Zacks Small-Cap Research

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Pressure BioSciences Inc. (PBIO-NASDAQ)

PBIO: Unique sample preparation technology with broad applications-- Outperform

Current Recommendation	**Outperform**
Prior Recommendation	N/A
Date of Last Change	08/10/2010
Current Price (04/04/11)	$1.07
Twelve- Month Target Price	**$5.00**

OUTLOOK

Pressure BioSciences (PBI) is a research products and services provider for the life science industry. We are impressed and optimistic about the Company's novel, enabling platform technology pressure cycling technology (PCT) which has competitive advantages over existing technologies in the sample preparation market. PCT is increasingly gaining recognition by research labs and user adoption will accelerate in the coming years due to the focused marketing efforts by the Company. We view the current share price as undervalued and our twelve-month price target is $5.00.

SUMMARY DATA

52-Week High	**$1.93**
52-Week Low	**$1.11**
One-Year Return (%)	**4.83**
Beta	**2.37**
Average Daily Volume (sh)	**18,483**
Shares Outstanding (mil)	**6.2**
Market Capitalization ($mil)	**$6.6**
Short Interest Ratio (days)	**0.84**
Institutional Ownership (%)	**3**
Insider Ownership (%)	**41**
Annual Cash Dividend	**$0.00**
Dividend Yield (%)	**0.00**
5-Yr. Historical Growth Rates	
Sales (%)	**62.9**
Earnings Per Share (%)	**N/A**
Dividend (%)	**N/A**
P/E using TTM EPS	**N/A**
P/E using 2010 Estimate	**N/A**
P/E using 2011 Estimate	**N/A**
Zacks Rank	**3**

Risk Level	**High,**
Type of Stock	**Small-Value**
Industry	**Med Instruments**
Zacks Rank in Industry	**16 of 50**

ZACKS ESTIMATES

Revenue
(In millions of $)

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2009	0.31 A	0.27 A	0.32 A	0.35 A	1.24 A
2010	0.29 A	0.40 A	0.37 A	0.28 A	1.34 A
2011	0.31 E	0.33 E	0.35 E	0.37 E	1.36 E
2012					3.00 E

Earnings per Share
(EPS is operating earnings before non-recurring items)

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2009	-$0.33 A	-$0.39 A	-$0.35 A	-$0.35 A	-$1.42 A
2010	-$0.49 A	-$0.35 A	-$0.26 A	-$0.28 A	-$1.35 A
2011	-$0.32 E	-$0.31 E	-$0.34 E	-$0.33 E	-$1.30 E
2012					-$1.21 E

Zacks Projected EPS Growth Rate - Next 4 Years % **N/A**

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WHAT'S NEW

Pressure BioSciences Reports Fiscal Year Results

On March 31, PBIO reported financial results for the year ended December 31, 2010.

Total revenue was $1.34 million in the year ended December 31, 2010 as compared to $1.24 million in the prior year, an increase of 7.6%.

Revenue from the sale of PCT products and services was $877,567 in 2010 as compared to $831,602 in 2009, an increase of 5.5%. Increased rental income, higher average selling prices, and supporting equipment sales offset the lower number of PCT installations in the current period. The Company generated consumable sales of $104,924 for the year ended December 31, 2010 compared to $70,343 during the prior year, an increase of $34,581 or 50%. In fiscal year 2010, PBIO installed 50 PCT systems compared to 54 in 2009.

The cost of PCT products and services was $376,514 for the year ended December 31, 2010, compared to $402,340 in 2009. Gross profit margin on PCT products and services increased to 57% for the year ended December 31, 2010, as compared to 52% for 2009. The increase in the gross profit margin on PCT products and services was due primarily to sales of Barocycler units to international distributors at distributor discounted prices in the prior year and increased rental rates this year on Barocycler leases.

Operating loss was $3.4 million for the year ended December 31, 2010 as compared to $3.2 million for the comparable period in 2009, an increase of $202,186 or 6%.

Net loss applicable to common shareholders was $3.7 million or $(1.36) per share, as compared to $3.3 million or $(1.42) per share in 2009.

Key Takeaways from the Financial Results

Although product revenue was a little below our estimates, it still achieved 5.5% increase year on year. We expect quarterly revenue for product sales will still fluctuate. But we are more optimistic for the growth of consumables in the future.

As we mentioned before, PBI is still in the early stage of commercialization of its PCT technology. It takes time for research labs to recognize PCT's superiority and advantage. Therefore, initial slow sales are understandable and acceptable. We believe sales of the equipment will continue to vary in the short term. But in the long run, we expect to see a relatively stable growth of PCT equipments year over year.

On the other hand, we have been very impressed by the growth of consumables. In fiscal year 2010, PBIO generated consumable sales of $104,924 compared to $70,343 during the prior year, an increase of $34,581 or 50%. We expect the trend will continue for consumables in the coming quarters. This growth is very important to the Company's long term sustainable growth in our view. We remind investors consumables are recurring revenue source to the Company which are associated with the installation of PCT equipments. When more and more equipments are installed, more consumables will be used. The numbers of installed equipments will eventually go down, but the use of consumables will increase each quarter as the equipment base becomes larger. Although currently, revenue from consumables accounts for only 12% of total PCT related revenue, this number will become larger going forward.

PBIO expects the number of units installed will increase in future periods as the Company continues to gain commercial awareness of its technology, although it may experience some delays in customer purchases due to current economic conditions in the United States and globally. The Company continues to expect that some portion of future installations will be for the smaller, lower priced, Barocycler NEP2320 model and some will be placed under lease or short-term rental

agreements. Therefore, the average revenue per installation may continue to fluctuate from period to period. When the Company continues to expand the installed base of Barocycler instruments in the field, more revenue is expected from the sale of consumable products and extended service contracts.

New Products Launches are on the Horizon

On February 7, 2011, Pressure BioSciences, Inc. (PBIO) announced that it has unveiled **four key instruments** in its 2011-2013 product pipeline at the annual meeting of the Association for Mass Spectrometry Applications to the Clinical Lab (MSACL) held from Feb 5 to Feb 9 at San Diego, CA. The MSACL meeting is important to mass spectrometry manufacturers since MSACL is an active and influential supporter of the development of new mass spectrometry applications for clinical medicine, including tests for the diagnosis, treatment, and prognosis of clinical disorders. The MSACL meeting is attended by physicians, scientists, and other healthcare professionals, and therefore is an important stage and opportunity for major mass spectrometry manufacturer in the U.S. to show their new products.

The four new instruments unveiled by PBIO include:

Barocycler HUB440: a manual or computer controlled, compact, portable, and versatile high pressure generator for multiple bioscience applications. Estimated release: Q3 2011.

Barocycler FFPE Protein Extraction Service: a service offering the enhanced extraction of proteins from formalin-fixed, paraffin-embedded (FFPE) samples using a modified Barocycler instrument that combines the advantages of pressure cycling, high temperature, and certain reagents. Estimated release: 2012.

XstreamPCT(TM) HPLC Digestion Module: for automated, in-line, on-demand PCT-enhanced protein digestion; the first module in PBIO's PCT-based HPLC platform. Estimated release: 2013.

Barocycler HT Multiwell (48-384): for high throughput, PCT-enhanced biomolecule extraction/accelerated enzymatic digestion; process 48 - 384 samples. Estimated release: 2013.

The Company has demonstrated proof-of-concept. Data has also been generated and patents have been filed on these new products. In addition, ten presentations related to the Company's current PCT-based Barocycler product line are scheduled to be presented at the meeting. These presentations are expected to highlight the advantages of PBIO's current products when used in research related to mitochondria, cancer, and Klotho, a potential biomarker for a number of significant human disorders, including chronic renal disease, osteoporosis, and Alzheimer's disease.

The four new instruments will offer key advantages to current products in the mass spectrometry area. The Company will focus significant resources to help ensure the remaining development and subsequent release of these products will proceed as efficiently and rapidly as possible. PBIO also plans to grow its in-house sales and marketing capabilities and staff, and to find strategic partners to help it rapidly take advantage of this opportunity.

We believe the four key instruments unveiled at MSACL by PBIO represent an important addition to the Company's existing pressure cycling technology (PCT) platform. These new products will make a significant impact in the way that research scientists prepare their samples for analysis, particularly scientists working in the mass spectrometry market which is a multi-billion dollar market.

PBIO's plan is to becoming a major supplier of sample preparation instruments and consumables to the large and growing mass spectrometry market. In this regard, we are very pleased to see that the Company has put a lot of efforts to come up with new products and services and has generated results. The successful launch of these new products will boost the Company's revenue in the coming years.

EXECUTIVE SUMMARY

- We maintain our Outperform rating for Pressure BioSciences Inc. (PBI) and reiterate our twelve-month price target to $5.00 per share based on the Company's fundamentals.

- PBI operates in the multi-billon dollar but underserved research products and services market with a current focus on sample preparation for life science research. The research products and services market is a rapidly growing market with a large and immediate need for better technology, which we expect will create a huge opportunity for PBI to grow its business in the coming years.

- We are impressed with and optimistic about PBI's patented, novel, enabling platform technology: pressure cycling technology (PCT). We believe the Company's PCT Sample Preparation System (PCT SPS) has competitive advantages over existing technologies in the sample preparation market. The Company continues to make progress in pushing the technology from the conventional use in life science labs into new application areas.

- Based upon the PCT platform, PBI has established a broad product portfolio for the sample preparation market. The instruments and consumables, a "razor and blade" model, that form its PCT Sample Preparation System (PCT SPS) are now increasingly being recognized by many research labs as a novel and paradigm shifting sample preparation method due to PBI's focused marketing efforts. We believe uptake of the PCT SPS will accelerate in the coming years.

- PBI has a well clarified growth strategy in place. Short term focus will be the sample preparation market. Longer term, the Company plans to expand into other markets, such as pathogen inactivation, protein purification, control of chemical reactions, and immunodiagnostics. International expansion is also planed. We believe this strategy is workable and will provide sustainable growth for the Company.

- Current price is under valued compared to its peers in our view. We encourage investors to accumulate PBI's shares at the current level.

- Risks related to our call include a cash burn concern and competition in the research products and services market.

OVERVIEW

Pressure BioSciences Inc. (PBI) is a life sciences company engaged in the research, development and commercialization of a novel, enabling platform technology called **pressure cycling technology (PCT).**

PCT uses cycles of hydrostatic pressure between ambient and ultra-high levels (≥35,000 psi) to control bio-molecular interactions. The current product portfolio includes **Barocyclers**, PCT based instruments, and **consumables,** which include PULSE (Pressure Used to Lyse Samples for Extraction) Tubes as well as application specific kits (which include consumable products and reagents). The instruments and the consumables together make up the PCT Sample Preparation System (**PCT SPS**). The system follows the highly successful and profitable "razor and blade" business model.

The Company's targeted market is **research products and services** for the life science industry. This market is comprised of academic research institutions (both private and government-sponsored), biotechnology and pharmaceutical companies, and other public and private laboratories. Currently, the Company provides PCT-based **sample preparation products** for genomic, proteomic, and small molecule studies. Pressure BioSciences also plans to pursue the further development and

commercialization of its PCT platform in other life sciences applications such as pathogen inactivation, protein purification, control of chemical reactions, and vaccine production, which could include working with various strategic partners that have greater scientific, and regulatory, expertise in the respective applications.

Pressure BioSciences was formerly known as Boston Biomedica Inc. and changed its name to Pressure BioSciences Inc. in 2004 after Boston Biomedica's core business units were sold. The new company commenced operations as Pressure BioSciences in February 2005 and has been focused exclusively on the development and commercialization of pressure cycling technology. The Company was founded in 1978 and is headquartered in South Easton, Massachusetts. PBI has about 13 employees.

INVESTMENT THESES

Unique and Superior Pressure Cycling Technology for Sample Preparation

Since PBI began operations as Pressure BioSciences in February 2005, the Company has focused substantially all of its research and development and commercialization efforts on sample preparation for genomic, proteomic, and small molecule studies. Pressure BioSciences' major business for **research products and services** market is based on a unique and superior sample preparation technology: pressure cycling technology (**PCT**). Its PCT Sample Preparation System (**PCT SPS**) consists of internally developed instruments and single-use consumables.

The Company's technology platform is based on high hydrostatic pressure technology, a Nobel Prize winning technology. Percy Bridgman from Harvard University won the 1946 Nobel Prize for his innovative work on the physics of substances under high hydrostatic pressure. Based on Percy's concept, Pressure BioScience established a patented, novel, enabling platform PCT technology with broad applicability in life science research. The mechanisms of action of the PCT SPS differ significantly from other existing sample preparation techniques. Specifically, cell disruption, or lysis, occurs when samples are subjected to well-controlled, alternating cycles of ambient and ultra-high pressure of up to 35,000 psi in the hydrostatic reaction chamber of either of the two Barocycler instruments. This use of rapid and repeated alternating cycles of hydrostatic pressure at controlled temperatures controls the interactions of biomolecules and induces cell lysis for extraction of cell components. There are two components of Pressure BioSciences' PCT Sample Preparation System. The first is the pressure-generating instrument known as the **Barocycler**, which subjects a sample to cycles of pressure from ambient to ultra-high levels and back to ambient in a precisely controlled manner. The second component of the PCT SPS is the specially designed, single-use processing containers, **PULSE Tubes**, which contain the laboratory sample and appropriate processing reagents.

The Company's PCT platform employs a unique approach that has the potential for broad applications in a number of established and emerging life sciences areas, including:

- sample preparation for genomic, proteomic, and small molecule studies
- pathogen inactivation
- protein purification
- control of chemical (primarily enzymatic) reactions; and
- immunodiagnostics

The PCT Sample Preparation System has the following features & benefits:

- **Safe** - PULSE Tubes offer a closed system to reduce sample handling and minimize exposure to pathogens/toxins
- **Fast** - Nucleic acids, small molecules, and proteins are released from a wide variety of cells and tissues in minutes

- **Powerful** - Up to 35,000 psi can be used to lyse samples and release excellent quality and quantity of bio-molecules
- **Efficient** - Up to three samples can be extracted simultaneously, in minutes
- **Versatile** - Animal, plant, and microbial cells and tissues, particularly those considered "hard-to-extract", can be processed; either standard or user defined protocols can be used
- **Reproducible** - Computer controlled protocols mean consistent sample extraction each time, every time

Sample preparation is a significant bottleneck to discoveries in genomic and proteomic research. There are several incumbent technologies that offer scientists varying degrees of success in sample preparation, but there are a number of significant issues related to the use of currently existing methods, including: complexity, sample containment, cross-contamination, shearing of bio-molecules of interest, and limited applicability to different sample types, ease-of-use and reproducibility.

The PCT Sample Preparation System is a novel and enabling system for genomic, proteomic, and small molecule sample preparation that has been shown to offer a number of advantages over other methods of sample preparation. For several years, PBI scientists have been performing comparative studies with thousands of samples to better understand how pressure cycling technology compares with these competitive technologies.

In addition to above mentioned features, the PCT Sample Preparation System offers a number of other significant advantages over other sample preparation techniques. Below is an illustration of how pressure cycling technology compares to several existing, widely used technologies across the key attributes that were assessed (with a "x" denoting a negative attribute, and a "√" denoting a positive attribute, and "Min" denoting a minimally sheared product).

Table 1: PCT SPS outperforms others

Key Attributes	Incumbent Technologies					PCT
	Sonication	Bead Beating	Tissue Homogenizer	Mortar Pestle	French Press	
Closed System	x	√	x	x	x	√
Storage, Transport	x	√	x	x	x	√
Versatility	x	x	x	x	x	√
Reproducibility	x	x	x	x	x	√
Efficiency	x	x/√	x	x	x	√
Shearing Molecules	Yes	Yes	Yes	Min	Yes	Min

Source: company filing and Zacks Investment Research

The Niche Market, Rather Large but Underserved

PBI is currently targeting the **research products and services** market. Since February 2005, PBI has focused substantially all of its research & development and commercialization efforts on **sample preparation** for genomic, proteomic, 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 materials within plant and animal cells and tissues.

The research products and services market is a multi-billion dollar market. Sales from Life Technologies Corp (formerly known as Invitrogen) alone were $3.2 billion in 2009 and revenue from Qiagen NV also crossed the $1 billion mark in 2009 and will record double digit growth in the next few years. The market is still growing rapidly, although there have been some negative events developing in the life science industry in recent years such as the restructuring and consolidation in pharmaceutical/biotech industry and reduction of government research grant for medical research in the US. On the other hand, the downsize of research spending in the US has been offset by increased research spending in other parts of the world especially in emerging markets such as in China and India. As a result, the market has attracted many players like Qiagen, Life Technologies and Affymetrix.

Research laboratories were previously using a “home brew” batch procedure for sample preparation before the process was greatly simplified by Qiagen and other commercial companies. Pressure BioSciences elected to initially focus its resources on the market of genomic, proteomic, and small molecule sample preparation because sample preparation:

- is a rapidly 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 compatible with its technical core competency; and
- is the area in which the Company has strong patent protection.

We think the Company’s Barocycler instrumentations and PCT-dependent 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, and small molecules from a wide variety of plant and animal cells and tissues.

PBI’s customers include researchers at academic laboratories, government agencies, and biotechnology and pharmaceutical research facilities. In the future, the company plans to further expand PCT applications beyond its current focus area of genomic, proteomic and small molecule sample preparation and expand its customer base to include hospitals, reference laboratories, blood banks and transfusion centers, plasma collection centers, pharmaceutical manufacturing plants, and other sites involved in specific applications that can benefit with the PCT platform. International expansion is also important to boost its revenue base and sustain growth in the long run.

One of the Company’s targeted markets in the sample preparation market is **Mass Spectrometry**. Mass spectrometry is one of the most powerful laboratory tools used today, and is frequently used by research scientists to study proteins and nucleic acids (DNA and RNA). It is playing an increasingly important role in the analysis of biological samples in life sciences research. A number of important companies and research laboratories in this market are currently PBI’s customers, or are in the process of evaluating its technology for use in their laboratories. PBI is focusing primarily on the application of PCT-enhanced protein digestion and integral membrane extraction for mass spectrometry and other clear advantages of PCT in this market.

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 (DNA and/or RNA), proteins, or small molecules from 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 the key part of sample preparation. PBI’s current commercialization efforts emphasize that pressure cycling technology provides a superior solution to sample extraction compared to other available technologies or procedures, and can thus significantly

improve the quality of sample preparation. Indeed, because virtually all aspects of the sample preparation can be controlled, we believe that the PBI solution may well be the new "**standard**" of sample preparation for not only the Mass Spectrometry market, but many other markets where this exquisite level of control is necessary.

This is where the company's business opportunity lies. PCT is an enabling platform technology based on a bio-physical process that had not previously been used to control bio-molecular interactions. Although PBI's currently targeted market is sample preparation, research studies so far have demonstrated that PCT can be used both within and **outside the sample preparation market.**

In addition to genomic, proteomic and small molecule sample preparation, PCT is potentially beneficial in a number of other areas of the life sciences, including pathogen inactivation, protein purification, control of chemical (particularly enzymatic) reactions, and immunodiagnostics. We believe the Company will target these markets after it has sufficiently penetrated the sample preparation market. The penetration of these new markets will further boost the Company's top line and provide sustainable growth for the company.

Ever Expanding Product/Service Portfolio

PBI's 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 technologies. PBI's products consist of pressure-generating instruments and consumables used with the instruments.

Barocycler Instrumentation

PBI's key instruments, the **Barocycler NEP3229** and **Barocycler NEP2320**, use cycles of high hydrostatic pressure (from ambient to very high levels) to quickly and efficiently break up the cellular structures of a specimen to release nucleic acids, proteins, lipids and small molecules from a specimen into consumable processing container, referred to as PULSE Tubes.

Barocycler NEP3229 is a self-contained, high-pressure laboratory instrument generating up to 35,000 psi, designed to fit on a bench top, inside a biological safety cabinet, or on the shelf of a cold room. The Barocycler NEP3229 is capable of processing up to three samples simultaneously using specially designed, single-use PULSE Tubes. The Barocycler NEP3229 has an external chiller hook-up, automatic fill and dispense valves, and an integrated microprocessor with programmable logic controller accessed by keypad.

Barocycler NEP2320 is a smaller and more compact version of the NEP3229 and provides many of the same pressure cycling technology advantages as the larger instrument. The NEP2320 quickly and efficiently processes one sample at a time and is designed to use a minimum amount of laboratory bench space. The NEP2320 can be easily attached by an air hose to a typical 85 psi air compressor found in most scientific laboratories, to many consumer-sold portable compressors, or even to bottled gas. This instrument is currently being used as a demonstration instrument and is being marketed as a second instrument alternative for the PCT SPS.

The PCT MicroTube Adapter Kit includes an ergonomically designed, space-saving Workstation, PCT MicroTubes and MicroCaps, and specialized tools to enable the user to process up to forty-eight samples simultaneously in the Company's primary product, the PCT SPS, as compared to three PULSE Tubes with the Barocycler NEP3229.

The PCT Shredder is designed to help research scientists safely, rapidly, and conveniently disrupt tough samples - such as ticks, muscle, and seeds, that require homogenization prior to PCT or other sample preparation methods. The PCT Shredder uses a similar PULSE Tube as the PCT SPS, and allows

scientists to homogenize tough samples prior to extraction with the PCT SPS, but without the need to transfer the sample into a second processing container between steps.

Consumable Products

PULSE Tubes (FT500) are specially-designed, plastic, single-use, processing container with two chambers separated by a small lysis disk with about sixty small holes. PULSE Tubes transmit the power of PCT from the Barocycler instrument to the sample. In sample extraction, the specimen is placed on the Lysis Disk, buffers are added to the PULSE tube, the PULSE Tube is capped and placed in the pressure chamber of the Barocycler instrument, pressure chamber fluid is added, and pressurization begins. As pressure increases, a small moveable piston (the Ram) pushes the specimen from the top (sample) chamber, through the Lysis Disk and into the bottom (fluid retention) chamber. When pressure is released, the sample (now partially homogenized) is pulled back through the Lysis Disk by the receding Ram. The combination of physical passage through the Lysis Disk, rapid pressure changes, and other biophysical mechanisms related to cycled pressure break up the cellular structures of the specimen to quickly and efficiently release nucleic acids, proteins, lipids, and small molecules.

Non-Disk PULSE Tubes (FT500-ND) are similar to the FT500 in look and feel, except there is no Lysis Disk separating the body of the processing container into two chambers. The design change was based on strong market demand for a new PCT-dependent consumable for the rapid and reproducible processing of solutions and suspensions that do not require partial homogenization by passage through a Lysis Disk, and for a consumable that could accept smaller sample volumes. The FT500-ND offers variable sample volumes (5x the range of the existing FT500).

ProteoSolve-LRS (ProteoSolve for Lipid Rich Samples) is a PCT-dependent method for the extraction of proteins from lipid-rich samples, including adipose and brain tissues, organelles, and membrane preparations. Proteomic analysis of these types of samples is widely used in the study of diabetes, cancer, ALS, heart disease, and a number of other serious human disorders related to obesity. This PCT-dependent method of protein extraction from lipid-rich samples offers significant advantages over current extraction techniques, primarily due to the ability to use certain organic solvents instead of harsh detergents in the extraction process. Harsh detergents are known to compromise the integrity of many proteins; therefore the use of these detergents requires a very careful and time consuming removal process. ProteoSolve-LRS includes 12 specially-designed PULSE Tubes, certain organic solvents, and other reagents, to enhance the extraction of proteins from lipid-rich samples.

ProteoSolve-SB (ProteoSolve for Systems Biology) is a PCT-dependent method for the simultaneous extraction, isolation, and fractionation of nucleic acids (DNA and RNA), proteins, and lipids from animal and plant samples routinely used in laboratory research. This kit contains proprietary reagents and consumable processing containers (PULSE Tubes), and is intended to be used with the company's PCT Sample Preparation System. The kit is based on the unique approach to a "systems biology" sample preparation method that was first unveiled during early 2008.

ProteoSolve-CE (ProteoSolve for Conventional Extraction) is a PCT-dependent kit for the extraction of proteins from a variety of samples using optimized detergent-based reagent system compatible with two-dimensional electrophoresis or two-dimensional chromatographic separation for proteomic analysis. The kit contains all of the reagents necessary for the extraction of either denatured or non-denatured proteins, which can then be used for the analysis of protein structure and function.

Company Services

Extended Service Contracts: PBI offers extended service contracts on its laboratory instrumentation to all 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. The company offers one-year and four-year extended service contracts to customers who

purchase Barocycler instruments. These are often high-margin contracts that we believe will add significantly to the bottom-line at PBI in the future.

Fee-for-Service: PBI will occasionally perform PCT-based services on a fee-for-service basis. The Company may enter into these types of arrangements if the customer has a high likelihood of purchasing a PCT Sample Preparation System or if the customer will publish or present results of the work performed in scientific journals or in scientific meetings.

These products and services have helped, and will continue to help, drive the adoption of the PCT platform within the life science industry. We believe that PBI will continue to develop new PCT-based, market-driven products. As penetration for the company's products and services grow; PBI will begin to approach and achieve profitability. This is a significant opportunity for shareholders in our view.

An Well Clarified Growth Strategy is in Place

In the short run, PBI's focus is to commercialize PCT in the area of sample preparation for genomic, proteomic, and small molecule studies. To support this current strategy, the Company's primary focus is the execution of its commercialization plan for its PCT platform in sample preparation. The Company remains focused on projects that represent near-term revenue opportunities. Since the key source of the Company's revenues are based upon its Barocyclers and consumables associated with the use of the Barocycler instruments, therefore, the Company continues to focus on increasing the number of installed Barocyclers in the field.

To this end, the Company has offered its prospective customers the opportunity to buy outright, lease or rent the Barocycler instruments, and in some cases the company has engaged in short-term reagent rental agreements. Under a reagent rental agreement PBI provides the customer with a Barocycler instrument in exchange for a minimum purchase commitment of consumable products. While these arrangements do not provide the company with the immediate revenue of a sale, they do serve to expand the utilization of PCT and they provide a stream of revenue in the form of rental payments and consumable purchases.

Since the company began operations as Pressure BioSciences in February 2005, PBI has installed total 178 Barocycler instruments to the end of 2010. We note the steady growth in the installed base as evidence the business model is working at PBI. Breakdown of the number is listed below:

	2005	2006	2007	2008	2009	2010
Installed units	5	8	20	41	54	50

This strategy has created positive impact on the Company's financial performance. Revenue from PCT products/services increased 63.9% and 26.9% respectively in 2008 and 2009. We expect product revenue from the PCT platform will continue to increase in the next few years from 2009 to 2015 with a compound annual growth rate (CAGR) of 68%.

In the long run, PBI plans to pursue the further development and commercialization of the PCT platform in other life sciences applications, such as pathogen inactivation, protein purification, control of chemical (particularly enzymatic) reactions, and immunodiagnostics. This strategy will further boost the Company's financials and provide sustainable growth. This offers significant upside for shareholders in our view.

Collaboration program is an important element of PBI's business strategy. Initiating a collaboration with a researcher usually involves the installation of a Barocycler instrument for an agreed upon period of time, generally three to six months, and the execution of an agreed upon work plan. The primary objectives for entering into a collaboration agreement include:

- the development of a new application for the PCT platform in sample preparation;

- the advancement and validation of understanding PCT within an area of life sciences in which the company already has products;
- the demonstration of the effectiveness of the PCT platform to specific research scientists who can have a positive impact on market acceptance of the PCT platform; and
- the expectation of peer-reviewed publications and/or presentations at scientific meetings by a third party on the merits of the PCT platform.

Since the beginning of the collaboration program in June 2005, the Company has placed Barocycler instruments in multiple sites, resulting in increasing number of publications and presentations by third party researchers. This program has provided, and continues to provide independent and objective data about PCT from well respected laboratories throughout the United States which have helped and will continue to help improve the acceptance of the PCT platform in the life science industry.

Expansion into **international markets** is also a long term strategy for the company. Currently, PBI has three foreign distributors and the company has about 14 instruments installed overseas, mostly in Japan. PBI plans to further expand the number of foreign distributors in the near future after the company gets a foothold in the US. The company intends to sing a deal with a partner in the U.S. so that the Company can use the partner's distributors internationally.

We believe international expansion is important to the company's long term growth, especially when the U.S. pharmaceutical/biotech industry is experiencing major restructuring and consolidation and the U.S. government is reducing spending on biological research. R&D spending in medical/biological research has been rising dramatically outside the U.S., especially in the emerging markets such as in China and India. We believe the international market for research services can be as big as the U.S. market which will provide huge opportunity for PBI to growth its business.

A Strong Management Team

Mr. Richard T. Schumacher, the founder of the Company, has been CEO and president of the Company since 2004. He has served as Chief Financial Officer and Treasurer of PBI since November 18, 2008. 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 1986 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 employed by 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.

Dr. Edmund Ting joined as Senior Vice President of Engineering on April 24, 2006. Prior to joining, 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 water jet cutting technology market, and the parent company of Avure Technologies until November 2005. Dr. Ting last held the position of VP 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. Nathan P. Lawrence was appointed Vice President of Marketing and Sales on April 1, 2006. Dr. Lawrence joined Pressure BioSciences Inc. in 2005, serving as Director of Research and Development until his promotion to Vice President of Marketing and Business Development in 2006. Dr. Lawrence was responsible for the development of protocols based on pressure cycling technology (PCT). From 2004 through 2005, Dr. Lawrence worked for 454 Life Sciences in product development. Prior to 454 Life

Sciences, Dr. Lawrence was Director of Research and Development for Boston Biomedica, Inc. from 1998-2004. He was responsible for the development of PCT, as well as the development of nucleic acid-based diagnostic assays. Prior to joining Boston Biomedica, Inc., Dr. Lawrence held several positions with increasing responsibility in Research and Development and manufacturing at Becton Dickinson and Gene Trak Systems. Dr. Lawrence holds a BA from the University of Miami, an M.S. from Southern Connecticut State University, and a Ph.D. from Yale University.

Dr. Alexander Lazarev was promoted to the position of Vice President of Research and Development, effective March 20, 2007. Prior to his promotion he served as Director of Research and Development, since joining PBI on April 3, 2006. Prior to joining Pressure BioSciences, Inc., 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.

Mr. Matthew B. Potter joined PBI as Vice President of Sales on February 25, 2008. Mr. Potter has worked in many different disciplines that include molecular biology, chromatography, personalized medicine, diagnostics, and biophysics. Prior to joining PBI Mr. Potter was the Vice President of Sales & Marketing at Abcam, Inc. from July 2007 to January 2008. Prior to Abcam, Mr. Potter was the National Sales Manager: Key Accounts Pharmaceutical at Qiagen, Inc. from July 2005 to May 2007. Prior to Qiagen, Mr. Potter was Director, Sales and Marketing at MicroCal, LLC from January 2000 to July 2005. Mr. Potter is also a former Treasurer of the New England Scientific Manufacturers Association and has been cited as a co-author and contributor on assorted scientific publications during his tenure working at the Worcester Foundation for Experimental Biology. Mr. Potter holds a BA in Biology from Clark University and an MBA from Assumption College, both located in Worcester, MA.

RECOMMENDATION AND VALUATION

We maintain our **Outperform** rating on Pressure BioSciences Inc. (PBI) and reiterate our twelve-month price target of $5.00.

Our call is based on the strong fundamentals of the Company. PBI operates in the rather large, but underserved research services market. The Company has developed a unique and superior pressure cycling technology for the preparation of biological laboratory samples. The Company's PCT platform holds competitive advantages over incumbent technologies in many important aspects related to sample preparation.

Currently, the Company is in the early stage of commercialization of its platform technology. We realized that sales in the past few quarters have not been impressive, but this is understandable. Pressure cycling technology is quite new to most customers in the sample preparation market, and the costs for PCT are also higher than those for most existing technologies. Therefore, rollout of the PCT platform will take time. However, once customers become familiar with the new PCT platform, and realize its advantages over existing technologies, uptake of PCT and its consumable products by the industry will increase dramatically in our view.

We are especially optimistic about the Company's collaboration programs which will generate great awareness of the PCT platform among researchers in the sample preparation market. We are also impressed with the potential of the PCT technology in new application areas such as in the forensic, oil-spill clean-up and agricultural applications. With a growing sales force and a clear growth strategy in place, sales should pick up steam in the coming quarters.

We are optimistic about the Company's prospect. With a rapidly growing market worldwide, combined with its unique technology and broad range of product offering, the Company is well positioned to boost its top line and bottom line in the coming years. According to our long term financial model, the Company's revenue will grow at a tremendous compound annual growth rate (CAGR) of 68% in the next five fiscal years from 2010 to 2015. The Company will become profitable in fiscal 2014 with earnings per share (EPS) of $0.20.

Currently, the Company trades around $1.07 per share with a market cap of $6.6 million. We believe this undervalues the Company based on the strong fundamentals mentioned above. We understand that market discounts the value of the Company because the Company has only limited revenue base and has been losing money since its inception. We also understand that the Company has a relatively weak balance sheet, and further financing may be needed soon. However, the Company has no debt sitting on its balance sheet. When we look at the Company and the industry in which it operates in more detail, we realize that this is a company with huge opportunity and one that can grow its revenue and earnings at a tremendous rate in the next few years.

We think the Company should trade around a P/E of 15x, which is only half of the average P/E multiple of the research services/biotech industry. If we apply this P/E to our estimated EPS of $0.90 in fiscal 2015, discounted at 30% for 4 years, we get our price target of $5.00 per share. As long as the Company can execute its growth strategy correctly, we believe this goal is achievable.

RISKS

Cash Position is a Concern

Since it began operation as Pressure BioSciences in 2005, the Company has been losing money. The Company has only limited revenue derived from its PCT-based instruments and PCT-dependent consumable products. The Company has experienced negative cash flows from operations since its inception. According to our financial model, the Company will continue to lose money until fiscal 2014 when the Company will be profitable with an EPS of $0.20 per share.

As of December 31, 2010, the Company held $0.55 million in cash and cash equivalents. Current cash resources will be able to fund normal operations into the second quarter of 2011. We may see the Company tap the capital market in the immediate future. Equity financing is certainly an option. If the Company chooses to issue more shares, current shareholder base will be diluted and share price will suffer.

Management indicated that they are continuing to look at all available options related to financing the Company, not just for the short-term, but for the long-term as well. Management is confident that the Company will successfully close on one of these options in the near future. A financing deal with a strategic partner should be positive to the Company's long term growth.

Competition Remains Fierce in the Sample Preparation Market

Currently, the sample preparation/research services market is dominated by big players like Life Technologies (formerly known as Invitrogen), Qiagen and Illumina. Unfortunately, we see this area

attracting a high level of competitive interest over the next several years. Big players are actively seeking to expand market shares in this area.

Pressure BioSciences (PBI) is a relatively new comer in this area with limited operational experiences and financial resources. The PCT Sample Preparation System is a novel and enabling system for genomic, proteomic, and small molecule sample preparation. As such, many users of current technologies will need to be willing to challenge their existing methods of sample preparation and invest time to evaluate a method that could change for the better their overall workflow in the sample preparation process, prior to adopting the PCT platform. Also, the cost of the PCT Sample Preparation System may be greater than the cost of many of the other techniques currently employed. Therefore, PBI must convince its current and potential customers that the PCT platform and products are superior and have advantages over other technologies in terms of versatility, reproducibility, quality and safety, etc.

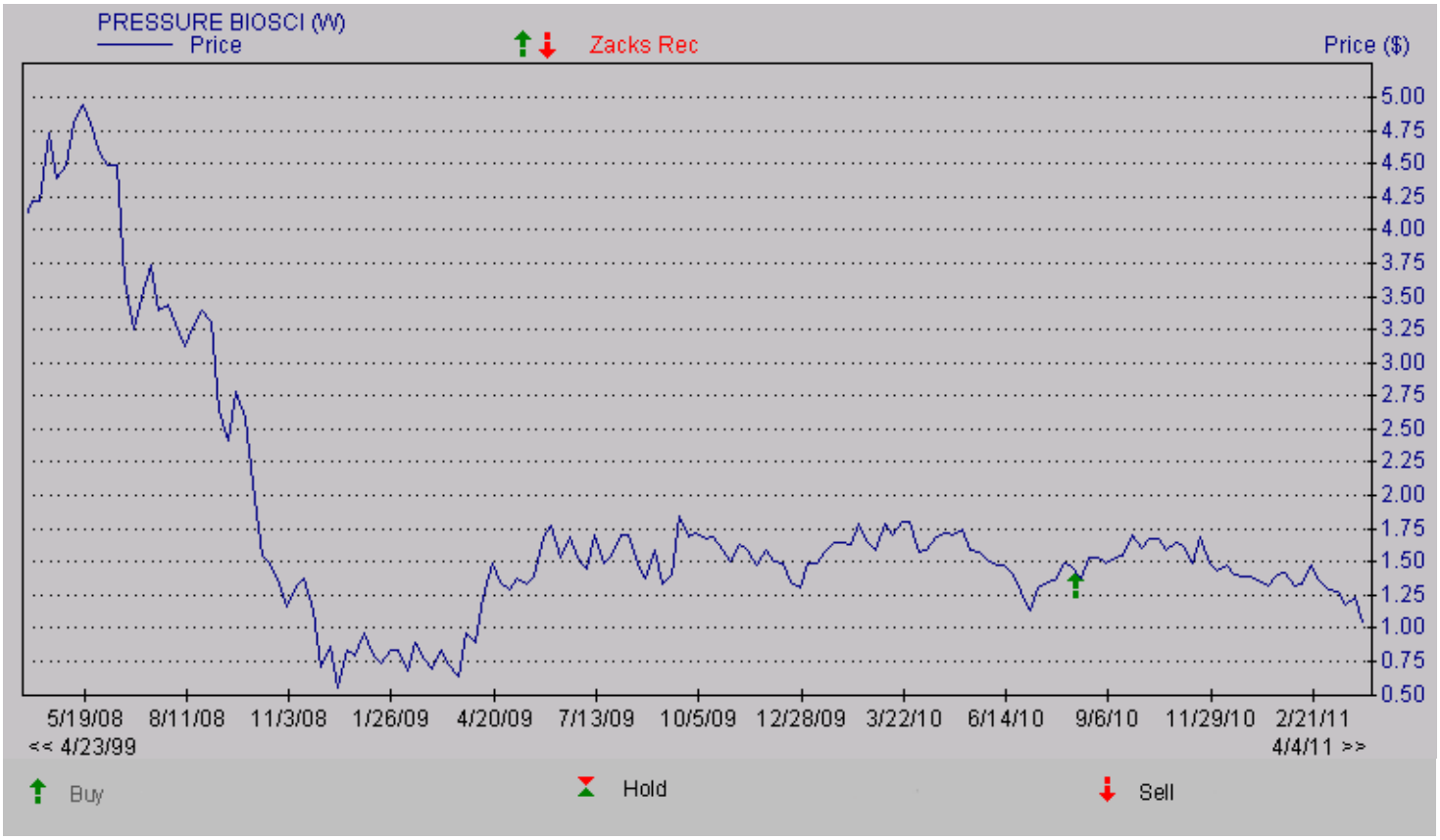
PROJECTED INCOME STATEMENT

$ in million except per share data	12/07A	12/08A	12/09A	12/10A	Q1	Q2	Q3	Q4	12/11E	12/12E	12/13E	12/14E	12/15E
Product/Service Revenue	$0.40	$0.66	$0.83	$0.88	$0.21	$0.23	$0.25	$0.27	$0.96	$2.50	$5.50	$12.50	$19.00
YOY Growth	-	63.90%	26.91%	5.53%	11.02%	-18.84%	28.38%	28.38%	9.39%	160.4%	120.0%	127.3%	52.0%
Grant Revenue	$0.25	$0.20	$0.41	$0.46	$0.10	$0.10	$0.10	$0.10	$0.40	$0.50	$0.40	$0.40	$0.40
Total Revenues	**$0.65**	**$0.85**	**$1.24**	**$1.34**	**$0.31**	**$0.33**	**$0.35**	**$0.37**	**$1.36**	**$3.00**	**$5.90**	**$12.90**	**$19.40**
YOY Growth			46.1%	7.6%	6.6%	-17.9%	-5.9%	34.5%	1.5%	120.6%	96.7%	118.6%	50.4%
CoGS	$0.2	$0.4	$0.4	$0.4	$0.1	$0.1	$0.1	$0.1	$0.4	$0.9	$1.9	$3.6	$4.5
Gross Income	**$0.44**	**$0.45**	**$0.84**	**$0.96**	**$0.23**	**$0.23**	**$0.26**	**$0.25**	**$0.98**	**$2.06**	**$4.03**	**$9.29**	**$14.85**
Gross Margin	67.6%	52.9%	67.7%	71.9%	75.5%	70.1%	74.1%	68.7%	72.0%	68.6%	68.4%	72.0%	76.5%
Gross Margin for PCT revenue	47.7%	38.7%	51.6%	57.1%	63.8%	57.1%	63.8%	57.1%	60.3%	62.3%	66.1%	71.2%	76.1%
R&D	$2.0	$1.8	$1.2	$1.2	$0.3	$0.3	$0.4	$0.4	$1.4	$1.8	$2.2	$2.5	$2.8
% R&D	313.2%	212.4%	94.4%	92.0%	96.8%	90.9%	114.3%	108.1%	102.9%	60.0%	37.3%	19.4%	14.4%
SG&A	$3.6	$3.6	$2.9	$3.1	$0.8	$0.8	$0.8	$0.8	$3.2	$3.8	$4.5	$5.0	$5.5
% SG&A	551.4%	423.2%	230.1%	233.6%	258.1%	242.4%	228.6%	216.2%	235.3%	126.7%	76.3%	38.8%	28.4%
Other	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
% Other	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Operating Income	**($5.1)**	**($5.0)**	**($3.2)**	**($3.4)**	**($0.9)**	**($0.9)**	**($0.9)**	**($0.9)**	**($3.6)**	**($3.5)**	**($2.7)**	**$1.8**	**$6.6**
Operating Margin	-796.9%	-582.8%	-256.8%	-253.6%	-279.4%	-263.2%	-268.7%	-255.6%	-266.3%	-118.1%	-45.2%	13.9%	33.8%
Other Net	$3.47	$0.06	$0.00	$0.25	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Pre-Tax Income	**($1.7)**	**($4.9)**	**($3.2)**	**($3.2)**	**($0.9)**	**($0.9)**	**($0.9)**	**($0.9)**	**($3.6)**	**($3.5)**	**($2.7)**	**$1.8**	**$6.6**
Pref. stk Div	$0.00	$0.00	$0.72	$0.50	$0.10	$0.10	$0.10	$0.10	$0.40	$0.70	$0.70	$0.70	$0.70
Taxes (Benefit)	($0.5)	$0.0	($0.6)	($0.0)	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Tax Rate	-	0.0%	19.5%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Reported Net Income	**($1.2)**	**($4.9)**	**($3.3)**	**($3.6)**	**($1.0)**	**($1.0)**	**($1.0)**	**($1.0)**	**($4.0)**	**($4.2)**	**($3.4)**	**$1.1**	**$5.9**
YOY Growth	-	-	-	-	-	-	-	-	-	-	-20.6%	-132.5%	434.9%
Net Margin	-179.0%	-576.0%	-263.9%	-271.0%	-311.6%	-293.5%	-297.3%	-282.7%	-295.7%	-141.4%	-57.1%	8.5%	30.2%
Shares Out	2.1	$2.2	2.3	2.7	3.0	3.1	3.1	3.2	3.1	3.5	4.5	5.5	6.5
Reported EPS	**($0.56)**	**($2.24)**	**($1.42)**	**($1.35)**	**($0.32)**	**($0.31)**	**($0.34)**	**($0.33)**	**($1.30)**	**($1.21)**	**($0.75)**	**$0.20**	**$0.90**
YOY Growth	-	-	-	-	-	-	-	-	-	-	-38.3%	-126.6%	352.6%
One time charge	*($3.18)*	*$0.00*	*$0.00*	$0.00	$0.00	$0.00	$0.00	$0.00	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*
Non GAAP Net Income	**($4.3)**	**($4.9)**	**($3.3)**	**($3.6)**	**($1.0)**	**($1.0)**	**($1.0)**	**($1.0)**	**($4.0)**	**($4.2)**	**($3.4)**	**$1.1**	**$5.9**
Non GAAP EPS	**($2.09)**	**($2.24)**	**($1.42)**	**($1.35)**	**($0.32)**	**($0.31)**	**($0.34)**	**($0.33)**	**($1.30)**	**($1.21)**	**($0.75)**	**$0.20**	**$0.90**

Source: Company filings and Zacks Investment Research Inc. estimates

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