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Pressure BioSciences' PCT Platform Identified as Pivotal for Cancer Biomarker Discovery and for Potential Clinical Diagnostics

Two Prestigious Research Centers Report PBI's PCT Platform Delivers Superior Results for Protein Biomarker Discovery Studies from Preserved Cancer Biopsy Tissue Samples

SOUTH EASTON, MA, Sept. 10, 2019 (GLOBE NEWSWIRE) -- via NEWMEDIAWIRE – Pressure BioSciences, Inc. (OTCQB: PBIO) ("PBI" and the "Company") is a leader in the development and sale of innovative, broadly enabling, pressure-based instruments and related consumables for the worldwide life sciences and other industries. The Company announced today the publication of two scientific journal articles, led by independent teams of scientists in China and Australia, reporting excellent results with PBI's Pressure Cycling Technology ("PCT") platform in processing preserved formalin-fixed paraffin-embedded ("FFPE") and fresh frozen biopsy tissue samples for discovery and elucidation of cancer biomarkers and potentially for use in clinical diagnostics based upon these markers. The Chinese team from Westlake University (Hangzhou, China) purchased their first two PCT platforms in 2017 and subsequently purchased four additional PCT systems. The Australian Proteome of Human Cancer ("ProCan") team bought their first PCT system in 2016 and have subsequently added five more PCT platforms.

FFPE preserved tissue samples are an invaluable resource for retrospective studies of disease progression and response to therapy, because the disease outcome associated with the tissue and patient's treatment history are known. Effective studies on these sample sets can accelerate discoveries of new therapies, drugs, and preventive strategies. FFPE has been long-established as the most common technique worldwide for the preservation of tissues for later study. Archival repositories exist that contain a total of millions to a billion or more FFPE tissue samples. However, the analysis of FFPE samples has historically been problematic. FFPE preservation techniques were designed for permanence and stability – hence it is challenging to reverse this fixation and to liberate and extract the important biomolecules relevant as cancer biomarkers. Significantly, both publications cited here, together with other publications (See PBI Website), now report excellent results using the PCT sample preparation platform for comprehensive and reliable extraction and presentation of important proteins for analysis, from both FFPE and fresh frozen tissue samples.

Mr. Richard T. Schumacher, President and CEO of Pressure BioSciences, commented: "It is estimated (*Nature* volume 448, pages 959–962, 23 August 2007) that well over one billion archival FFPE tissue samples exist in pathology and other laboratories worldwide. We believe there are millions of new FFPE tissue samples processed and stored each year. These samples offer the promise of unveiling invaluable information that can lead to the

development of new treatments, cures, and preventive measures for cancer and many other diseases. However, up to now, it has been very difficult to extract this information from biomolecules in FFPE samples."

Ms. Roxana McCloskey, Director of Marketing and Sales at PBI, said: "We believe that our PCT platform is establishing itself as the method of choice for the superior extraction of potential biomarkers and their presentation for the effective proteomic analyses that will propel the growth of this huge market. We expect this exciting, now proven application of our PCT Platform for protein biomarker discovery in fresh frozen and FFPE biopsy samples to manifest itself in increased instrument sales starting in the second half of 2019."

The global cancer biomarkers market alone is expected to exceed more than US $157 Billion by 2022 (MarketWatch - January 8, 2019).

In their publication *High-throughput proteomic analysis of FFPE tissue samples facilitates tumor stratification*, Professor Tiannan Guo, Laboratory Director at Westlake University, explained: "We developed the PCT-SWATH/DIA method of coupling pressure cycling technology for sample preparation with a high throughput mass spectrometry workflow, to analyze FFPE tissue proteomes. We showed that our workflow is a robust and reproducible proteomic method to analyze FFPE tissues from both bulk tissue and tiny biopsy samples as well as sectioned tissue slices."

Dr. Guo continued, "We believe that the vast reservoirs of historical FFPE tissue samples accumulated in biobanks worldwide offer enormous potential using our methods for biomarker discovery, by leveraging thepracticality and superiority of PBI's PCT sample preparation platform for maximizing the diversity and abundance of results from FFPE samples (over even fresh frozen samples), followed by mass spectrometry analysis in the PCT-SWATH/DIA workflow."

Professor Phil Robinson, Co-Director of ProCan, stated: "The key to clinical application of tissue-based proteomics is to adapt to the practical requirements of clinical workflow. Our results from FFPE tissues following PCT sample preparation are consistent with other reports showing that high quality data can be generated and that the scale and scope of quantifiable proteins is comparable to that obtained from fresh frozen tissues."

Professor Robinson continued: "After samples are collected, tissue lysis and digestion protocols must be rapid, efficient, reproducible and broadly applicable to tissues of different kinds and from different source laboratories. In addition, the methodology should be adaptable for integration of robotics to facilitate high throughput where possible. ProCan has instituted the use of pressure cycling technology (PBI Barocyclers) to achieve consistent and superior lysis and digestion of tissue samples." (*Addressing the challenges of high-throughput cancer tissue proteomics for clinical application: ProCan®).*

About Westlake Institute for Advanced Study (now Westlake University)
Westlake Institute for Advanced Study ("WIAS") is a non-profit research institute dedicated to the advancement of natural sciences and the frontiers of engineering disciplines. Located in the beautiful Cloud Town of Xihu District, Hangzhou, China, WIAS strives to represent the scientific strength of China, to influence the nation's future, and to promote inclusive development and progress. WIAS, now grown into Westlake University, aims at establishing a top-level research-oriented global university. At WIAS, scientific knowledge and

technological advancement are utilized to have a real-life impact on the world and to benefit human beings. Leading talent with innovative spirit and capabilities are trained to become the driving force of China’s development.

About ProCan

The Australian Cancer Research Center Foundation International Centre for the Proteome of Cancer ("ProCan") is located in newly renovated laboratory facilities at the Children's Medical Research Institute ("CMRI") near Sydney, Australia. The goal of ProCan is to analyze over 70,000 cancer samples from all over the world over the next 5 years, with over 10,000 samples completed to date. This will enable a better understanding of cancer, as well as provide a means of personalized precision diagnosis and treatment, giving clinicians the information needed to decide on the best option for each individual patient. CMRI is an official collaborator of the US National Cancer Institute's Cancer Moonshot initiative, with a key objective to accelerate what would normally take ten years of cancer research to completion in five years.

About Pressure BioSciences, Inc.

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

Forward Looking Statements

This press release contains forward-looking statements. These statements relate to future events or our future financial performance and involve known and unknown risks, uncertainties and other factors that may cause our or our industry's actual results, levels of activity, performance or achievements to be materially different from any future results, levels of activity, performance or achievements expressed, implied or inferred by these forward-looking statements. In some cases, you can identify forward-looking statements by terminology such as "may," "will," "should," "could," "would," "expects," "plans," "intends," "anticipates," "believes," estimates," "predicts," "projects," "potential" or "continue" or the negative of such terms and other comparable terminology. These statements are only predictions based on our current expectations and projections about future events. You should not place undue reliance on these statements. In evaluating these statements, you should specifically consider various factors. Actual events or results may differ materially.

These and other factors may cause our actual results to differ materially from any forward-looking statement. These risks, uncertainties, and other factors include, but are not limited to, the risks and uncertainties discussed under the heading "Risk Factors" in the Company's Annual Report on Form 10-K for the year ended December 31, 2018, and other reports filed by the Company from time to time with the SEC. The Company undertakes no obligation to update any of the information included in this release, except as otherwise required by law. Due to rounding, numbers presented throughout this and other documents may not add up precisely to the totals provided and percentages may not precisely reflect the absolute figures.

For more information about PBI and this press release, please click on the following website link: http://www.pressurebiosciences.com

Please visit us on Facebook, LinkedIn, and Twitter.

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