost of living increases. The lease shall be automatically extended for three years unless either party terminates at least six months prior to the expiration of the current lease term. The Company accounted for the lease extension of our Medford Lease as a lease modification under ASC 842. At the effective date of modification, the Company recorded an adjustment to the right-of-use asset and lease liability in the amount of $221,432 based on the net present value of lease payments discounted using an estimated borrowing rate of 12%.

On August 9, 2021, we entered into an operating lease agreement for our warehouse space in Sparks, NV (the "Sparks Lease") for the period from September 1, 2021 through September 30, 2026. The lease contains escalating payments during the lease period. The lease can be extended for an additional three years if the Company provides notice at least six months prior to the expiration of the current lease term.

The Company accounted for the Sparks Lease as an operating lease under ASC 842. Upon the commencement of the lease, the Company recorded a right-of-use asset and lease liability in the amount of $239,327 based on the net present value of lease payments discounted using an estimated borrowing rate of 12%.

Following is a schedule by years of future minimum rental payments required under operating leases with initial or remaining non-cancelable lease terms for greater than one year as of December 31, 2023:

Year		Total
2024	$	64,393
2025	$	66,969
2026	$	51,778
Total future undiscounted lease payments	$	183,140
Less: Imputed interest		(55,284)
Present value of lease liabilities		127,856

The operating cash flows from the operating leases were $154,239, and $113,470 for the years ended December 31, 2023 and 2022, respectively.

Below is a table for the right of use asset and the corresponding lease liability in the consolidated balance sheets:

Operating Leases	December 31, 2023	December 31, 2022
Right of use asset	$ 142,815	$ 282,095
Right of use lease liability, current	$ 66,895	$ 142,171
Right of use lease liability, long term	$ 60,961	$ 139,924
Total lease liability	$ 127,856	$ 282,095

The weighted-average remaining lease term (years) of the above leases is 2.75 years, and 2.96 years as of December 31, 2023 and 2022. The weighted-average discount rate is 12% in both 2023 and 2022.

The Company had no financing lease during the year ended December 31, 2023 and 2022.

The components of lease cost for operating leases for the years ended December 31, 2023 and 2022 are as follows:

	December 31, 2023	December 31, 2022
Operating lease cost	$ 124,606	$ 151,239
Short-term lease cost	91,800	91,800
Total lease cost	$ 216,406	$ 243,039

Battelle Memorial Institute

In December 2008, we entered into an exclusive patent license agreement with the Battelle Memorial Institute ("*Battelle*"). The licensed technology is the subject of a patent application filed by Battelle in 2008 and relates to a method and a system for improving the analysis of protein samples, including through an automated system utilizing pressure and a pre-selected agent to obtain a digested sample in a significantly shorter period than current methods, while maintaining the integrity of the sample throughout the preparatory process. In addition to royalty payments on net sales on "licensed products," we are obligated to make minimum royalty payments for each year that we retain the rights outlined in the patent license agreement and we are required to have our first commercial sale of the licensed products within one year following the issuance of the patent covered by the licensed technology. After re-negotiating the terms of the contract in 2013, the minimum annual royalty was $1,200 in 2014 and $2,000 in 2015; the minimum royalties were $3,000 in 2016, $4,000 in 2017 and $5,000 in 2018 and each calendar year thereafter during the term of the agreement.

Target Discovery Inc.

In March 2010, we signed a strategic product licensing, manufacturing, co-marketing, and collaborative research and development agreement with Target Discovery Inc. ("TDI"), a related party. Under the terms of the agreement, we have been licensed by TDI to manufacture and sell a highly innovative line of chemicals used in the preparation of tissues for scientific analysis ("TDI reagents"). The TDI reagents were designed for use in combination with our pressure cycling technology. The companies believe that the combination of PCT and the TDI reagents can fill an existing need in life science research for an automated method for rapid extraction and recovery of intact, functional proteins associated with cell membranes in tissue samples. We did not incur any royalty obligation under this agreement in 2023 or 2022.

In April 2012, we signed a non-exclusive license agreement with TDI to grant the non-exclusive use of our pressure cycling technology. We executed an amendment to this agreement on October 1, 2016 wherein we agreed to pay a monthly fee of $1,400 for the use of a lab bench, shared space and other utilities, and $2,000 per day for technical support services as needed. The agreement requires TDI to pay the Company a minimum royalty fee of $60,000 in 2022 and $60,000 in 2021. For the years ended December 31, 2023 and 2022, we reported expenses of $67,100 and $69,300, respectively for these arrangements.

Severance and Change of Control Agreements

Each of Mr. Schumacher, and Drs. Ting, and Lazarev, executive officers of the Company, are entitled to receive a severance payment if terminated by us without cause. The severance benefits would include a payment in an amount equal to one year of such executive officer's annualized base salary compensation plus accrued paid time off. Additionally, the officer will be entitled to receive medical and dental insurance coverage for one year following the date of termination.

Each of these executive officers, other than Mr. Schumacher, is entitled to receive a change of control payment in an amount equal to one year of such executive officer's annualized base salary compensation, accrued paid time off, and medical and dental coverage, in the event of their termination upon a change of control of the Company. In the case of Mr. Schumacher, this payment would be equal to two years of annualized base salary compensation, accrued paid time off, and two years of medical and dental coverage. The severance payment is meant to induce the aforementioned executives to remain in the employ of the Company, in general, and particularly in the occurrence of a change in control, as a disincentive to the control change.

(9) Debt

Convertible Debt

On various dates during the year ended December 31, 2023, the Company issued convertible notes for net proceeds of approximately $5.5 million which contained varied terms and conditions as follows: a) 1-12 month maturity date; b) interest rates of 0 -18% per annum c) convertible to the Company's common stock at issuance at a fixed rate of $2.50 or at variable conversion rates upon the Company's up-listing to NASDAQ or NYSE or an event of default. These notes were issued with shares of common stock or preferred stock that were fairly valued at issuance dates. The aggregate relative fair value of the shares of common stock issued with the notes of $790,975 was recorded as a debt discount to be amortized over the term of the notes. The aggregate relative fair value of the preferred stock issued with the notes of $563,441 was also recorded as a debt discount to be amortized over the term of the notes. Deferred financing costs and OID issued with the debt are $1,051,000 and the Company repaid $2,742,409 for the year ended December 31, 2023. Finally, we evaluated our convertible notes for derivative liability treatment on an on-going basis and have determined that all our notes did not qualify for derivative accounting treatment at December 31, 2023. In the year ended December 31, 2023 the amortization of debt discount on convertible notes was $2,507,055.

On various dates during the year ended December 31, 2022, the Company issued convertible notes for net proceeds of approximately $4.9 million which contained varied terms and conditions as follows: a) 1-12 month maturity date; b) interest rates of 0 -18% per annum c) convertible to the Company's common stock at issuance at a fixed rate of $2.50 or at variable conversion rates upon the Company's up-listing to NASDAQ or NYSE or an event of default. These notes were issued with shares of common stock or warrants to purchase common stock that were fairly valued at issuance dates. The aggregate relative fair value of the shares of common stock issued with the notes of $873,854 was recorded as a debt discount to be amortized over the term of the notes. The aggregate relative fair value of the warrants issued with the notes of $93,576 was also recorded as a debt discount to be amortized over the term of the notes. Deferred financing costs and OID issued with the debt are $541,313 and the Company repaid $1,522,494 for the year ended December 31, 2022. We evaluated our convertible notes for derivative liability treatment on an on-going basis and have determined that all our notes did not qualify for derivative accounting treatment at December 31, 2022. In the year ended December 31, 2022 the amortization of debt discount on convertible notes was $1,694,028.

The summary of specific terms of the convertible notes and outstanding balances as of December 31, 2023 and December 31, 2022 are listed in the tables below. The convertible notes are from numerous parties and with original issue dates from June, 2019 to December, 2023, and maturity dates from March, 2020 to December, 2024. There are approximately $13 million of notes that are past due as of December 31, 2023.

	December 31, 2023			December 31, 2022		
Holders	Interest Rate	Conversion Price	Principal	Interest Rate	Conversion Price	Principal
Main Investor	10%	$ 2.50(1)	$ 8,920,250	10%	$ 2.50(1)	$ 9,393,150
Others	0 to 24%	$ 2.50 (2) or $7.50	12,409,062	0 to 24%	$ 7.50(2)	8,886,036
Totals			21,329,312			18,279,186
Discount			645,471			455,517
Net			$ 20,683,841			$ 17,823,669

Notes:

(1) Conversion price of these note is $2.50 except for a note for $189,750, which will be adjusted to, upon an Event of Default, the lower of (i) the conversion price or (ii) a 25% discount to the 5-day average VWAP of the stock prior to default, and $1,062,600 lower of (i) $2.50 or (ii) the conversion price of the Series AA Preferred Stock as adjusted. These notes are secured by all assets of the Company.

(2) Conversion price of these notes is $2.50 but also varies with one or more of these notes having the following conversion adjustment:

a. Notes are convertible before maturity at $2.50 per share or mandatorily convertible when the Company up-lists to the NASDAQ at the lower of $2.50 or the up-list price.
b. Notes are convertible upon an Event of Default at 75% multiplied by the lowest trading price for the common stock during the five days prior to the conversion.
c. Notes are convertible at $2.50 per share except that following an Event of Default the conversion price will be adjusted to 75% multiplied by the lowest trading price for the common stock during the five days prior to the conversion.
d. Notes can be voluntary converted at lower of 1) $2.50/share; or 2) purchase price of stock sold by PBI at a price lower than $2.50/share. In the event of default, these notes can be converted at lower of 1) $2.50/share; 2) 30% discount to 5-day VWAP prior to date of default.
e. Notes can be voluntary converted at lower of 1) $2.50/share; or 2) purchase price of stock sold by PBI at a price lower than $2.50/share. In the event of default, these notes can be converted at lower of 1) $2.50/share; 2) 25% discount to 5-day VWAP prior to date of default.
f. Conversion price is lower of (i) $2.50 or (ii) the price per share that the Company last sold Common Stock after the execution of an anti-dilution protection agreement.
g. Note can be converted at a Voluntary Conversion Price which is the lower of 1) $2.50/share; or 2) purchase price of stock sold by the Company at a price lower than $2.50 except that following an Event of Default, the Holder shall have the right, with no further consent from the Borrower, to convert notes which can be the lower of 1) the Voluntary Conversion Price, or 2) 70% of the 5-day VWAP prior to conversion.
h. Conversion price is $2.50. If note is in default, it is $1.
i. Notes can be voluntarily converted before maturity at $2.50 per share. Lender retains the option upon an Up-list to convert at the lower of $2.50 or the 10% off Up-list price.
j. Notes can be converted at the lesser of $2.5 per share or 25% discount to the opening price of the Company's first day of trading on either Nasdaq or NYSE. In addition, if the Company fails to pay the Note in cash on maturity date, the conversion price will be adjusted to the lesser of (i) original conversion price or (ii) a 35% discount to the VWAP prior to each conversion date.
k. Some notes are not convertible until 180 days from the date of issuance of the Note and following an Event of Default will be convertible at the lowest trading price of the 20 days prior to conversion. The loan with a principal balance of $950,000 as of December 31, 2023 is guaranteed by the Company's Chief Executive Officer, but the lender may only enforce this guarantee after certain conditions have been met, specifically after (i) the occurrence of an Event of Default (as defined in the Note), (ii) the failure of the Company to cure the Default in 10 business days, and (iii) a failure by the Company to issue, or cause to be issued, shares of its common stock upon submission by the lender of a notice of conversion.
l. Some notes can be converted at the lesser of $2.50 per share or 25% discount to the opening price of the Company's first day of trading on either Nasdaq or NYSE. In addition, if the Company fails to pay the Note in cash on maturity date, the conversion price will be adjusted to the lesser of original conversion price or the product of the VWAP of the common stock for the 5 trading dates immediately prior to the maturity date multiplied by 0.75.
m. Some notes can be converted at $2.50 through fixed rate expiration dates, thereafter 60% of the lowest trading price for the last 20 days before conversion.
n. Some notes can be converted at $2.50 through fixed rate expiration dates; thereafter lesser of (1) lowest trading price during the prior 25 days of the note or 65% of the lowest price during the 25 days prior to the conversion. Notes can be voluntary converted at lower of 1) $2.50/share; or 2) purchase price of stock sold by PBI at a price lower than $2.50/share. Notes can be voluntary converted at lower of lower of (i) $2.5/share and (ii) purchase Price of stock sold by PBIO at a price lower than $2.50/share that is not an Excluded Event in the Series AA Deal Documents. Notes can be converted at lower of lower of (i) $2.50 or (ii) the conversion price of the Series AA Preferred Stock as adjusted. Notes can be converted at lower of (i) $2.50 or (ii) the purchase price of stock by Series AA Holders. Notes can be voluntary converted at offering price of Common Stock at the close of the day prior to the Conversion Date

As of December 31, 2023, the approximate principal balance that are secured by the assets of the Company's subsidiary, PBI Agrochem, Inc. is $352,188.

During the year ended December 31, 2023, the Company extended 23 loans totaling $5,625,648 and increased the principal to $6,325,263. The Company issued 2,552,300 shares of common stock and 802 shares of preferred stock for these extensions and added principal.

Standstill and Forbearance Agreements

The Company has entered into Standstill and Forbearance Agreements with lenders who hold variable-rate convertible notes with a total principal as of December 31, 2023 of $272,500. Pursuant to the Standstill and Forbearance Agreements, the lenders agreed to not convert any portion of their notes into shares of common stock at a variable rate until April 16, 2021. During the year ended December 31, 2023, the Company settled one note with total principal of $302,484, leaving one final lender (three notes) with total principal of $272,500 outstanding and incurred interest, penalties and fees of approximately $253,425 in connection with the Standstill and Forbearance Agreement. During the year ended December 31, 2022 the Company settled one note with a total principal of $166,703 and incurred interest, penalties, and fees of approximately $0.8 million in connection with the Standstill and Forbearance agreements.

Convertible Loan Modifications and Extinguishments

We refinanced certain convertible loans during the years ended December 31, 2023 and 2022 at substantially the same terms for extensions ranging over a period of three to twelve (12) months. We amortized any remaining unamortized debt discount as of the modification date over the remaining, extended term of the new loans. We applied ASC 470 of modification accounting to the debt instruments which were modified during the period or those settled with new notes issued concurrently for the same amounts but different maturity dates. The terms such as the interest rate, prepayment penalties, and default rates will be the same over the new extensions. According to ASC 470, an exchange of debt instruments between or a modification of a debt instrument by a debtor and a creditor in a nontroubled debt situation is deemed to have been accomplished with debt instruments that are substantially different if the present value of the cash flows under the terms of the new debt instrument is at least 10 percent different from the present value of the remaining cash flows under the terms of the original instrument. If the terms of a debt instrument are changed or modified and the cash flow effect on a present value basis is less than 10 percent, the debt instruments are not considered to be substantially different and will be accounted for as modifications.

The cash flows of new debt exceeded 10% of the remaining cash flows of the original debt on several loans in 2023 and 2022. We recorded losses on extinguishment of liabilities of $751,335 in 2022 and $3,970,983 in 2023. Our gains and losses were measured by calculating the difference of the fair value of the new debt and the carrying value of the old debt.

Other Debt

Twelve notes in Other Debt are past due as of December 31, 2023.

	December 31, 2023		December 31, 2022	
Holders	Interest Rate	Principal	Interest Rate	Principal
Non-Convertible	(4)	$ 170,000	(1)	$ 878,809
Merchant debt (3)		1,094,162		760,160
SBA (2)	3.75%	161,864	3.75%	150,000
Totals		1,426,026		$ 1,788,969
Long Term		161,864		150,000
Short Term		$ 1,264,162		$ 1,638,969

Notes:

(1) Interest varies from 1% to 10%. The maturity is between being past due and May 2, 2023.

(2) The Company entered into a COVID-19 government loan in 2020, the Economic Injury Disaster Loan (or "EIDL"). The Company's EIDL loan, $150,000, accrues interest at 3.75% and requires monthly payments of $731 for principal and interest beginning in December 2022. The balance of the principal will be due in 30 years. In connection with the EIDL loan the Company entered into a security agreement with the SBA, whereby the Company granted the SBA a security interest in all of the Company's right, title and interest in all of the Company's assets. During the year ended December 31, 2020, the Company borrowed $367,039 (two-year term and 1% interest rate per annum) under Payroll Protection program (or "2020 PPP"). During the year ended December 31, 2021, the Company borrowed $367,039 through a second Payroll Protection program (or "2021 PPP") and extended the monthly payment date on the EIDL to December 2022. In year 2021, both 2020 PPP and 2021 PPP was forgiven by the United States and SBA.

(3) During the years ended December 31, 2023 and 2022 we signed various Merchant Agreements which are secured by second position rights to all customer receipts until the loan has been repaid in full and subject to interest rates of 4.1% - 100.9% per month. Under the terms of these agreements, we received the disclosed Purchase Price and agreed to repay the disclosed Purchase Amount, which is collected by the Merchant lenders at the Daily Payment Rate. We accounted for the Merchant Agreements as loans under ASC 860 because while we provided rights to current and future receipts, we still had control over the receipts. The difference between the Purchase Amount and the Purchase Price is imputed interest that is recorded as interest expense when paid each day. The Company's Chief Executive Officer guarantees the Company's performance of all representations, warranties, and covenants made by the Company in the Agreement. For loans outstanding on December 31, 2023, the maturity dates ranged from July, 2023 to October, 2024. For loans outstanding on December 31, 2022, the maturity dates ranged from April 4, 2023 to June 6, 2023.

(4) Interest rate of 10%. The maturity date is December 31, 2019. During the year ended December 31, 2023, the term was modified from non-convertible to convertible for two loans in the amount of $651,500. As of December 31, 2023, $170,000 of the non-convertible debt is past due.

Related Party Debt

Holders	December 31, 2023 Interest Rate	December 31, 2023 Principal	December 31, 2022 Interest Rate	December 31, 2022 Principal	Security
Officers & Directors	(1)	$ 522,450	(1)	$ 521,950	Unsecured
Other Related Parties	12%	126,050	12%	120,850	Unsecured
Totals		648,500		642,800	
Discount		-		7,915	
Net		$ 648,500		$ 634,885	

Notes:

(1) Interest varies from 12% to 120%.

During the year ended December 31, 2023, we received short-term non-convertible loans of $190,000 with $8,300 OID from related parties and repaid $168,085 of related party loans. These notes bear interest ranging from 12% to 120% interest and are due upon demand.

During the year ended December 31, 2022, we received short-term non-convertible loans of $958,100 with $91,750 OID from related parties and repaid $315,300 of related party loans. These notes bear interest ranging from 12% to 120% interest and are due upon demand. All related party notes are convertible at $2.50 per /share.

We amortized $8,300 and $83,835 of debt discounts during the years ended December 31, 2023 and 2022, respectively for all non-convertible notes. The total unamortized discount for all non-convertible notes as of December 31, 2023 and 2022 was $0 and $7,915, respectively.

(10) Stockholders' (Deficit)

Preferred Stock

We are authorized to issue 1,000,000 shares of preferred stock with a par value of $0.01.

As of December 31, 2023, there were no shares of Junior A issued and outstanding and no shares of Series A, B, C, G, H, H2, J and K issued and outstanding and as of December 31, 2022, there were no shares of Junior A issued and outstanding, and no shares of Series A, B, C, and E issued and outstanding.

Below is a summary table of the preferred stock:

	December 31, 2023	December 31, 2022
Series D Convertible Preferred Stock, $.01 par value; 850 shares authorized; 75 shares issued and outstanding on December 31, 2023, and 300 shares issued and outstanding on December 31, 2022 (Liquidation value of $300,000)	$ -	$ 3
Series G Convertible Preferred Stock, $.01 par value; 240,000 shares authorized; no shares issued and outstanding on December 31, 2023 and 80,570 shares issued and outstanding on December 31, 2022	-	806
Series H Convertible Preferred Stock, $.01 par value; 10,000 shares authorized; no shares issued and outstanding on December 31, 2023 and 10,000 shares issued and outstanding on December 31, 2022	-	100
Series J Convertible Preferred Stock, $.01 par value; 6,250 shares authorized; no shares issued and outstanding on December 31, 2023 and 3,458 shares issued and outstanding on December 31, 2022	-	35
Series K Convertible Preferred Stock, $.01 par value; 15,000 shares authorized; no shares issued and outstanding on December 31, 2023 and 6,880 shares issued and outstanding on December 31, 2022	-	68
Series AA Convertible Preferred Stock, $.01 par value; 10,000 shares authorized; 8,645 shares issued and outstanding on December 31, 2023 and December 31, 2022, respectively	86	86
Series BB Convertible Preferred Stock, $.01 par value; 1,000 shares authorized; 1,219 shares issued and outstanding on December 31, 2023 (1) and no shares outstanding at December 31, 2022	12	-
Series CC Convertible Preferred Stock, $.01 par value; 2,000 shares authorized; 401 shares issued and outstanding on December 31, 2023 and no shares outstanding at December 31, 2022	4	-
Series H2 Convertible Preferred Stock, $.01 par value; 21 shares authorized; no shares issued and outstanding on December 31, 2023 and 21 shares issued and outstanding on December 31, 2022	-	-
Series A Junior Participating Preferred Stock, $.01 par value, 20,000 shares authorized, no shares outstanding	-	-
Series A Convertible Preferred Stock, $.01 par value, 313,960 shares authorized, no shares outstanding	-	-
Series B Convertible Preferred Stock, $.01 par value, 279,256 shares authorized, no shares outstanding	-	-
Series C Convertible Preferred Stock, $.01 par value, 88,098 shares authorized, no shares outstanding	-	-
Series E Convertible Preferred Stock, $.01 par value, 500 shares authorized, no shares outstanding	-	-
Total Convertible Preferred Shares	$ 102	$ 1,098

(1) 219 shares of the Series BB Convertible Preferred Stock are accounted for as a short-term liability in the amount of $1,000,000 due to the company exceeding its stated authorized amount.

Series D Convertible Preferred Stock

On November 11, 2011, we completed a registered direct offering, pursuant to which we sold an aggregate of 843 units for a purchase price of $1,000 per unit, resulting in gross proceeds to us of $843,000 (the "*Series D Placement*"). Each unit ("*Series D Unit*") consisted of (i) one share of Series D Convertible Preferred Stock, $0.01 par value per share (the "*Series D Convertible Preferred Stock*") convertible into 84 shares of our common stock, (subject to adjustment for stock splits, stock dividends, recapitalization, etc.) and (ii) one five-year warrant to purchase approximately 21 shares of our common stock at a per share exercise price of $24.30, subject to adjustment as provided in the Warrants ("*Series D Warrant*"). The Series D Warrants were exercisable beginning on May 11, 2012 and until the close of business on the fifth anniversary of the initial exercise date. There are currently no Series D Warrants outstanding.

The Series D Convertible Preferred Stock will rank senior to the Company's common stock with respect to payments made upon liquidation, winding up or dissolution. Upon any liquidation, dissolution or winding up of the Company, after payment of the Company's debts and liabilities, and before any payment is made to the holders of any junior securities, the holders of Series D Convertible Preferred Stock will first be entitled to be paid $1,000 per share subject to adjustment for accrued but unpaid dividends.

We may not pay any dividends on shares of common stock unless we also pay dividends on the Series D Convertible Preferred Stock in the same form and amount, on an as-if-converted basis, as dividends actually paid on shares of our common stock. Except for such dividends, no other dividends may be paid on the Series D Convertible Preferred Stock.

Each share of Series D Convertible Preferred Stock is convertible into 84 shares of common stock (based upon an initial conversion price of $19.50 per share) at any time at the option of the holder, subject to adjustment for stock splits, stock dividends, combinations, and similar recapitalization transactions (the "*Series D Conversion Ratio*"). Subject to certain exceptions, if the Company issues any shares of common stock or common stock equivalents at a per share price that is lower than the conversion price of the Series D Convertible Preferred Stock, the conversion price will be reduced to the per share price at which such shares of common stock or common stock equivalents are issued. Each share of Series D Convertible Preferred Stock will automatically be converted into shares of common stock at the Series D Conversion Ratio then in effect if, after six months from the closing of the Series D Placement, the common stock trades on the OTCQB (or other primary trading market or exchange on which the common stock is then traded) at a price equal to at least 300% of the then effective Series D Convertible Preferred Stock conversion price for 20 out of 30 consecutive trading days with each trading day having a volume of at least $50,000. Unless waived under certain circumstances by the holder of the Series D Convertible Preferred Stock, such holder's Series D Convertible Preferred Stock may not be converted if upon such conversion the holder's beneficial ownership would exceed certain thresholds.

In addition, in the event we consummate a merger or consolidation with or into another person or other reorganization event in which our shares of common stock are converted or exchanged for securities, cash or other property, or we sell, lease, license or otherwise dispose of all or substantially all of our assets or we or another person acquire 50% or more of our outstanding shares of common stock, then following such event, the holders of the Series D Convertible Preferred Stock will be entitled to receive upon conversion of the Series D Convertible Preferred Stock the same kind and amount of securities, cash or property which the holders of the Series D Convertible Preferred Stock would have received had they converted the Series D Convertible Preferred Stock immediately prior to such fundamental transaction.

The holders of Series D Convertible Preferred Stock are not entitled to vote on any matters presented to the stockholders of the Company for their action or consideration at any meeting of stockholders of the Company (or by written consent of stockholders in lieu of meeting), except that the holders of Series D Convertible Preferred Stock may vote separately as a class on any matters that would (i) amend, our Restated Articles of Organization, as amended, in a manner that adversely affects the rights of the Series D Convertible Preferred Stock, (ii) alter or change adversely the powers, preferences or rights of the Series D Convertible Preferred Stock or alter or amend the certificate of designation, (iii) authorize or create any class of shares ranking as to dividends, redemption or distribution of assets upon liquidation senior to, or otherwise pari passu with, the Series D Convertible Preferred Stock, or (iv) increase the number of authorized shares of Series D Convertible Preferred Stock.

If, within 12 months of the initial issuance of the Series D Convertible Preferred Stock, we issue any common stock, common stock equivalents, indebtedness or any combination thereof (a "*Subsequent Financing*"), the holders of Series D Convertible Preferred Stock will have the right to participate on a pro-rata basis in up to 50% of such Subsequent Financing.

Series D Warrants

All of these warrants have expired.

Series AA Convertible Preferred Stock and Warrants

During the year ended December 31, 2021, the Company entered into Securities Purchase Agreements with investors pursuant to which the Company sold an aggregate of 406 shares of Series AA Convertible Preferred Stock, each preferred share convertible into 1,000 shares of the Company's common stock, par value $0.01 per share, for an aggregate Purchase price of approximately $1,015,000. We issued to the investors warrants to purchase an aggregate 406,000 shares of common stock with an exercise price of $3.50 per share. The Company did not incur any placement agent fees for this transaction. The relative fair value of warrants is $509,130. In this time the Company also issued 200 shares of Series AA Preferred Stock and 200,100 warrants to acquire common stock (five year term and $3.50 exercise price) for settlement of liabilities, including accrued expense, accrued Compensation to employees and non-convertible debt and related interest. The relative fair value of warrants is $245,635. The Company also recognized a $23,004 loss on settlement of liabilities, which is included in losses on extinguishment of liabilities on the consolidated statement of operations.

During the year ended December 31, 2022, there was 4,400 common stock issued for preferred stock conversions from Series AA Convertible Preferred Stock. During year ended December 31, 2023 and 2022, the Company accrued dividend for the amount of $1,727,275 and $1,658,175, respectively to holders of Series AA Convertible Preferred Stock

The issuances of our convertible preferred stock and common stock purchase warrants are accounted for under the fair value and relative fair value method.

The warrant is first analyzed per its terms as to whether it has derivative features or not. If the warrant is determined to be a derivative, then it is measured at fair value using the Black Scholes Option Model and recorded as a liability on the balance sheet. The warrant is re-measured at its then current fair value at each subsequent reporting date (it is "marked-to-market").

If the warrant is determined to not have derivative features, it is recorded into equity at its fair value using the Black Scholes option model, however, limited to a relative fair value based upon the percentage of its fair value to the total fair value including the fair value of the convertible preferred stock.

We analyzed these warrants issued in 2021 and determined that they were not considered derivatives and therefore recorded the aggregate relative fair value of $509,130 into equity relating to the 406,000 investor warrants issued during 2021.

The convertible preferred stock is recorded at its fair value, limited to a relative fair value based upon the percentage of its fair value to the total fair value including the fair value of the warrant. Further, the convertible preferred stock is examined for any intrinsic beneficial conversion feature ("BCF") of which the convertible price of the preferred stock is less than the closing stock price on date of issuance. If the relative fair value method is used to value the convertible preferred stock and there is an intrinsic BCF, a further analysis is undertaken of the BCF using an effective conversion price which assumes the conversion price is the relative fair value divided by the number of shares of common stock the convertible preferred stock is converted into by its terms. The adjusted BCF value of $0 and $873,798 was accounted for as a deemed dividend within equity and was included in the earnings per share calculation for the years ended December 31, 2023 and 2022, respectively. The Company did not recognize any BCF for the year ended December 31, 2022, since the Company adopted ASU 2020-06 effective January 1, 2022.

On May 1, 2023, Pressure Biosciences, Inc. (the "Company") filed Articles of Amendment to Restated Articles of Organization (the "Amendment") with the Secretary of the Commonwealth of Massachusetts to designate 1,000 shares of its Preferred Stock as Series BB Convertible Preferred Stock, par value $0.01 per share (the "Series BB Preferred Stock") and 2,000 shares of Preferred Stock as Series CC Convertible Preferred Stock, par value $0.01 per share (the "Series CC Preferred Stock"). Each of the Certificate of Designation of Series BB Convertible Preferred Stock (the "Series BB COD") and Certificate of Designation of Series CC Convertible Preferred Stock (the "Series CC COD") filed with the Amendment set forth the terms and provisions of the Series BB Preferred Stock and Series CC Preferred Stock, respectively.

Series BB Preferred Stock

Rank. The Series BB Preferred Stock ranks prior to the Company's common stock, par value $0.01 per share (the "Common Stock"), and subordinate to the Series AA and Series CC Preferred Stock, and to all other classes of classes and series of equity securities of the Company, which by its terms does not rank on a parity with or senior to the Series BB Preferred, and all indebtedness of the Company.

Dividends. The holders of shares of the Series BB Preferred Stock are not entitled to receive dividends.

Voting Rights. The Series BB Preferred Stock has all of the same voting rights as the Common Stock. Each share of Series BB Preferred Stock. The holders of Series BB Preferred Stock shall have the right to vote along with the holders of Common Stock in an amount equal to 10,000 votes for each share of Series BB Preferred Stock held.

Voluntary Conversion. The holders of Series BB Preferred Stock have the right to convert its Series BB Preferred Stock into Common Stock at a ratio of 10,000 shares of Common Stock for each share of Series BB Preferred Stock held, subject to adjustment as set forth in Section 4(e) of the Series BB COD.

Company Forced Conversion. The Company has the right to cause the conversion of all shares of Series BB Preferred Stock into Common Stock ("Forced Conversion"). Following the effectiveness of a registration statement permitting the resale of the Conversion Shares held by holders of the Series BB Preferred Stock, the Company may effectuate a Forced Conversion if either of the following conditions are satisfied: (i) the VWAP of the Common Stock shall equal or exceed 300% of $2.50 (with such dollar figure to be appropriately adjusted for any stock dividend, stock split, stock combination or other similar transaction that affects the share price of the Common Stock) for either 10 consecutive trading days, or 15 of 25 consecutive trading days immediately preceding the date of the Forced Conversion Notice; or (ii) listing of the Common Stock on any national securities exchange (NYSE, NYSE American or Nasdaq). The Company shall not have an obligation to register the Conversion Shares of the shares of Series BB Preferred Stock that are issued pursuant to any exchange of previously issued securities.

Series CC Preferred Stock

Rank. The Series CC Preferred Stock ranks prior to the Common Stock, pari passu to the Series AA Preferred Stock, and prior to all other classes and series of equity securities of the Company which by its terms does not rank on a parity with or senior to the Series CC Preferred Stock (the "Junior Stock"). The Series CC Preferred Stock is subordinate to and ranks junior to all indebtedness of the Company.

Quarterly Dividends. The holders of shares of the Series CC Preferred Stock are entitled to receive, out of funds legally available therefor, dividends at an annual rate equal to 8% of the Liquidation Preference Amount (as defined below), calculated on the basis of a 360-day year, consisting of twelve 30-day months, and shall accrue on a daily basis from April 24, 2023. Accrued and unpaid dividends shall compound on a quarterly basis, and shall be, except as set forth in Section 2(b) of the Series CC COD, payable in cash. The first such dividend payment shall be due and payable on April 30, 2023, with subsequent dividend payments due and payable on June 30, September 30, and December 31, 2023. Each year thereafter, dividend payments shall be due and payable on March 31, June 30, September 30, and December 31.

Junior Stock Dividends. The Company shall not declare or pay any cash dividends on or make any other distributions with respect to or redeem, purchase, or otherwise acquire for consideration, any shares of Junior Stock unless and until all accrued and unpaid dividends on the Series CC Preferred Stock have been paid in full, subject to restrictions as set forth in Section 3(a) of the Series CC COD.

Class Voting Rights. So long as more than ten percent (10%) of the Series CC Preferred Stock remain outstanding, the Company shall not, and shall not permit any subsidiary to, without the affirmative vote or consent of the holders of at least 75% of the shares of the Series CC Preferred Stock outstanding at the time, given in person or by proxy, either in writing or at a meeting, in which the holders of the Series CC Preferred Stock vote separately as a class: (i) authorize, create, issue or increase the authorized or issued amount of any class or series of stock, including but not limited to the issuance of any more shares of previously authorized Preferred Stock, ranking prior to the Series CC Preferred Stock, with respect to the distribution of assets on liquidation, dissolution or winding up; (ii) amend, alter or repeal the provisions of the Series CC Preferred Stock, whether by merger, consolidation or otherwise, so as to adversely affect any right, preference, privilege or voting power of the Series CC Preferred Stock; (iii) repurchase, redeem or pay dividends on (whether in cash, in kind, or otherwise), shares of Junior Stock; (iv) amend the Articles of Incorporation or By-Laws of the Company so as to affect materially and adversely any right, preference, privilege or voting power of the Series CC Preferred Stock; (v) effect any distribution with respect to Junior Stock or parity stock; (vi) reclassify the Company's outstanding securities; or (vii) effect a transaction with one or more persons or entities whereby such other persons or entities will own more than the 50% of the outstanding shares of Common Stock following such transaction.

General Voting Rights. Except with respect to transactions upon which the Series CC Preferred Stock shall be entitled to vote separately as a class as set forth in "Class Voting Rights" above and except as otherwise required by Massachusetts law, the Series CC Preferred Stock shall have no voting rights. The Common Stock into which the Series CC Preferred Stock is convertible shall, upon issuance, have all of the same voting rights as the Common Stock.

Liquidation Preference. In the event of the liquidation, dissolution or winding up of the affairs of the Company, whether voluntary or involuntary, the holders of shares of the Series CC Preferred Stock then outstanding shall be entitled to receive, out of the assets of the Company whether such assets are capital or surplus of any nature, an amount equal to $25,000.00 per share (the "Liquidation Preference Amount") of the Series CC Preferred Stock, on a pro rata and pari passu basis with any parity stock (the "Pari Passu Preferred Stock"), together with all accrued but unpaid dividends, before any payment shall be made or any assets distributed to the holders of the Common Stock or any other Junior Stock. If the assets of the Company are not sufficient to pay in full the Liquidation Preference Amount payable to the holders of outstanding shares of the Series CC Preferred Stock and any series of preferred stock or any other class of stock on a parity as to rights on liquidation, dissolution or winding up, with the Series CC Preferred Stock, then all of said assets will be distributed among the holders of the Series CC Preferred Stock, the Pari Passu Preferred Stock and the other classes of stock on a parity with the Series CC Preferred Stock, if any, ratably in accordance with the respective amounts that would be payable on such shares if all amounts payable thereon were paid in full.

Voluntary Conversion. The holders of Series CC Preferred Stock have the right to convert its Series CC Preferred Stock into a number of fully paid and nonassessable shares of Common Stock (the "Conversion Shares") equal to the quotient of (i) the Liquidation Preference Amount of the shares of Series CC Preferred Stock being converted thereon divided by (ii) the Conversion Price then in effect as of the date of the delivery by such holder of its notice of election to convert. The "Conversion Price" shall mean $2.50 per share, subject to adjustment under Section 5(e) of the Series CC COD.

Company Forced Conversion. The Company has the right to cause the conversion of all shares of Series CC Preferred Stock into Common Stock ("Forced Conversion"). Following the effectiveness of a registration statement permitting the resale of the Conversion Shares held by holders of the Series CC Preferred Stock the Company may effectuate a Forced Conversion if either of the following conditions are satisfied as of the Forced Conversion Effective Date: (i) the VWAP of the Common Stock shall equal or exceed 300% of the Conversion Price for either 10 consecutive trading days, or 15 of 25 consecutive trading days immediately preceding the date of the Forced Conversion Notice; or (ii) listing of the Common Stock on any national securities exchange (NYSE, NYSE American or Nasdaq). The Company shall not have an obligation to register the Conversion Shares of the shares of Series CC Preferred Stock that are issued pursuant to any exchange of previously issued securities.

Conversion Restriction. At no time may a holder of shares of Series CC Preferred Stock convert shares of the Series CC Preferred Stock if the number of shares of Common Stock to be issued pursuant to such conversion would exceed, when aggregated with all other shares of Common Stock owned by such holder at such time, the number of shares of Common Stock which would result in such holder beneficially owning (as determined in accordance with Section 13(d) of the Securities Exchange Act of 1934, as amended, and the rules thereunder) in excess of 4.99% of all of the Common Stock outstanding at such time (the "Conversion Restriction"); provided, however, that a holder may waive the Conversion Restriction by providing the Company with sixty-one (61) days' notice that such holder is waiving the Conversion Restriction.

During the twelve months ended December 31, 2023 the Company converted 245 shares of Series BB convertible preferred stock and had 1,219 shares of Series BB convertible preferred stock outstanding which is 219 shares above the authorized of 1,000. As a result, 219 Series BB shares with an approximately fair value of $1,000,000 is included as preferred stock liability as of December 31, 2023. During the twelve months ended December 31, 2023, the company also issued 401 shares of Series CC restricted preferred stock to accredited investors and consultants, with the following detail:

- 233 shares of Series BB preferred stock with a fair value of $1,360,867, for services rendered;
- 822 shares of Series BB preferred stock with a fair value of $3,071,914 of which $397,384 is included as preferred stock liability for convertible debt extensions;
- 128 shares of Series BB preferred stock with a fair value of $563,441 and issued with convertible debt;
- 220 shares of Series BB preferred stock from interest paid-in kind with fair value of 602,616 included in preferred stock liability;
- 245 shares of Series BB preferred stock was converted into common stock; 62 shares issued for the conversion of common stock to preferred stock;
- 401 shares of Series CC preferred stock with a fair value of $10,017,208 for the conversion of debt/accrued interest and dividends.

Common Stock

Stock Options and Warrants

On April 13, 2023, the Board authorized a 3-year extension of common stock warrants held by Series AA preferred shares holders. Therefore, 8,897,603 warrants were extended with new expiration dates between May 2, 2026 to September 14, 2029. Based on a fair value computation, this extension resulted in net incremental expense of $3,626,950, which was booked as an increase in the value of warrants and an increase of the retained deficit.

At the Company's December 30, 2021 Special Meeting, the shareholder's approved the 2021 Equity Incentive Plan (the "2021 Plan") pursuant to which 3,000,000 shares of our common stock were reserved for issuance upon exercise of stock options or other equity awards. Consistent with the Company's existing 2013 Equity Incentive plan (the "2013 plan"), under the 2021 plan, we may award stock options, shares of common stock, and other equity interests in the Company to employees, officers, directors, consultants, and advisors, and to any other persons the Board of Directors deems appropriate. As of December 31, 2023 options to acquire 4,920,754 shares were outstanding under these Plans.

All of the outstanding non-qualified options had an exercise price that was at or above the Company's common stock share price at time of issuance. On October 18, 2023, the company's board of directors approved the re-pricing of all issued and outstanding qualified and non-qualified stock option grants to $0.25 per share.

As of December 31, 2022, total unrecognized compensation cost related to the unvested stock-based awards was $15,312, which is expected to be recognized over weighted average period of 1.09 years. The aggregate intrinsic value associated with the options outstanding and exercisable, and the aggregate intrinsic value associated with the warrants outstanding and exercisable as of December 31, 2022, based on the December 31, 2022 closing stock price of $1.30, was $0. At this time the warrants had a weighted average remaining contractual term of 1.53 years and zero intrinsic value.

The following tables summarize information concerning options and warrants outstanding and exercisable:

	Stock Options		Warrants		Total	
	Shares	Weighted Average price per share	Shares	Weighted Average price per share	Shares	Exercisable
Balance outstanding, December 31, 2021	1,333,101	$ 0.72	16,207,108	$ 3.50	17,540,209	17,308,567
Granted	-	-	277,500	3.50	277,500	
Exercised	(25,279)	0.69	-	-	(25,279)	
Expired	-	-	(205,839)	3.50	(205,839)	
Balance outstanding, December 31, 2022	1,307,822	$ 0.72	16,278,769	$ 3.50	17,586,591	17,570,591
Granted	7,151,238	0.25	100,000	3.50	7,251,238	
Exercised	(117,552)	0.69	-	-	(117,552)	
Expired	-	-	(801,415)	3.50	(645,829)	
Forfeited	(3,420,754)	-	-	-	(3,420,754)	
Balance outstanding, December 31, 2023	4,920,754	$ 0.25	15,577,354	$ 3.50	20,628,305	18,625,326

		Options Outstanding			Options Exercisable		
			Weighted Average			Weighted Average	
Range of Exercise Prices		Number of Options	Remaining Contractual Life (Years)	Exercise Price	Number of Options	Remaining Contractual Life (Years)	Exercise Price
$ 0.25	$ 1.00	4,920,754	8.5	$ 0.25	3,047,972	7.8	$ 0.25
$ 1.01	$ 3.00	-	-	$ -	-	-	$ -
		4,920,754	8.5	$ 0.25	3,047,972	7.8	$ 0.25

Common Stock Issuances

For the year ended December 31, 2023 the Company recognized 117,552 shares issued with a fair value of $81,111 for stock option exercises; issued 2,150,000 shares for services rendered with a fair value of $2,082,544; 2,552,300 shares with a fair value of $2,028,748 for debt extensions; 203,613 shares with a fair value of $509,033 for conversion of debt and interest; 729,571 shares with a fair value of $386,936 for dividends paid in kind; 11,878,135 shares with a fair value of $8,226,186 for interest paid-in-kind; 1,625,642 shares for stock issued with debt with a fair value of $790,975, 60,000 shares with a fair value of $150,000 for sale of common stock, 2,454,000 shares for conversion of Series BB convertible preferred stock, 624,000 shares converted into 62 shares of Series BB convertible preferred stock and 537,940 shares for conversion of Series D-K convertible preferred stock.

For the year ended December 31, 2022 the Company recognized 25,279 shares issued with a fair value of $17,443 for stock option exercises; issued 255,500 shares for services rendered with a fair value of $392,175; 1,423,800 shares with a fair value of $2,198,861 for debt extensions; 181,918 shares with a fair value of $467,092 for conversion of debt and interest; 4,400 shares for conversion of preferred stock for preferred stock conversions from Series AA Convertible Preferred Stock; 236,221 shares with a fair value of $386,300 for dividends paid in kind; 1,766,266 shares with a fair value of $2,943,139 for interest paid-in-kind; 659,000 shares for stock issued with debt with a fair value of $873,854, and 10,000 shares with a fair value of $25,000 for sale of common stock.

During the year ended December 31, 2023, the Company accrued approximately $5.3 million in interest expense for these obligations to issue common stock. During the year ended December 31, 2022, the Company accrued approx. $2.7 million in interest expense for these obligations to issue common stock.

For our loan dated December 23, 2020, we are obligated to issue 100,000 warrants if the loan is not repaid before January 23, 2021 and an additional 10,000 shares of common stock and 100,000 warrants if the loan is not repaid before February 23, 2021. We are also obligated to issue 10,000 shares of common stock and 200,000 warrants if the loan is not repaid before March 23, 2021. During the year ended December 31, 2021 the Company issued 400,000 warrants to this lender ($3.50 exercise price and five-year term) with a fair value of $600,298. The Company is also obligated to issue 10,000 shares of common stock to this lender every 31 days up to the loan's maturity date on June 23, 2021.

For the twelve months ended December 31, 2023, the Company issued 100,000 warrants (four-year term at a $3.50 exercise price) to acquire common stock at a fair value of $61,609 to a consultant for professional services.

For the twelve months ended December 31, 2022, the Company issued a total of 277,500 warrants at a fair value of $280,608, all with a strike price of $3.50 per share and an expiration term ranging from 3 to 5 years. Warrants issued:

- 120,000 issued in conjunction with signing of new convertible loans for the fair value of $93,576;
- 100,000 issued for a debt extension for the fair value of $132,537, and
- 57,500 issued for professional services rendered for the fair value of $54,495.

(11) Subsequent Events

Acquisition of Assets and Liabilities from CBH International LLC, dba "Uncle Bud's."

On January 9, 2024, Pressure BioSciences, Inc. (the "Company") and CBH International LLC, dba "Uncle Bud's," ("Uncle Bud's") signed an Asset Purchase Agreement (the "Agreement") for the Company to acquire all of Uncle Bud's assets and assume selected liabilities, including a $734,000 long-term loan and all trade payables. Uncle Bud's stockholders received 127 shares in PBIO convertible Series DD Preferred Stock that converts into 2,540,000 common shares of PBIO. Such shares are subject to standard restrictions on resale. In addition, the parties agreed to an earnout for additional shares of PBIO Common Stock worth up to $4,000,000 based on the achievement of revenue and pre-tax income results in 2024, and subsequently entered into an amendment to terminate the contingent and earnout clause of the Agreement and issued 8,000,000 non-qualified stock options. All options had an exercise price of $0.30, (100% vest immediately), have a ten-year life as long as the Optionee remains affiliated with PBI (one-year life after loss of affiliation), and all other terms and conditions as specified in the 2024 plan. Upon the closing, all employees of Uncle Bud's have become employees of PBIO and Uncle Bud's has become the Consumer Products Business Unit of the Company.

Debt, Preferred, Common Stock, and Option activity

From January 1, 2024, through May 31, 2024, the Company issued thirteen (13) convertible loans for approximately $3,100,000, which each carry a 0-72% annual interest rate and one (1) to twelve (12) month terms. All the loans are convertible into common stock either at $2.50 per share or subject to a conversion adjustment.

The Company also repaid 6 loans totaling $272,852 between January 1, 2024 and May 31, 2024, , which were issued between May 2023 and April 2024. The Company also extended twenty-two (22) loans in the amount of approximately $7,281,000 to between June 30, 2024 and March 24, 2025. The Company is obligated to issue 880 shares of Series BB Preferred Stock to the Lenders for the extensions, but could not because no shares of Series BB remained available for issue. However, 353,000 shares of the Company's Common Stock were issued to three Lenders as extension fees.

From January 1, 2024, through June 6, 2024, 722 shares of Series BB convertible preferred stock converted into 7,224,000 shares of common stock, 323 shares of Series BB convertible preferred stock was issued for debt , 745 shares of Series BB convertible preferred stock was issued for extensions and default and 123 shares of Series BB convertible preferred stock was issued for services. The company's Series BB convertible preferred stock is currently over the stated authorized amount by 1,091 shares.

From January 1, 2024, through June 6, 2024, 1,053,250 shares of common stock was issued for debt, default and paid-in-kind and 1,274,000 shares of common stock for services.

From January 1, 2024, through June 6, 2024, 803,750 options were grants with an exercise price of $0.30 per share and a term of ten (10) years.

Lease

On February 5, 2024, our corporate office and R&D labs have been consolidated into one facility and we are currently located at 480 Neponset St., Unit 10B, Canton, Massachusetts 02021. The lease agreement term is five years and contains escalating payments during the lease period with the first lease payment being due on May 1, 2024 and monthly rent ranging from $11,651 to $13,678 through the lease term.

EXHIBIT 21.1

Pressure BioSciences, Inc. – Subsidiaries

PBI Agrochem, Inc. (Massachusetts)
PBI BioSeq, Inc. (Massachusetts)
Pressure BioSciences Europe (Poland)

EXHIBIT 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the Registration Statement on Form S-8 (File No. 333-203609) of our report dated June 7, 2024 with respect to the consolidated financial statements of Pressure BioSciences, Inc., which is included in this Annual Report on Form 10-K for the year ended December 31, 2023. Our report contains an explanatory paragraph regarding the Company's ability to continue as a going concern.

/s/ Malone Bailey LLP

www.malonebailey.com
Houston, Texas
June 7, 2024

EXHIBIT 31.1

CERTIFICATION PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Richard T. Schumacher, certify that:

1. I have reviewed this report on Form 10-K of Pressure BioSciences, Inc.;

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

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

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

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

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

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

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

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

a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial data; 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: June 7, 2024

By: */s/ Richard T. Schumacher*
Name: Richard T. Schumacher
Title: President and Chief Executive Officer
(Principal Executive Officer)

EXHIBIT 31.2

CERTIFICATION PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Richard T. Schumacher, certify that:

1. I have reviewed this report on Form 10-K of Pressure BioSciences, Inc.;

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

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

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

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

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

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

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

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

a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial data; 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: June 7, 2024

By: */s/ Richard T. Schumacher*
Richard T. Schumacher
Interim Chief Financial Officer
(Principal Financial Officer)

EXHIBIT 32.1

Certification
Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
(Subsections (a) and (b) of Section 1350, Chapter 63 of Title 18, United States Code)

In connection with the Annual Report on Form 10-K of Pressure BioSciences, Inc., a Massachusetts corporation (the "Company") for the period ended December 31, 2023 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), Richard T. Schumacher, President and Chief Executive Officer, of Pressure BioSciences, Inc., a Massachusetts corporation (the "Company"), do hereby certify, pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (subsections (a) and (b) of Section 1350, Chapter 63 of Title 18, United States Code) that:

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

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

Dated: June 7, 2024

/s/ Richard T. Schumacher
Richard T. Schumacher
President and Chief Executive Officer
(Principal Executive Officer)

A signed original of this written statement required by Section 906 has been provided to Pressure BioSciences, Inc., and will be retained by Pressure BioSciences, Inc. and furnished to the Securities and Exchange Commission or its staff upon request.

EXHIBIT 32.2

Certification
Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
(Subsections (a) and (b) of Section 1350, Chapter 63 of Title 18, United States Code)

In connection with the Annual Report on Form 10-K of Pressure BioSciences, Inc., a Massachusetts corporation (the "Company") for the period ended December 31, 2023 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), Richard T. Schumacher, Chief Financial Officer, of Pressure BioSciences, Inc., a Massachusetts corporation (the "Company"), do hereby certify, pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (subsections (a) and (b) of Section 1350, Chapter 63 of Title 18, United States Code) that:

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

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

Dated: June 7, 2024

/s/ Richard T. Schumacher
Richard T. Schumacher
Interim Chief Financial Officer
(Principal Financial Officer)

A signed original of this written statement required by Section 906 has been provided to Pressure BioSciences, Inc., and will be retained by Pressure BioSciences, Inc. and furnished to the Securities and Exchange Commission or its staff upon request.