

Pressure BioSciences collaborates with The Steinbeis Centre

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Pressure BioSciences has announced a collaboration with The Steinbeis Centre for Biopolymer Analysis & Biomedical Mass Spectrometry, a world-renowned German research organization. The collaboration is combining the unique capabilities of PBI's patented pressure cycling technology (PCT) for sample preparation, protein characterization, and biotherapeutics quality control with the Steinbeis Centre's innovative PROTEX-MS instrument for elucidating structural details of antibody interactions to create an instrument system to accelerate the development of new protein therapeutics and improve existing drug treatments.

The collaborative program will be directed by Dr. Michael Przybylski, Professor of Analytical Chemistry and Biochemistry and Director of The Steinbeis Centre, who explained the selection of PBI's PCT platform: "The high-quality digestion of proteins is an essential initial step in the discovery, analysis, and characterization of potential therapeutic proteins. In the past, we have not been fully satisfied with the results achieved when using traditional protein digestion procedures and instrumentation. However, with PBI's proprietary PCT platform, we now achieve high quality and reproducible digestion of proteins. Consequently, we believe that PCT, in combination with our innovative PROTEX-MS system, could more rapidly lead to the discovery and development of biopharmaceutical treatments for a large number of diseases resulting in substantial improvements in patient care and outcomes."

The PCT-PROTEX-MS platform will be used to elucidate critical details of how the immune response functions as the body defends against bacteria, viruses, and other harmful molecules, organisms and cells. When an immune response is generated, proteins called antibodies are produced that interact with specific molecules (antigens) presented by these invaders, by physically fitting and binding (like a key in a lock) with specific regions on these molecules (epitopes). Better characterization of these epitopes on specific antigens of the invaders, and how they bind to the antibodies that recognize them, provide valuable insights into how the immune system combats disease, and how to improve the development of targeted protein therapeutics. The past decade has seen a dramatic increase in the use of targeted antibodies as effective protein therapeutics in auto-immune diseases, cancers and other life-threatening conditions.

Dr. Alexander Lazarev, Chief Science Officer of PBI, said: "We believe the PCT-PROTEX-MS platform being developed will offer the global research community a powerful new laboratory tool for the powerful, rapid, and sensitive digestion of protein and peptide antigens followed by measurement of binding affinity (strength) and identification of epitopes captured on immobilized antibodies."

Dr. Lazarev continued: "Furthermore, the potential of this new platform in the rapid discovery of new targeted therapeutics and improvement of existing treatments tailored specifically to individual patients and their conditions offer great promise for a wide range of diseases, including cancer, arthritis, Crohn's disease, transplant rejection and Alzheimer's disease."

Dr. Bradford A. Young, Chief Commercial Officer of PBI concluded: "We are delighted to be collaborating with a research team of such global stature as The Steinbeis Centre to develop a new platform technology for the characterization of binding sites on antibodies and the potential development of new and/or better protein therapeutics. This work has very important clinical applications, as it may help to develop more effective protein drugs with reduced side-effects in cancer, auto-immune, neurodegenerative and other critical diseases and conditions. We are honored that Dr. Przybylski and his team have incorporated our proprietary PCT platform as a critical component of this innovative solution. The results of this collaboration will provide PBI with another valuable and broad application area for our Barocycler instruments, and we anticipate this new instrument system will be of great interest to both current and future customers in the monoclonal antibody therapeutics market, expected to reach \$218.97 billion by the end of 2023 (Zion Market Research, 2018)."