

Gabrielle Giese Wins a Young Investigator Travel Award from HUPO for Her Work on *Caenorhabditis elegans* and Pressure Cycling Technology

Young Investigator Travel Award Abstract

Phosphopeptide isolation from *Caenorhabditis elegans* using the CE PrEP, PCT, and PhosphoScan Technologies

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Introduction. So resilient is the exoskeletal cuticle of *Caenorhabditis elegans* that specimens aboard the Space Shuttle Columbia were the only survivors of the disastrous crash [1]. Nematodes are also resistant to disruption at high hydrostatic pressure and an LD50 of 7,400 psi is estimated [2]. Although 100% mortality is observed at 35,000 and 45,000 psi, Trypan blue staining shows permeability of less than 30% of nematode cuticles. Complete disruption of this cuticle is necessary for reproducible and unbiased protein recoveries. This facilitates phosphoproteomic analyses as exemplified by the isolation of target peptides of src-1 kinase activity.

Methods. The Pressure Enhanced Processing (PrEP) Kits were developed in combination with Pressure Cycling Technology (PCT) for the complete disruption of nematodes and the destruction of cuticles enabling unprecedented protein yields using either native buffers (PBS, TBS, or HEPES) or high stringency reagents (chaotropes, detergents, and reducing agents). For biomass processed with the CE PrEP Kit, nematodes and their exoskeletons were obliterated as observed microscopically. Proteins were reduced, alkylated and trypsin digested and the resulting peptides were incubated with anti-phosphotyrosine antibodies coupled to Protein G agarose beads provided in the Phosphoscan Kit (Cell Signaling Technologies).

Results. The absorbed phosphotyrosine-containing peptides were eluted and analyzed by LC tandem mass spectrometry. The phosphoproteomes of N2 wild type and src-1 RNAi knock outs were compared.

References:

[1] Szewczyk, N.J. *et al.* (2005) *Caenorhabditis elegans* Survives Atmospheric Breakup of STS-107, Space Shuttle Columbia. *Astrobiology* 5, 690-705.

[2] Smejkal, G.B. *et al.* (2008) Pressure Enhanced Processing (PrEP) using Pressure Cycling Technology (PCT) maximizes protein yields from the nematode *Caenorhabditis elegans* under mild, nondenaturing conditions. *HUPO 7th World Congress*, Amsterdam, August 16-20, 2008.

To Be Presented at the 8th HUPO World Congress

Pressure BioSciences, Inc. Comments on Methods Used for the Detection of Food Contaminants

Food contamination continues to dominate the headlines. Whether it's a widespread pistachio recall, dangerous ground beef products, or cookie dough contaminations, these shocking incidents have sent federal microbiologists out into the field to perform the detective work necessary to uncover the sources of disease-causing strains of food-borne bacteria.

"The key here is the phrase 'detective work,'" says leading expert in high pressure bioscience and biotechnology, Dr. Edmund Ting, Senior VP of South Easton, MA-based [Pressure BioSciences, Inc.](#), (NASDAQ: PBIO) who has spent years researching the effects of high hydrostatic pressure on pathogens that contaminate the food supply, such as *E. coli*, *Listeria*, and *Salmonella*. Dr. Ting believes that improvements in food safety depend on the rapid and accurate detection of food-borne pathogens, both in pre-release quality control testing and in post-outbreak investigations. Such detection depends to a great extent on the quality of the extraction of the DNA, RNA, and proteins ("biomolecules") from the pathogens contaminating the food.

"Current extraction methods rely principally on heat, electrical charge, sonication, homogenation, bead beating, and chemical partitioning, all of which can alter and sometimes even destroy sensitive, important biomolecules (such as proteins), or fail to liberate them from complex biological structures," explains Dr. Ting.

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PCT Related Abstracts at the 2009 APS Annual Meeting

[Incidence and spatial distribution of *Rhizoctonia* and *Pythium* species determined with real-time PCR](#)

K. L. SCHROEDER (1), T. C. Paulitz (1), P. A. Okubara (1)
 (1) USDA ARS, Pullman, WA, USA
 Phytopathology 99:S115

[Rapid detection and quantification of *Verticillium dahliae* in soil](#)

G. J. BILODEAU (1), P. Uribe (1), F. N. Martin (1)
 (1) United States Department of Agriculture-Agricultural Research Service (USDA-ARS), Salinas, CA
 Phytopathology 99:S12

[Isolation, cultivation, and Koch's postulates of the HLB bacterium](#)

N. Schaad, A. Sechler, E. Schuenzel
 USDA-ARS, Ft. Detrick, MD
 Phytopathology 99:S157

CALENDAR OF EVENTS

2009 APS ANNUAL MEETING	8TH HUPO WORLD CONGRESS
Portland, Oregon	Toronto, Canada
August 1-5, 2009	Sept. 26th-30th, 2009

WallStreet Research™ Initiates Profile Coverage of Pressure BioSciences, Inc.

South Easton, MA, July 8, 2009 – Pressure BioSciences, Inc. (NASDAQ: PBIO) (“PBI” or “the Company”) today announced that WallStreet Research™ (“WSR”), a prominent research boutique led by Mr. Alan Stone, Managing Director of Alan Stone & Company LLC (“ASC”), has commenced profile coverage of the Company. The corporate profile, together with additional information about WallStreet Research, is available at the www.WallStreetResearch.org website.

Mr. Richard T. Schumacher, President & CEO of Pressure BioSciences, stated: “We are pleased to have established a relationship with WallStreet Research, resulting in the publishing of our corporate profile on their website. We have also accepted an invitation to discuss our many recent accomplishments, including the early release of our much anticipated PCT MicroTube Adapter Kit on June 1st, to a select group of investment bankers, portfolio managers, institutional and other accredited investors at the Fifth Annual WSR Small Cap Conference (www.SmallCapConference.org), to be held in New York City on August 11th-12th at the Penn Club.”

Mr. Alan Stone, Managing Director of WallStreet Research, added: “WSR is very impressed with Pressure BioSciences’ management, focused business strategy, and cutting-edge PCT technology. We strongly believe that their current base of well-known customers, the increasing market acceptance of PCT, their strong intellectual property estate, and the large and growing sample preparation market into which they sell their products, form a solid foundation to help ensure PBI’s growth and success.”

About Pressure BioSciences, Inc.

Pressure BioSciences, Inc. (PBI) is a publicly traded company focused on the development of a novel, enabling technology 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 13 US and 6 foreign patents covering multiple applications of PCT in the life sciences field, including genomic and proteomic sample preparation, pathogen inactivation, the control of chemical (primarily enzymatic) 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.

About WallStreet Research™

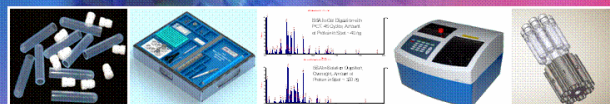
WallStreet Research™ (WSR) is a prominent research boutique led by Alan Stone, Managing Director of Alan Stone & Company, LLC (ASC). The firm specializes in the microcap and smallcap investment arena, looking for emerging growth companies with strong management, unique or proprietary technology, significant market potential, financial strength, and outstanding long-term earnings growth possibilities. Mr. Stone was formerly a securities analyst and assistant portfolio manager at Merrill Lynch Asset Management, an investment analyst at Prudential Insurance Company’s Capital Markets Group, and an investment banker with Ladenburg Thalmann & Company. The firm has offices in Los Angeles, CA, Palm Beach, FL, and New York City, NY, and is well known for discovering undervalued companies and bringing them to the attention of the investment community. ASC/WSR also arranges road shows for its publicly traded clients, before the investment community in New York City, California and Florida.

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

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Protein Digestion in Minutes with the PCT MicroTube Adapter Kit for Enhanced Enzymatic Proteolysis



Pressure Cycling Technology (PCT)

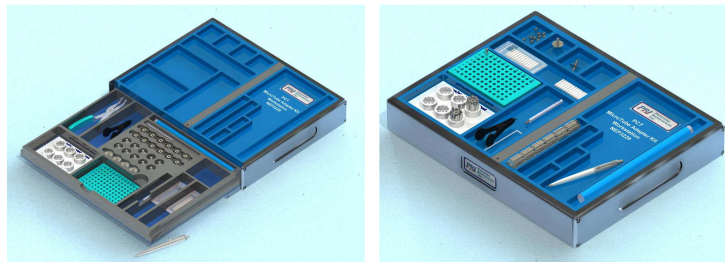
- Standardize Protein Digestion for Mass Spectrometry
- Substantially Increase Protein Digestion Efficiency
- Significantly Accelerate In-Solution or In-Gel Protein Digestion
- Promote Accurate & Efficient Protein Cleavage
- Avoid Undesired Protein Modifications
- Process Up to 48 Samples at a Time
- Versatile Range of Small Sample Sizes (50-150 µL)
- Compatible with a Variety of Proteolytic Enzymes
- Inert, Non-Wetting, Single-Use MicroTube Processing Containers
- Unique MicroCap Design for Protein Spot Transfer from 2D Gels

[PCT MicroTube™ Adapter Kit*](#)
for
[Pressure-Enhanced Enzymatic Proteolysis](#)

[See Brochure](#)

with Data and Comments from

Thermo Fisher, FDA, NYU School of Medicine, Mississippi
State University and
Harvard School of Public Health



Pressure BioSciences, Inc. Comments on Methods Used for the Detection of Food Contaminants: Continued from Page 1

"Consequently, it may be difficult to find the contaminating pathogen if the sample preparation method cannot reproducibly and effectively extract the pathogen's biomolecules from the food sample prior to testing."

New sample preparation technologies continue to be developed, enabling scientists to extract biomolecules related to food-borne and other pathogens more quickly, accurately, and efficiently than ever before. One example cited by Dr. Ting, pressure cycling technology (PCT), employs cycles of hydrostatic pressure between ambient and ultra-high levels (up to 35,000 psi and greater) to safely, reproducibly, and efficiently release DNA, RNA, and proteins from food, plant, and biological samples within minutes, allowing for more rapid and accurate downstream testing.

At present, PCT technology is being used by approximately seventy-five laboratories around the world, mostly in the areas of biomarker discovery (to detect markers for cancer, stroke, neurological disease, etc.), soil and plant biology (to detect pathogens harmful to food crops, such as wheat and strawberries), forensics (mostly in the detection of DNA), human disease (to detect microbes that live on or in the human body), and counter-bioterror applications. Currently, several USDA laboratories are employing the technology, as is at least one laboratory of the Food and Drug Administration (FDA).

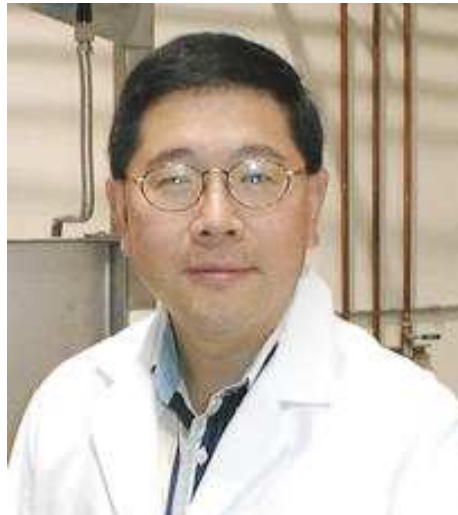
Dr. Ting believes that the issues affecting the quality of sample preparation in the food safety industry are fundamentally the same as those facing the biotech drug discovery and development laboratory. Traditional sample preparation methods are difficult to reproduce due to user variability, sample collection contamination, and the fundamental process limitations of the basic extraction technology. Conversely, PCT uses pressure, a bio-physical force that is instantaneously and uniformly transmitted to all points within the disposable sample container, thus offering the potential to standardize the sample preparation process, a significant advantage to any method.

"Current sample preparation methods used in the food industry may fail to preserve sensitive and important biomolecules, especially proteins, or fail to liberate them from complex biological structures," explains Dr. Ting. "It may be difficult to effectively find the contaminating pathogen if the sample preparation method cannot reproducibly and effectively provide proper preparation of the sample, in order to efficiently release pathogen DNA, RNA, or proteins from the food sample prior to testing and analysis."

The food safety spectrum involves not only bacteria pathogens but also allergens and genetically modified organism (GMO) issues. "All of these areas will depend on effective sample preparation methods," said Dr. Ting. "Having speed, increased reproducibility, the opportunity for greater accuracy, and the ability to standardize the preparation of the samples to be tested, will better allow for "hold and release" strategies, which should further enhance food safety."

"Higher levels of quality are now being expected from the food industry, and the scientific community is being asked to develop better ways to increase the safety of the world's food supply," says Dr. Ting. "To that end, we believe that new sample preparation methods, such as PCT, will begin to play more important roles in the identification of food-borne pathogens going forward."

Pressure BioSciences, Inc. Comments on Methods Used for the Detection of Food Contaminants: Continued from Page 1



Dr. Ed Ting (S. Easton, MA-based Pressure BioSciences, Inc.) has spent years researching the effects of high hydrostatic pressure on pathogens that contaminate the food supply, such as E. coli, Listeria, and salmonella. Dr. Ting believes that improvements in food safety depend on the rapid and accurate detection of food-borne pathogens, both in pre-release quality control testing and in post-outbreak investigations. Such detection depends to a great extent on the quality of the extraction of the DNA, RNA, and proteins ("biomolecules") from the pathogens contaminating the food.

"For more information, log in to www.irgnews.com/coi/PBIO.

WallStreet Research™ Initiates Profile Coverage of Pressure BioSciences, Inc.: Continued from Page 2

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, 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, 2008, 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.

Disclaimer

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