

## Improvements in DNA Yield from Forensic Samples and Other Important Benefits Reported with Pressure Cycling Technology (PCT)

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South Easton, MA, October 26, 2010 – Pressure BioSciences, Inc. (NASDAQ: PBIO) (“PBI” and the “Company”) today announced that two scientific presentations at the 21<sup>st</sup> International Symposium on Human Identification have provided further evidence that pressure cycling technology (“PCT”) offers an improved method for the extraction of DNA in the analysis of forensic evidentiary samples.

A study entitled *Pressure Cycling Technology (PCT): Applications for Forensics DNA Analysis* was presented by Ms. Pam Marshall, MS, et al., from the Institute of Investigative Genetics, Department of Forensics and Investigative Genetics at the University of North Texas Health Science Center (UNTHSC), Fort Worth, Texas. Results from the study showed an increase in DNA yield from forensic swab samples prepared with PCT compared to samples prepared without PCT. These results confirmed and extended the data presented by UNTHSC scientists at the 20<sup>th</sup> Human Identification Meeting in October 2009 and the Harvard Medical School Symposium on High Pressure in May 2010, where data were presented that showed significant improvements in DNA yield from challenging forensics samples using PCT.

Dr. Bruce Budowle, Executive Director of the Institute of Investigative Genetics at UNTHSC, said: "New analytical techniques offer forensic scientists the potential to detect lower quantities of DNA. To reach this potential, methods for preparing samples prior to analysis must be improved. For the past 18 months, we have evaluated PCT in this regard. The results we presented at the 21st Annual Human ID Meeting confirm our earlier, reported findings that increased yields of DNA are seen in samples after PCT treatment compared with samples not exposed to PCT. Consequently, we continue to pursue development of PCT as a viable method to enhance DNA recovery from forensic samples, since it is feasible that the benefits of PCT may lead to more solved cases."

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#### CALENDAR OF PBI EVENTS

[ASCB- AMERICAN SOCIETY FOR  
CELL BIOLOGY 2010](#)

DECEMBER 11-15, 2010

PHILADELPHIA, PA

### PCT Presentations at the 21<sup>st</sup> International Symposium on Human Identification San Antonio, TX

#### [PRESSURE CYCLING TECHNOLOGY \(PCT\) APPLICATIONS FOR FORENSIC DNA ANALYSIS](#)

Pam Marshall, MS; Jonathan King, MS; Meredith Turnbough, PhD; Arthur J. Eisenberg, Ph.D; Bruce Budowle, PhD., Institute of Investigative Genetics, Department of Forensics and Investigative Genetics, University of North Texas Health Science Center, Fort Worth, Texas

**PURPOSE:** In an effort to increase deoxyribonucleic acid (DNA) recovery from devices used for collecting crime scene biological evidence, such as cotton swabs, samples containing various amounts of purified DNA or epithelial cells were placed onto swabs and processed using Pressure Cycling Technology (PCT). These samples were compared with control samples processed without PCT.

**METHODS:** PCT has yet to be considered for forensic applications but has the potential to enhance current DNA extraction methods by increasing DNA recovery while preserving the quality of the DNA. PCT exposes biological samples to alternating high hydrostatic and ambient pressures, allowing for molecular interactions to be controlled. This results in baroporation and the release of DNA into solution, while generally maintaining the sample's morphological integrity.

**RESULTS:** The data illustrate increased DNA yield in samples following PCT compared with those samples not exposed to pressure technology. These results indicate that PCT is a viable method to enhance DNA recovery from forensic samples. PCT can be used in conjunction with commercially available extraction reagents.

**CONCLUSIONS:** This research study demonstrates the capabilities and potential of PCT applications for forensic DNA analysis of biological evidentiary samples. The impact is that some samples that traditionally yield too little DNA for typing may now be suitable for routine analysis. Thus, more cases may be solved with this combined approach of PCT and DNA extraction.

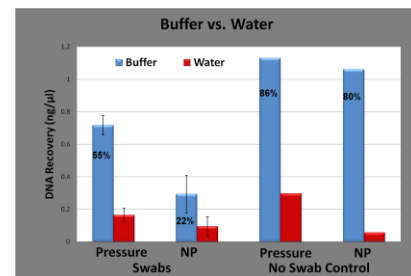


Figure 3. Buffer was compared with water in order to determine if buffer use during pressure cycling results in loss of DNA. For swabs and the no swab controls, 50µl (1 ng/µl) of cultured epithelial cells were used (swabs were dried overnight prior to analysis). Pressure samples were compared with non-pressured samples and swabs were compared with the no swab controls.

## Improvements in DNA Yield from Forensic Samples and Other Important Benefits Reported with Pressure Cycling Technology (PCT): Continued from Page 1

In addition to the UNTHSC study, Dr. Bruce R. McCord and Ms. Deepthi Nori, MFS from the International Forensic Research Institute (IFRI), Department of Chemistry and Biochemistry, Florida International University (FIU) presented a study entitled *Application of Pressure Cycling Technology (PCT) in Differential Extraction*. Their unique extraction protocol uses PCT to differentially extract DNA from sperm and vaginal epithelial cells. This novel method has the potential to lead to better identification of criminals involved in sexual assaults.

Dr. Bruce McCord, Associate Director, IFRI-FIU, said: "One of the more difficult and time consuming tasks in forensic analysis is the selective detection of male DNA from sperm cells in the presence of larger quantities of female DNA in sexual assault casework. Our results demonstrate the potential of PCT for the selective disruption of sperm cells in mixtures containing female cells."

Dr. Nathan Lawrence, VP of Marketing at PBI, commented: "UNTHSC and the IFRI - FIU are two of the most well-known and respected investigative and academic forensics laboratories in the US. The data presented by these groups at the recent 21<sup>st</sup> Annual Human ID Meeting is additional confirmation that PCT can improve the detection of DNA in challenging forensic samples. These methods can be used by forensic laboratories and criminal justice agencies worldwide to better identify missing persons or perpetrators of violent crimes. We believe that these data will help us to successfully close new forensics accounts and to identify one or more strategic partners to co-market our PCT-based product line in the forensics marketplace."

### About Pressure BioSciences

Pressure BioSciences, Inc. (PBI) is a NASDAQ Capital Markets listed company focused on the development and sale of instrumentation and consumables based on a novel, enabling technology platform called Pressure Cycling Technology (PCT). PCT uses cycles of hydrostatic pressure between ambient and ultra-high levels (up to 35,000 psi and greater) to control bio-molecular interactions. PBI currently holds 24 issued patents covering multiple applications of PCT in the life sciences field, including genomic and proteomic sample preparation, pathogen inactivation, the control of chemical reactions, immunodiagnostics, and protein purification. PBI currently focuses its efforts on the development and sale of PCT-enhanced enzymatic digestion products designed specifically for the mass spectrometry marketplace, as well as sample preparation products for biomarker discovery, soil and plant biology, forensics, histology, and counter-bioterror applications.

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## PCT Presentations at the 21<sup>st</sup> International Symposium on Human Identification San Antonio, TX: Continued from Page 1

### [Application of Pressure Cycling Technology \(PCT\) in Differential Extraction](#)

Deepthi Nori, MFS\*\* Bruce R. McCord, PhD  
International Forensic Research Institute, Department of Chemistry and Biochemistry, Florida International University, Miami, FL 33199

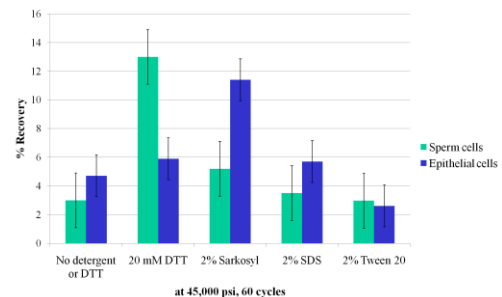
#### Introduction

Conventional differential extraction methods used for the separation of DNA from sperm cells and epithelial cells are time consuming and require special expertise. It is imperative to develop a method that addresses the issues of time, efficiency and ease of use.

The current study involves the application of pressure cycling technology sample preparation system (PCT SPS) in the extraction of nucleic acids from sperm cells and vaginal epithelial cells.

#### Objective

Our goal is to determine the possibility of selectively lysing sperm cells while keeping the epithelial cells intact from mixtures in sexual assault evidence.



**Figure 5. Effect of pressure treatment on treated cells. DTT treatment proved to be effective for DNA extraction from sperm cells whereas Sarkosyl treatment was most effective in the lysis of epithelial cells.**

#### Conclusions and Future work

Pressure Cycling Technology (PCT) has been shown to have potential application in differential extractions.

An increase in extraction efficiency is observed with sperm cells treated with Dithiothreitol, while improved extraction of epithelial cells is possible using detergent.

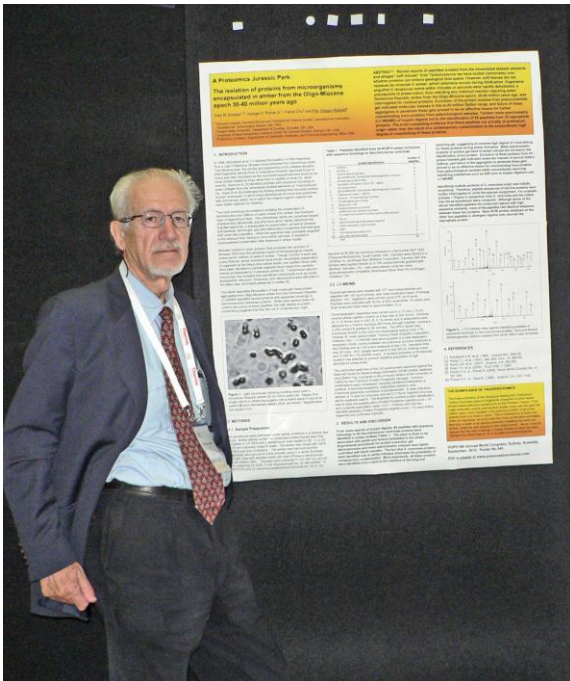
Further studies need to be done to maximize the relative amount of DNA recovered from the sperm cells which will enable us to perform selective lysis of sperm cells in the presence of epithelial cells.

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**Dr. Pier Giorgio Righetti**  
**Showing His Team's Poster at**  
**HUPO 9<sup>th</sup> Annual World Congress**  
**September 19-23, 2010**  
**Sydney, Australia**

**A Proteomics Jurassic Park:**  
**The isolation of proteins from**  
**microorganisms encapsulated in amber from**  
**the Oligo-Miocene**  
**epoch 30-40 million years ago**

Gary B. Smejkal<sup>1</sup>, George O. Poinar Jr.<sup>2</sup>, Feixia Chu<sup>3</sup> and  
Pier Giorgio Righetti<sup>4</sup>



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**Improvements in DNA Yield from Forensic**  
**Samples and Other Important Benefits**  
**Reported with Pressure Cycling Technology**  
**(PCT): Continued from Page 2**

**Forward Looking Statements**

Statements contained in this press release regarding the Company's intentions, hopes, beliefs, expectations, or predictions of the future are "forward-looking" statements within the meaning of the Private Securities Litigation Reform Act of 1995. Such forward looking statements include statements regarding the use, capabilities, and benefits of the Company's PCT-based products for the extraction of DNA from challenging forensic samples, including swabs, sperm, and vaginal epithelial cells; the potential for PCT to be a valuable tool for DNA typing; that the data generated by scientists at UNTHSC and the IFRI-FIU is additional confirmation that PCT can improve DNA detection; that PCT-based methods can be used to solve criminal cases and to better identify missing persons and perpetrators of violent crimes; and that the UNTHSC and IFRI-FIU data will help the Company close new accounts and help find strategic partners. These statements are based upon the Company's current expectations, forecasts, and assumptions that are subject to risks, uncertainties, and other factors that could cause actual outcomes and results to differ materially from those indicated by these forward-looking statements. These risks, uncertainties, and other factors include, but are not limited to: possible difficulties or delays in the implementation of the Company's strategies that may adversely affect the Company's continued commercialization of PCT and its PCT dependent products; changes in customers' needs and technological innovations; other forensic scientists may not achieve the same results with PCT reported by the scientists at UNTHSC and IFRI-FIU; the Company's sales force may not be successful in selling the Company's PCT product line and the Company may be unable to secure strategic partners because scientists may not perceive the advantages of PCT over other sample preparation methods, including the investigative forensics area; and the Company will require additional working capital to fund its operations beyond the first quarter of 2011, and there can be no assurance that the Company will be successful in obtaining such financing on acceptable terms, if at all. Additional risks and uncertainties that could cause actual results to differ materially from those indicated by these forward-looking statements are discussed under the heading "Risk Factors" in the Company's Annual Report on Form 10-K for the year ended December 31, 2009, and other reports filed by the Company periodically with the SEC. The Company undertakes no obligation to update any of the information included in this release, except as otherwise required by law.

For more information please visit  
<http://www.pressurebiosciences.com>