# The Future of H/D Exchange Analysis: A Proposed Integrated Workflow

## Pressure BioSciences, LEAP Technologies, Valco Instruments, and Sage-N Research

Hydrogen–deuterium exchange (H–D or H/D exchange) is a chemical reaction in which a covalently bonded hydrogen atom is replaced by a deuterium atom, or vice versa. Typically, the protons of interest are the amides in the backbone of a protein. This technique yields information about the accessibility of solvents to various parts of the molecule, and subsequently, about the tertiary structure of the protein.

H/D exchange can be used to examine conformational changes in proteins and their effects on protein function. Alterations of protein conformation due to post-translational modification, enzyme activation, drug binding or other functional events, often can be detected by H/D exchange techniques. The ability to monitor these changes is important in the discovery, design, development, and manufacturing of drugs and other therapeutic agents.

PBI Pressure BioSciences Inc.

VICI® Valco Instruments Co. Inc. VICI AG International

LEAP TECHNOLOGIES

SageN Research

## Pressure BioSciences

www.pressurebiosciences.com

Pressure BioSciences, Inc. ("PBI") (OTCQB: PBIO) is focused on the development, marketing, and sale of proprietary laboratory instrumentation and associated consumables based on Pressure Cycling Technology ("PCT"). PCT is a patented, enabling technology platform with multiple applications in the estimated $6 billion life sciences sample preparation market. PCT uses cycles of hydrostatic pressure between ambient and ultra-high levels to control bio-molecular interactions. PBI currently focuses its efforts on the development and sale of PCT-enhanced sample preparation systems (instruments and consumables) for mass spectrometry, biomarker discovery, bio-therapeutics characterization, vaccine development, soil and plant biology, forensics, histology, and counter-bioterror applications.

**Booth 94**

## Valco Instruments

http://www.vici.com

For 40 years, Valco Instruments Co. Inc. has been the leading designer and manufacturer of standard and custom valves and fittings for precision analytical, biomedical, and biocompatible instrumentation. Our product line also includes a wide range of related products such as pneumatic and electric actuators, tubing and sampling loops, heated enclosures, valve sequence and temperature controllers, gas purifiers, GC detectors, and digital interfaces.

**Booth 43**

## LEAP Technologies

http://www.leaptec.com

LEAP Technologies has been providing proprietary robotics and laboratory automation equipment and support for specific applications for over 20 years. LEAP was first to introduce automated sample handling for H/D exchange – currently there are nearly 50 such instrument systems around the world. Our PAL-based robotic system and sophisticated control software are widely acknowledged as the instrument of choice for this growing application. Our automation solutions allow the research scientist to walk away and leave their samples to run unattended (such as overnight). The Company has become the automation application "house of choice" to which even the large analytical instrument companies refer their customers. Furthermore, our name is synonymous with great support, and with flexible and innovative ideas. With today's digital communication and fast proliferation of new analytical techniques, LEAP successfully offers its value-added products and services worldwide (world wide support network) through a carefully selected network of smaller companies that share the same spirit.

**Booth 36**

## Sage-N Research

http://www.sagenresearch.com/

Sage-N Research, Inc. is a world leader in supplying Integrated Data Appliances (iDAs) for proteomics research. The industry-leading SORCERER™ iDAs are plug-and-play productivity systems used by leading life science researchers worldwide to rapidly and accurately identify proteins and protein modifications in biological samples using mass spectrometry data. Founded in 2002, the company is a privately held corporation headquartered in Silicon Valley in California. Through strategic collaborations with leading scientists and companies, Sage-N Research advances the state of the art in ease-of-use applications and technology to enable world-changing discoveries in biology and medicine.

**Booth 19**

**Barocycler HUB440**

**Pressure Cycling Technology (PCT)**

**State-of-the-art Valves**

**HPLC-*xt* Systems**
**Prep and Load Platform**


**H/D Exchange is Measured as m/z shift by MS**

**Protein Extraction/Proteolysis**

**Automated, on-Line, on-demand PCT**

**HPLC**

**Mass Spectrometry**