



## Quarterly Update: September 29, 2014

### Company Description

Pressure BioSciences, Inc. ("Pressure BioSciences" or "the Company") develops and commercializes proprietary laboratory instruments and consumable products. Its product portfolio is based on its patented pressure cycling technology (PCT) platform, which is able to apply and release low to high levels of hydrostatic pressure in a safe and controlled manner. While this technology has applications across many industries, Pressure BioSciences is initially using PCT to develop products that improve sample preparation—the crucial process of preparing a sample for analysis. In life science research, sample preparation is integral to tens of thousands of laboratories worldwide. Pressure BioSciences' line of Barocycler® products enables scientists to harness the power of PCT in the lab. Biological samples (e.g., cells and tissues from humans, animals, plants) placed in a Barocycler are exposed to programmable cycles of low-to-intense pressure—up to 100,000 pounds per square inch (psi). This act of "cycling" pressure can accelerate and control physical and chemical processes, including the breakup of cellular structures and release of biomarkers from a sample for testing and analysis. Pressure BioSciences' portfolio also includes Shredder instruments (for rapidly shredding or grinding samples), sample preparation kits and reagents, and related consumable products (e.g., tubes to hold the samples during the PCT process).

### Key Points

- In September 2014, Pressure BioSciences commenced manufacture of Barozyme™ HT48 units intended for shipment to laboratories for evaluation during fall 2014. The high-throughput Barozyme™ system, which was introduced in June 2014, can process up to 48 samples simultaneously using the Company's new BaroFlex 8-well processing strips.
- Earlier in 2014, the Company launched the ultra-high-pressure HUB880 Barocycler, which is capable of safe operation up to 100,000 psi and enables investigation of new biological, chemical, material, and industrial sciences applications.
- For the six months ended June 30, 2014, Pressure BioSciences reported record products and services revenue compared to any prior half-year period. The Company reported total revenues of \$711,611 for the first half of 2014, which was driven by products and services sales rather than grant revenue.
- For the second quarter 2014 and first half of 2014, Pressure BioSciences reported a 56% and 70% increase, respectively, on its products and services revenue compared to the same periods in 2013, though grant revenue declined for both timeframes. Sales of the Company's consumables products increased 86% in the second quarter 2014 and 93% in the first half of 2014 versus the year-ago periods.
- The Company has begun collaborating with Parabase Genomics for the development of a PCT-based, front-end, sample preparation method for Parabase's neonatal diagnostics platform, which simultaneously evaluates 350 genes to improve early diagnosis of genetic diseases in newborns.
- At June 30, 2014, Pressure BioSciences' cash position was \$9,369, followed by the receipt of \$200,000 in July 2014.



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Ticker (Exchange)	PBIO (OTC)
Recent Price (09/26/2014)	\$0.31
52-week Range	\$0.16 - \$0.78
Shares Outstanding	~15.5 million
Market Capitalization	~\$4.8 million
Average 3-month Volume	43,188
Insider Ownership + >5%*	11.11%
Institutional Ownership*	4.06%
EPS (Qtr. ended 06/30/14)	(\$0.05)
Employees	12

**PBIO One-Year Stock Chart**



\*Source: S&P Capital IQ, 9/26/2014

## Recent Events and Financial Results

### Recent Events

An overview of the Company's recent news announcements is provided below, referring the reader to Pressure BioSciences' website for complete news releases: [www.pressurebiosciences.com](http://www.pressurebiosciences.com).

- *On September 19, 2014*, Pressure BioSciences announced it has received and approved all parts required to build nine high-throughput Barozyme™ HT48 instruments and has begun to manufacture the new PCT-based instrument system. The Company believes the first instrument can be ready for shipment by mid-October and that additional Barozyme™ instruments can be built and released at a rate of about one per week thereafter. Further details are provided on pages 7-8.
- *On September 3, 2014*, the *MicroCap Review* magazine announced the availability of its digital issue for Summer/Fall 2014, available on [www.MicroCapReview.com](http://www.MicroCapReview.com). The issue, which provides coverage of public and private emerging growth companies, includes a featured article on Pressure BioSciences.
- *On July 22, 2014*, the Company and Parabase Genomics announced a strategic agreement in which Pressure BioSciences is expected to develop a front-end sample preparation method for Parabase's enhanced neonatal molecular diagnostics and newborn confirmatory testing process, based on the Company's patented Pressure Cycling Technology (PCT) platform. Parabase's testing platform uses targeted next-generation sequencing to offer comprehensive test panels for the diagnosis of single-gene conditions in newborns, with an end goal of improving early diagnosis of genetic diseases.
- *On June 26, 2014*, the Company announced the engagement of IssuWorks to provide strategic advisory services to the Pressure BioSciences' Board of Directors and management team, specifically for review of the Company's growth strategies, including strategic and financing alternatives and the possible spin-off of vertical market applications into new, stand-alone businesses. IssuWorks—the brainchild of Wall Street executives David Weild IV and Edward H. Kim, the former vice chairman and former senior vice president of the NASDAQ Stock Market, respectively—is a company-aligned investment bank that uses technology and services to improve investor targeting, securities marketing, and distribution in public and private markets.
- *On June 23, 2014*, Pressure BioSciences announced the successful completion of the Barozyme™ HT48 product launch, conducted at the 62<sup>nd</sup> Annual Conference of the American Society for Mass Spectrometry (ASMS), held June 15-19, 2014, in Baltimore, Maryland.
- *On June 19, 2014*, the Company announced that the adoption, use, and impact of its PCT platform were highlighted at ASMS's 62<sup>nd</sup> Annual Conference. During the conference, PCT-based sample preparation methods were featured in eight presentations from six separate research groups, covering cancer, tissue biopsy, archival samples, and foodborne pathogen studies. Study data indicated that using the Company's PCT platform resulted in critically enabling quality and/or improved time or cost efficiency of test results.

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## Financial Results

On August 14, 2014, Pressure BioSciences announced financial results for the three and six months ended June 30, 2014.

### *Results for the Second Quarter 2014 (ended June 30, 2014)*

Revenue from the sale of products and services for the second quarter 2014 was \$307,464 versus \$196,522 for the same period in 2013, a 56% increase. The increase in products and services revenue was offset by the decrease of grant revenue. During the second quarter 2014, the Company's financial results included no grant revenue, compared to \$161,214 for the comparable period in 2013. As a result, total revenue for the second quarter 2014 was \$307,464 compared to \$357,736 for 2013, a 14% decrease.

Operating loss for the second quarter 2014 decreased slightly to \$846,757 from \$858,026 for the same period in 2013, despite the loss of grant revenue, which was offset through increases in products and services revenue and control of operating costs.

Pressure BioSciences reported a net loss of \$720,789, or (\$0.05) per share, for the second quarter 2014 versus a net loss of nearly \$1.2 million, or (\$0.10) per share, for the second quarter 2013.

### *Results for the First Half of 2014*

For the six months ended June 30, 2014, Pressure BioSciences reported revenues from product and services of \$711,611, a 70% increase versus \$418,092 for the same half of 2013. In addition, sales of consumables were \$103,029 for the six months ended June 30, 2014, versus \$53,258 for the same period in 2013, a 93% increase. Total revenue for the first half of 2014 was \$711,611 versus \$728,474 for the same period in 2013, a 2% decrease. This decrease was due solely to the loss of \$310,382 in grant revenue in the six-month period ended June 30, 2014.

Operating loss for the six months ended June 30, 2014, was \$1.63 million versus \$1.58 million for the same half of 2013. The small increase in operating loss for the 2014 period was attributable to the 100% loss of grant revenue to date this year versus last year.

The Company reported a net loss for 2014 to date of approximately \$3.8 million, or (\$0.30) per share, versus a net loss for the first half of 2013 of approximately \$2.6 million, or (\$0.22) per share. The increase in net loss is due in large part to changes in the fair value of Pressure BioSciences' derivatives and amortization of derivatives related to the Company's debt.

### *Liquidity*

As of June 30, 2014, Pressure BioSciences held approximately \$9,369 in cash and cash equivalents. On July 1, 2014, Pressure BioSciences received payment of \$200,000 under the fourth tranche of its private placement (begun in December 2013). The \$200,000 had been previously classified as an investor receivable when the fourth tranche closed on June 30, 2014.

Since December 2013, the Company has raised approximately \$3.1 million in its ongoing offering, which has included roughly \$2.25 million in cash and approximately \$820,706 from the conversion of outstanding indebtedness and Board of Director fees. In addition, Pressure BioSciences has performed the conversion of \$392,750 in principal and accrued interest from convertible promissory notes and other fees. The Company also signed an agreement to borrow up to \$400,000 on June 4, 2014. Through August 1, 2014, Pressure BioSciences had received \$150,000 under this agreement.

In addition, the Company recently engaged IssuWorks, a company that offers services and technology to improve capital formation, distribution, and aftermarket results for issuers, investors, and investment banks, to review the strategic and financial avenues available to the Company. These could include the possible spin-off of certain vertical market applications into new, stand-alone businesses that may be able to generate new revenue streams for Pressure BioSciences through royalty payments, licensing agreements, and equity ownership, among other activities.

## Company Background

Pressure BioSciences, Inc. (“Pressure BioSciences” or “the Company”) is focused on the research, development, and commercialization of proprietary laboratory instruments and consumable products based on its patented pressure cycling technology (PCT) platform. PCT is an enabling technology that is able to create, apply, and release low to high levels of hydrostatic pressure—currently up to 100,000 pounds per square inch (psi)—quickly and in a safe and controlled manner. As a frame of reference, in the deepest part of the Mariana Trench, which is approximately 35,800 feet under the ocean’s surface and the deepest point on Earth, the pressure is roughly 17,920 psi or nearly nine tons per square inch—roughly the weight of an elephant balanced on a postage stamp. Not only has Pressure BioSciences developed a means to harness high pressure in a compact instrument that fits comfortably on a laboratory workbench, but the Company has also incorporated and patented its unique ability to rapidly cycle pressure on and off.

Pressure is force applied to a surface area. It is a fundamental variable in thermodynamics, and can be used to manipulate matter between amorphous and various crystalline solids, liquid, gas, and plasma physical states, without requiring changes in temperature. Easy access to pressure cycling capabilities can provide a powerful and important tool for many areas of scientific research and materials processing.

PCT is expected to significantly benefit research and routine processing applications across many industries, including the life sciences, diagnostics, pharmaceutical, biotechnology, forensics, food, anti-bioterror, agriculture, automotive, and oil and gas industries, among many others. Extensive demonstrations and data collected internally and by third-party researchers have confirmed the potential of PCT across many of these areas. While Pressure BioSciences could ultimately develop products specially designed for each market, management has evaluated its core competencies and intellectual property strengths and thus selected sample preparation—a critically important process that dramatically affects outcomes in life sciences research and patient diagnostics—as its initial target market. The Company has 24 issued and multiple pending patents worldwide protecting the application of PCT in sample preparation and other areas.

### **First Application for Pressure Cycling Technology (PCT): the Sample Preparation Market**

Pressure BioSciences is initially using PCT to develop products that improve “sample preparation,” or the process of preparing a biological sample (such as cells and tissues from human, animal, plant, and microbial sources) for analysis. Sample preparation is a crucial laboratory step for most areas of life sciences research and commercial diagnostics applications. Sample preparation is required prior to virtually all scientific analyses, and can be pivotal for protecting such scientific analyses from the ancient conundrum of “garbage in yields garbage out.” Sample preparation processes vary but, within the life sciences, often include breaking up the cellular structures of a sample (“cell lysis”) as well as separating or extracting out various cell components and biomolecules or biomarkers, including proteins, lipids, small molecules, and nucleic acids (DNA/RNA). Accurate analysis of these extracted biomolecules is crucial to the development of new diagnostics and therapeutics.

There are a number of tools and techniques currently used in sample preparation, including bead beaters, sonicators, homogenizers, mortar and pestle grinders, French Press, freezer mills, enzymatic digestion, and chemical dissolution. While sample preparation is intended to facilitate and improve accurate scientific analysis, conventional methods for performing sample preparation are often complex, time consuming, and error-prone. The University of Florida has identified human error as a major liability in sample preparation. Additionally, it is estimated that laboratory professionals spend as much as 80% of their time preparing samples for analysis (Source: *Lab Manager Magazine*, July 13, 2011). Important cell components can be lost, degraded, damaged, or otherwise affected during the process of breaking up and separating the components of the cell. While scientists can use cutting-edge devices to analyze what remains in the prepared sample, cell components lost or damaged during the sample preparation process will not be found in the final analysis of the sample, hindering the scientists’ ability to obtain relevant and useful results. For this reason, sample preparation is widely considered to be the main bottleneck in life science research.

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### *PCT Is Designed to Substantially Improve Sample Preparation*

Pressure BioSciences believes that its PCT methods offer several important advantages over current sample preparation products and processes. First, researchers at the U.S. Food and Drug Administration (FDA), the Harvard School of Public Health, the Armed Forces Institute of Pathology, the Johns Hopkins School of Medicine, and other institutions have shown that using the PCT platform in their sample preparation workflows resulted in significant advantages, including major reductions in the total time for analysis and improved reliability and reproducibility of testing and quality of results. Next, when used as part of the sample preparation process, PCT was shown to improve the quality and quantity of DNA, RNA, proteins, lipids, and small molecules recovered from a sample versus many available preparation techniques. Third, and perhaps most important of all, PCT has proven to dramatically increase the range of unique versions (often never previously seen) of biomolecules that were liberated and presented for analysis.

PCT helps to make sample preparation reproducible and enables standardization. Conventional bead beaters use small beads to aggressively disrupt the cells and their components in a sample, and mortar and pestle tools require extensive and laborious grinding of samples into smaller pieces. In contrast, PCT uses cycles of hydrostatic pressure to gently, rapidly, and reproducibly liberate and preserve the widest range of DNA, RNA, small molecules, and proteins from almost any biological fluid, cells, or tissue sample. Unlike the application of temperature as a process variable, the application of pressure is homogeneously experienced instantly and equally throughout the sample being treated. Repeated cycles of PCT help to ensure the effective liberation of released biomolecules from within the structural matrix of the sample, in a fashion somewhat analogous to the repeated squeezing of a wet sponge.

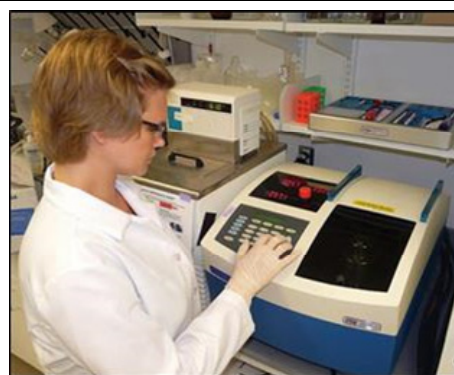
It is important to note that PCT is not designed to replace mainstream laboratory analysis instruments used to analyze biological samples; rather, it is designed to enhance the sample preparation process for use in tandem with downstream analyzers to recover greater quantities, higher quality, and previously unavailable biomolecules from the sample.

### **Pressure BioSciences' Product Portfolio**

The Company's first commercial application of PCT for sample preparation is the Barocycler® family of bench-top laboratory instruments. Biological samples placed in the pressure chamber of a Barocycler are exposed to programmable cycles of low-to-intense pressure. This act of "cycling" pressure quickly breaks up the cellular structures of a sample for downstream testing and analysis. An example of a Barocycler is shown in Figure 1. The Company's first two Barocycler® models—NEP2320 and NEP3229—produce up to 35,000 psi and vary in sample capacity, size, and weight. The 65-pound NEP2320 model lists for around \$30,000 and provides a sample chamber suitable for processing from 1 to 12 samples, while the larger NEP3229 model weighs roughly 350 pounds and lists for approximately \$45,000 but has the capacity to simultaneously process up to three times the number of samples as the smaller NEP2320.

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Figure 1  
BAROCYCLER®



*Source: Pressure BioSciences, Inc.*

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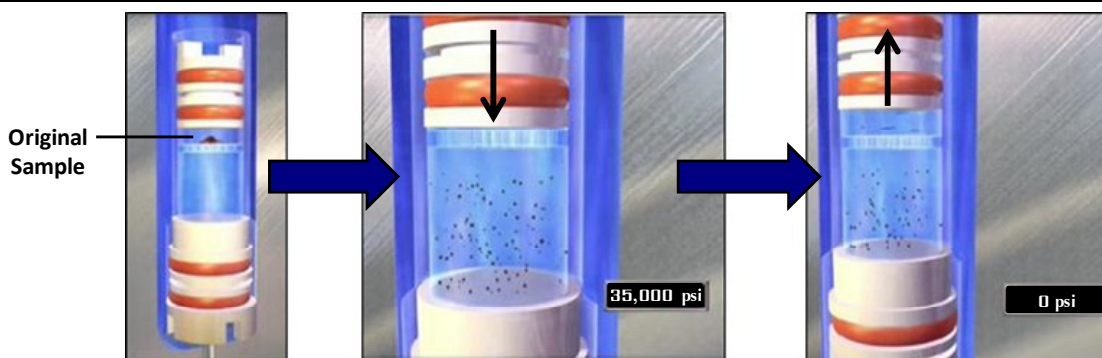
To prepare a biological sample using a Barocycler, the user first places the sample in a consumable processing sample tube that is specially designed to withstand high levels of pressure, and fills the remainder of the tube with solutions called "processing buffers." The user then inserts the sample tube into the chamber of the Barocycler and specifies the desired maximum level of pressure and number of cycles to subject the sample to (or can program more finely-grained pressure cycle profiles, if desired), before starting the machine.

Figure 2 (page 6) shows a rendering of the PCT process, with a maximum set pressure of 35,000 psi (NEP3229). As shown in the center of Figure 2, the increase in pressure forces the sample to pass through a disc with small holes (called a "lysis disc"), breaking the sample into smaller pieces that disperse throughout the processing buffers. As the pressure cycles back to ambient psi (about 14.5 psi), fragments of the sample are pulled back through the lysis disc. This process repeats for the number of cycles designated by the user.



Figure 2

HOW PRESSURE CYCLING TECHNOLOGY WORKS



Source: Pressure BioSciences, Inc.

*Next-Generation PCT System Offers Increased Versatility and Higher Margins*

Pressure BioSciences' next-generation PCT platform is the HUB family of Barocyclers. HUB models are designed to serve as a hub for a laboratory's high-pressure needs, with users purchasing accessories as needed to expand the functionality of their HUB unit. Unlike the Barocycler models, which have a set chamber size that can fit a specified number of samples in each test run, HUB models offer flexibility that enables the laboratory's pressure cycling capabilities to grow and adapt with the laboratory's needs. Additionally, the HUB concept allows Pressure BioSciences to focus on the development of accessories that target additional and new markets.

In the coming years, the Company expects the HUB platform to become the central workhorse in its PCT-based instrument line. Initial commercialization prior to 2014 of HUB units entailed installation in approximately 10 collaborator facilities. The first model under this product line is the HUB440, which weighs 55 pounds and provides up to 58,000 psi, and lists for roughly \$30,000.

*Newest Product Launches*

The Barocycler® HUB880

In March 2014, the Company released the second instrument in the HUB product line, the Barocycler® HUB880, which lists for roughly \$65,000. The HUB system is named after Dr. Wayne L. Hubbell, a distinguished professor of chemistry and biochemistry and the Jules Stein professor of ophthalmology at UCLA. Dr. Hubbell approached the Company in 2010 with a request for a device that would allow him to look at proteins in an EPR instrument under pressure, in order to study the structure of proteins as they change under pressure. This ability helps improve researchers' understanding of the structure and function of proteins, potentially improving the discovery process and providing new insights into such important areas as biomarker discovery and rational drug design. Dr. Hubbell helped sponsor the development of this technology and has worked closely with Pressure BioSciences throughout the development of its HUB instruments.

Under the guidance and funding of Dr. Hubbell, Pressure BioSciences has recently introduced a HUB880 model that can reach 100,000 psi. To the Company's knowledge, the HUB880 system is the first device to provide 100,000 psi pressure cycling in a convenient, table-top laboratory format. As a result, it could be applicable to an array of scientists whose work requires high-level control of cells and biomolecules, and who have no other method at present of achieving ultra-high pressure levels via a commercially available bench-top instrument.

The Barocycler HUB880 (shown in Figure 3 [page 7]) has an operating range of 1,000 psi to 100,000 psi, which for reference, is approximately 7,000 times greater than normal atmospheric pressure. The HUB880 can reach pressures sufficient to kill most pathogenic and food-borne bacteria, and could enable safe investigation of a number of innovative but yet-to-be-tried biological, chemical, material, and industrial sciences applications.

Figure 3  
BAROCYCLER HUB880



Fields-of-Use (Selected Examples)	Features and Benefits (Selected Examples)
Food Science	Ideal for high-pressure research
Microbiology	A USB-powered computer interface
Agriculture	Expandable with optional hardware and software
Structural Biology	Compact and light
Material and Chemical Sciences	Can interface with other instrumentation
Industrial	Safe and easy-to-use

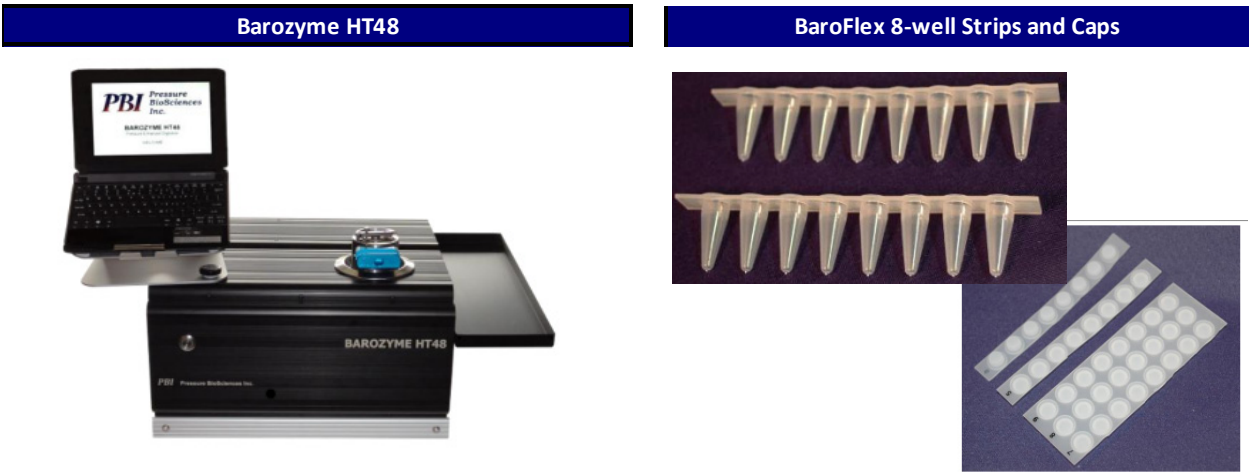
Source: Pressure BioSciences, Inc.

The Barozyme™ HT48

The Company's newest product to date, the Barozyme™ HT48, was introduced during the American Society for Mass Spectrometry's (ASMS) 62<sup>nd</sup> Annual Conference, which was held June 15-19, 2014. The Barozyme™ HT48 is a high-throughput system for the enhanced preparation of proteins for mass spectrometry analysis.

The bench-top Barozyme™ HT48, as shown in Figure 4, is a high-capacity, PCT-based instrument designed for accelerated enzymatic digestion of protein at high pressure, using an air-pressure-to-liquid-pressure intensifier system to reach 20,000 psi. The instrument is capable of processing up to 48 samples simultaneously using new and proprietary, single-use BaroFlex 8-well processing strips. According to the Company, the Barozyme™ HT48 can reduce the typical trypsin digestion times from hours to minutes.

Figure 4  
BAROZYME HT48 SYSTEM



Source: Pressure BioSciences, Inc.

The Barozyme™ HT48 automation-ready, high-throughput system allows the Company to further expand its target market, as it fulfills the needs of larger research and clinical diagnostics laboratories and companies. The current processing capabilities of Pressure BioSciences' existing Barocycler products provide capacity for one run, or up to a maximum of 48 samples, in a manual-handling format designed for small laboratories and individual scientists.

In addition, the BaroFlex strips were designed to the industry-standard micro-titer plate format, which the Company believes allows the new Barozyme™ HT48 system to integrate directly with the automated, standardized, high-throughput liquid handling robotic and analytical systems installed in biological research laboratories worldwide.

Pressure BioSciences believes that the Barozyme™ HT48 has the potential to fuel growth and increase revenues for existing and new PCT-based applications and products as well as to facilitate new strategic partnerships. In September 2014, the Company announced that it had completed the first phase of its commercialization plan for the Barozyme™ HT48, which included receiving all the parts required to build nine HT48 instruments and the commencement of manufacturing for this product line. Going forward, Pressure BioSciences expects to be able to release the first Barozyme™ HT48 instrument in October 2014, with additional units built and released at a rate of approximately one per week thereafter. As a result, commercial-grade Barozyme™ HT48 instruments and consumables are expected to be made available for evaluation by laboratories during fall 2014.

#### *Consumables and Other Products for Sample Preparation*

In addition to the Barocycler instruments, Pressure BioSciences markets a line of Shredder instruments for rapidly shredding or grinding bulky or particularly tough samples down to manageable sizes for further processing. The Shredder line is detailed on pages 29-31 of the Core Story of the base Executive Informational Overview® (EIO). The EIO was published on November 4, 2013, and is available from [www.crystalra.com](http://www.crystalra.com).

With a keen eye on the perennial “razor and razor blades” business model, Pressure BioSciences also sells many single-use, consumable products, including PULSE Tubes and MicroTubes to hold each sample being processed, as well as a variety of prepackaged sample preparation kits and reagents that provide additional specialized capabilities tailored to particular sample processing challenges. All of the consumables are designed to be used in conjunction with the Barocycler and Shredder products. The Company anticipates that these consumable products could eventually grow to become the leading revenue-generating item and profit center in its PCT products mix. Consumable products are described on pages 31-33 of the Core Story of the EIO.

#### **Enabling Platform Technology with Broad Applications**

Pressure BioSciences is initially developing PCT to improve sample preparation. The sample preparation market is among the fastest-growing segments of the life sciences industry. It was estimated at \$5.4 billion in 2013, with potential to more than double to \$11.5 billion in 2018 (Source: BCC Research, *Sample Preparation in Genomics, Proteomics, and Epigenomics: Global Markets*, September 2013). The Company estimates that 500,000 scientists in 80,000 laboratories globally perform sample preparation procedures. The use of PCT to prepare samples could contribute to the development of better therapeutics, diagnostics, and vaccines, as well as enable more accurate research into diseases and disorders, including leading causes of death like heart disease and cancer, and major chronic diseases like obesity, diabetes, and Alzheimer's disease.

Within the expansive sample preparation market, the Company is developing PCT for two key areas: (1) biomarker discovery, a key part of vaccine, diagnostic, and therapeutic R&D (detailed on pages 36-41 of the EIO); and (2) forensics, which may improve processing of DNA evidence and lead to higher arrest/conviction rates (pages 41-48 of the EIO). The ability for PCT to extract unique biomolecules that have potential to be important biomarkers has been studied by respected institutions and scientists, such as the FDA and the Harvard School of Public Health. Pressure BioSciences has partnered with several leading forensic institutions, including the Henry C. Lee Institute of Forensic Science, Florida International University's International Forensic Research Institute (IFRI), and the University of North Texas Health Science Center's Institute of Applied Genetics, to accelerate the development of its technology for this market.



Pressure BioSciences also plans to capitalize on its PCT platform's advantages for the creation of strategic R&D partnerships with companies and organizations involved in the design and commercialization of diagnostic and sample testing technical platforms. Recently, this strategy has included entering into an agreement with Parabase Genomics ([www.parabasegenomics.com](http://www.parabasegenomics.com)), as announced on July 22, 2014, that calls for Pressure BioSciences to develop a front-end, PCT-based, sample preparation method for use with Parabase's neonatal molecular diagnostics and confirmatory testing processes.

Parabase's testing platform, the LifeTime NewbornDx™, uses targeted next-generation sequencing to offer comprehensive test panels for diagnosing single-gene conditions in newborns, with an end goal of improving early diagnosis of genetic diseases and enhancing the standard of care in neonatal intensive care units (NICUs). Parabase's technology aims to replace hundreds of currently used single-gene-disorder tests with its sequencing service to simultaneously evaluate 350 genes representing genetic disorders in newborns.

Some additional potential markets for PCT include pathogen inactivation, anti-bioterror applications, protein purification, control of chemical reactions (particularly enzymatic reactions), immunodiagnosics, food safety, vaccine development, and DNA sequencing, including next-generation and whole-genome sequencing.

### **Study Data from Major Institutions Highlights Pressure BioSciences' PCT Platform Advantages**

The benefits of the adoption and use of the Company's technology was highlighted at ASMS's 62<sup>nd</sup> Annual Conference. During the June 2014 conference, PCT-based sample preparation methods were featured in eight presentations from six separate research groups, covering cancer, tissue biopsy, archival samples, and food-borne pathogen studies. Study data indicated that using Pressure BioSciences' patented PCT platform in the preparation of samples for analysis resulted in critically enabling quality and/or improved time or cost efficiency of test results.

These studies were conducted by the following groups: (1) ETH Zurich and the University of Zurich; (2) Laboratory Corporation of America (Lab Corp); (3) the U.S. Food and Drug Administration (FDA); (4) the University of Minnesota, Mayo Clinic, and the Karolinska Institutet; (5) Northeastern University; and (6) the Baltimore VA Medical Center, SAIC-Frederick, National Cancer Institute, and the Veteran's Health Administration.

### **Key Market Leaders Have Recognized the Benefits of PCT**

PCT systems have been used by approximately 150 customer sites and collaborators across a range of industries. Pressure BioSciences' strategic collaboration program allows researchers and their laboratory teams to lease a Barocycler under favorable financial terms for up to three months in exchange for collecting and sharing data on their diverse variety of applications for the PCT system. These lease relationships, together with the outright sales of the instruments, have led to over 100 publications in peer-reviewed journals as well as presentations at major industry events. The Company anticipates that this investment in strategic sales and collaborations will increase visibility, the number of PCT applications, and marketplace adoption of its PCT technology and products, as commercialization is accelerated.

As shown in Figure 5 (page 10), Pressure BioSciences' customers have included the FDA, the National Institutes of Health (NIH), U.S. Centers for Disease Control and Prevention (CDC), Federal Bureau of Investigation (FBI), and U.S. Department of Agriculture (USDA). Academic customers have included Harvard Medical School, Stanford University, and the University of California at Los Angeles (UCLA). As well, the Company has diagnostic, biotechnology, and pharmaceutical customers, including Amgen, Inc. (AMGN-NASDAQ), Biogen Idec Inc. (BIIB-NASDAQ), Bristol-Myers Squibb Co. (BMY-NYSE), Eli Lilly & Co. (LLY-NYSE), and Merck & Co., Inc. (MRK-NYSE). Many of these entities have performed and published important demonstrations and studies that were crucially enabled by PCT systems.

Figure 5

A SELECTION OF KEY CUSTOMERS

• Amgen, Inc.	• U.S. Centers for Disease Control and Prevention	• University of California, Los Angeles
• Biogen Idec Inc.	• U.S. Army Medical Research Institute of Infectious Diseases	• University of California, San Diego
• Eli Lilly & Co.	• Dana-Farber Cancer Institute	• University of California, Davis
• Novartis AG	• Sanford-Burnham Medical Research Institute	• Lawrence Livermore National Laboratory
• Monsanto Company	• Thermo Fisher Scientific Inc.	• Stanford University
• Bristol-Myers Squibb Co.	• Target Discovery, Inc.	• University of North Texas
• Merck & Co., Inc.	• U.S. Department of Agriculture	• Mississippi State University
• Centocor Biotech, Inc. (now Janssen Biotech, Inc.)	• Battelle Memorial Institute	• Montana State University
• Takeda Pharmaceutical Company Ltd.	• Harvard Medical School	• Lawrence Berkeley National Laboratory
• Momenta Pharmaceuticals Inc.	• Harvard School of Public Health	• University of Kentucky
• U.S. Army	• Rockefeller University	• Florida International University
• U.S. Federal Bureau of Investigation	• University of New Hampshire	• University of Massachusetts Boston
• U.S. Food and Drug Administration	• Barnett Institute (Northeastern University)	
• U.S. National Institutes of Health		
• Armed Forces Institute of Pathology		

Source: Pressure BioSciences, Inc.

### Continued Innovation Using PCT: Product Pipeline

Pressure BioSciences strives to continually innovate and improve upon its existing technologies. An estimated \$40 million has been invested in developing the PCT platform, including approximately \$2 million in grant funding through the U.S. government's Small Business Innovation Research (SBIR) program as well as an \$850,000 contract from the U.S. Department of Defense (DOD) to develop a PCT-based system that provides for the simultaneous inactivation and processing of pathogenic organisms (specifically viruses and bacteria). To Pressure BioSciences' knowledge, PCT is the only technology shown to completely kill anthrax while still leaving the sample in a testable state.

Additional products in development include specialized systems for protein extraction and digestion, as summarized below and detailed on pages 49-53 of the EIO.

- *The Barocycler FFPE Protein Extraction Instrument System.* Researchers use various techniques to preserve cancer and other tissues for subsequent pathology evaluation. The most commonly used method is formalin-fixation followed by paraffin-embedding ("FFPE"). FFPE tissues are the most widely available specimens for retrospective clinical studies of disease mechanisms. It is estimated that hundreds of millions of FFPE specimens have been archived globally (Source: Frost and Sullivan, June 21, 2012). Pressure BioSciences is developing a modified Barocycler system to improve the extraction of proteins from FFPE samples using a combination of pressure cycling, high temperatures, and certain reagents.
- *XstreamPCT™ HPLC Digestion Module.* Pressure BioSciences is developing a PCT-based sample preparation method for high-performance liquid chromatography (HPLC) platforms. The Company's goal is to develop instruments that can be directly integrated with HPLC and mass spectrometry for the complete processing of proteins, from sample preparation to final result. The first product under this platform, the XstreamPCT™ is designed for automated, in-line, on-demand PCT-enhanced protein digestion.

## Corporate Information

Pressure BioSciences is a spin-off of Boston Biomedica Inc., which was founded in 1978. Richard T. Schumacher founded Boston Biomedica during his tenure as a researcher at the Center for Blood Research (CBR), a laboratory affiliated with Harvard Medical School. He left CBR in 1985 and built Boston Biomedica into a global quality control company for infectious disease testing. In 1996, the company went public on NASDAQ and grew to over 300 employees and thousands of customer laboratories across 60 countries. In September 2004, this entity completed the sale of its core business units and began to focus exclusively on development of the PCT platform. Following this change in strategy, the Company's legal name was changed to Pressure BioSciences, Inc., which is now traded on the OTCQB tier of the OTC Marketplace under the ticker symbol "PBIO." The Company leases corporate offices in South Easton, Massachusetts. In addition to serving as Pressure BioSciences' corporate headquarters, these facilities support the manufacture and assembly of the Barocycler HUB440, the Shredder SG3, and MicroTubes. Pressure BioSciences also leases laboratory and office space at the University of Massachusetts in Boston, where it performs R&D activities. At present, the Company employs nine full-time and three part-time individuals.

## Key Points to Consider

- Pressure BioSciences, Inc. is focused on the development and commercialization of proprietary laboratory instruments and consumable products.
- The Company's product portfolio is based on its patented pressure cycling technology (PCT), which is able to create and release low to high levels of hydrostatic pressure in a safe and controlled manner. Pressure BioSciences has 24 issued and multiple pending patents globally that protect various aspects and applications of PCT.
- The PCT platform is a highly versatile and adaptable technology that can be used across many different industries, including the life sciences, pharmaceutical, biotechnology, forensics, food, anti-bioterror, agriculture, automotive, and oil and gas industries, among others. While Pressure BioSciences believes that its products have potential in each of these markets, the Company is currently focusing its product development efforts on biological sample preparation for life sciences research.
  - The sample preparation market for life sciences research is forecast to more than double to \$11.5 billion by 2018, driven by new technologies and growing demand.
- Pressure BioSciences' bench-top Barocycler® laboratory instruments employ high pressure to prepare samples for downstream analysis and testing. These PCT-based systems have been shown to extract higher quality and/or quantities of proteins, nucleic acids (DNA/RNA), and small molecules from samples versus competitive products, which could have positive implications in biomarker discovery, forensics, and many other areas of life science research.
  - The Company's customers include large pharmaceutical and biotechnology companies (e.g., Bristol-Myers, Amgen, and Merck), U.S. government agencies (FBI, FDA, NIH, USDA), and universities (Harvard, Stanford, and UCLA). Pressure BioSciences reported that it had installed roughly 250 PCT systems at approximately 150 customer sites as of May 2014.
  - Pressure BioSciences' next-generation PCT platform is the HUB family of Barocyclers. The goal of the HUB is to create a modular system that can grow and adapt to a laboratory's needs, with users purchasing accessories as needed to expand the functionality of their HUB unit. A HUB880 product capable of reaching 100,000 psi in a safe and controlled manner was launched in March 2014.
  - In June 2014, the Company introduced its newest offering, the Barozyme™ HT48, a high-throughput, automated system capable of processing up to 48 samples simultaneously. As of September 2014, the first phase of commercialization of the Barozyme™ HT48 had been completed, with production underway. Pressure BioSciences expects to release the first Barozyme™ unit for evaluation in October 2014, followed by up to eight more units thereafter in fall 2014.
- Pressure BioSciences has gained exposure to corporate, government, and university laboratories through its strategic collaboration program, which allows researchers to temporarily install a Barocycler instrument in their laboratory in exchange for a reasonable financial commitment and the collection of independent data on a certain subject. The program also exposes the technology to potential customers as well as specific research scientists who the Company believes could have a positive impact on market acceptance of PCT.
  - Data collected through this program has helped validate existing applications for PCT and establish potential in new applications. As well, much of this research has resulted in peer-reviewed publications and presentations at scientific meetings. To date, over 100 papers have been published on PCT.

- During the ASMS 62<sup>nd</sup> Annual Conference, PCT-based sample preparation methods were featured in eight presentations from six separate research groups, with results indicating that the use of the Company's PCT platform resulted in critically enabling quality and/or improved time or cost efficiency of test results.
- Pressure BioSciences' portfolio also includes Shredder instruments (for rapidly shredding or grinding samples), sample preparation kits and reagents, and related consumable products (e.g., sample tubes).
- At June 30, 2014, Pressure BioSciences held \$9,369 in cash and cash equivalents. On July 1, 2014, the Company received payment of \$200,000 under the fourth tranche of its private placement.



## Risks and Disclosures

This Quarterly Update has been prepared by Pressure BioSciences, Inc. (“Pressure BioSciences” or “the Company”) with the assistance of Crystal Research Associates, LLC (“CRA”) based upon information provided by the Company. CRA has not independently verified such information. Some of the information in this Update relates to future events or future business and financial performance. Such statements constitute forward-looking information within the meaning of the Private Securities Litigation Act of 1995. Such statements can only be predictions and the actual events or results may differ from those discussed due to the risks described in Pressure BioSciences’ statements on Forms 10-K, 10-Q, and 8-K, as well as other forms filed from time to time.

The content of this report with respect to Pressure BioSciences has been compiled primarily from information available to the public released by the Company through news releases, Annual Reports, and U.S. Securities and Exchange Commission (SEC) filings. Pressure BioSciences is solely responsible for the accuracy of this information. Information as to other companies has been prepared from publicly available information and has not been independently verified by Pressure BioSciences or CRA. Certain summaries of activities and outcomes have been condensed to aid the reader in gaining a general understanding. CRA assumes no responsibility to update the information contained in this report. In addition, CRA has been compensated by the Company in cash of thirty-nine thousand, five hundred U.S. dollars and one hundred thousand warrants for its services in creating the base Executive Informational Overview® (EIO) and for Updates. For more complete information about the risks involved in an investment in the Company, please see Pressure BioSciences’ most recently filed Annual Report on Form 10-K for the year ended December 31, 2013.

Investors should carefully consider risks and information about Pressure BioSciences’ business. Investors should not interpret the order in which considerations are presented in the Company’s filings as an indication of their relative importance. The risks and uncertainties overviewed in Pressure BioSciences’ Form 10-K and in Crystal Research Associates’ base EIO are not the only risks that the Company faces. Additional risks and uncertainties not presently known to Pressure BioSciences or that it currently believes to be immaterial may also adversely affect its business. If any of such risks and uncertainties develops into an actual event, Pressure BioSciences’ business, financial condition, and results of operations could be materially adversely affected, and the trading price of the Company’s shares could decline.

This report is published solely for information purposes and is not to be construed as an offer to sell or the solicitation of an offer to buy any security in any state. Past performance does not guarantee future performance. Additional information about Pressure BioSciences and its public filings, as well as copies of this report, can be obtained by calling (508) 230-1828.

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*Facts Without Fiction*

**QUARTERLY UPDATE: September 29, 2014**

**About Our Firm:** For the past decade, Crystal Research Associates, LLC ([www.crystalra.com](http://www.crystalra.com)) has successfully articulated the exceptional stories of small- and mid-cap companies to the Wall Street investor community. Our methods are well-established and diverse, from compiling and disseminating objective, factual information for both institutional and retail investor audiences to capitalizing on our expansive line of targeted distribution channels, which include industry-leading financial data and information providers. Our distribution efforts are accompanied by the use of prominent social media channels and by strategic and targeted appearances on national news programs and print media.

Crystal Research Associates is led by Wall Street veterans, Jeffrey Kraws and Karen Goldfarb. Together, Kraws and Goldfarb have built a unique business model, capitalizing on decades of experience as an award-winning sell-side analyst team to produce institutional-quality industry and market research in a manner that is easily understood by investors and consumers. Our firm's approach has been proven successful over the years as our products are published and available on Bloomberg, Thomson Reuters/First Call, Capital IQ, FactSet, Yahoo! Finance, and scores of other popular forums.

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