Seer's Proteograph™ Product Suite identifies undiscovered links between protein variants and lung cancer progression

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Peptide-level insights from deep, unbiased proteomics enable protein variant analysis of patient samples, revealing potential non-small cell lung cancer biomarkers

REDWOOD CITY, Calif., March 29, 2023 (GLOBE NEWSWIRE) -- Seer Inc. (NASDAQ: SEER), a life sciences company commercializing a disruptive new platform for proteomics, today announced a new scientific publication in *PLOS One* demonstrating the unmatched utility of the Proteograph Product Suite to uncover novel insights in human health and disease with deep, unbiased proteomics.

Scientists from Seer in collaboration with Luis Diaz, M.D. from Memorial Sloan Kettering Cancer Center found previously unknown associations between four protein isoforms and non-small cell lung cancer (NSCLC) progression, constituting potential novel, disease-relevant biomarkers, or therapeutic targets. Importantly, the identified NSCLC-associated protein isoforms comprise structural variants of proteins that arise from distinct but related mRNAs produced from the same gene through the process of alternative splicing. Different protein isoforms can have distinct roles in biology, influencing disease predisposition and progression. Notably, discovery and quantification of such protein variants in a complex biological sample requires deep, unbiased interrogation of the proteome at peptide-level resolution.

“These findings demonstrate that distinct protein isoforms may differentially contribute to diverse biological mechanisms and to the pathogenesis of cancers, potentially paving the road to identify new diagnostic markers or new therapeutic targets,” said Dr. Diaz, Head of the Division of Solid Tumor Oncology at Memorial Sloan Kettering Cancer Center. “What is especially encouraging here is that these protein isoforms were detected in plasma, a readily accessible sample type, enabling cancer detection and monitoring through liquid biopsy evaluation of patients.”

The researchers found that the short protein isoform of bone morphogenetic protein 1 (BMP1) occurred more frequently in NSCLC patients compared with healthy participants, and with even greater abundance in patients with late-stage cancer, suggesting that this isoform of BMP1 may play a role in NSCLC progression. BMP1 is involved in collagen processing, and the short isoform of the protein lacks the ability to release collagen, which could impact the tumor microenvironment.

The study analyzed 188 plasma proteomes from NSCLC patients and controls to identify disease-associated protein isoforms. In addition to BMP1, the analysis revealed three other protein isoforms with significant differential behavior in NSCLC when compared to healthy controls: complement component 4a (C4a), complement component 1r (C1r) and lactate dehydrogenase B (LDHB).

“This study, which found disease-associated protein isoforms in NSCLC, could only have been achieved using an unbiased peptide-level approach that provides a deeper, more nuanced view of the human proteome,” said Asim Siddiqui, Senior Vice President of Research at Seer. “These findings demonstrate the power of unbiased proteomics to discover novel biology, especially in the context of cancer, that may otherwise be missed by genomics or targeted proteomics.”

Further research is necessary to validate the utility of these protein isoforms as novel biomarkers for NSCLC, or even new therapeutic targets.

Seer’s Proteograph Product Suite enables proteomics studies with an unprecedented combination of speed, scale, depth, and breadth of data, allowing an unbiased interrogation of the proteome to allow studies not previously possible. Seer’s proprietary engineered nanoparticles deliver reproducible performance across samples, labs, and experiments, providing peptide level information that is key to identifying protein variants. The accompanying Proteograph Analysis Suite offers cloud-scalable software for proteomic data analysis, visualization, and generation of biological insights. The Proteograph Product Suite makes it easy to add unbiased, deep, rapid proteomics studies at scale to any lab.

About Seer
Seer is a life sciences company developing transformative products that open a new gateway to the proteome. Seer’s Proteograph™ Product Suite is an integrated solution that includes proprietary engineered nanoparticles, consumables, automation instrumentation and software to perform deep, unbiased proteomic analysis at scale in a matter of hours. Seer designed the Proteograph workflow to be efficient and easy to use, leveraging widely adopted laboratory instrumentation to provide a decentralized solution that can be incorporated by nearly any lab. Seer’s Proteograph Product Suite is for research use only and is not intended for diagnostic procedures. For more information, please visit www.seer.bio.

Forward-Looking Statements
This press release contains “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995, as amended. Such forward-looking statements are based on Seer’s beliefs and assumptions and on information currently

available to it on the date of this press release. Forward-looking statements may involve known and unknown risks, uncertainties and other factors that may cause Seer's actual results, performance, or achievements to be materially different from those expressed or implied by the forward-looking statements. These statements include but are not limited to statements regarding access to proteins, discovery and quantification of protein variants and biological insights, identification and utility of protein isoforms as novel biomarkers and therapeutic targets, deep unbiased interrogation of the proteome at the peptide level, the role of BMP1 in NSCLC pathogenesis and treatment resistance, the role of BMP1 in collagen processing and the tumor microenvironment, the ability of the Proteograph Product Suite to enable proteomics studies with an unprecedented combination of speed, scale, depth, and breadth of data. These and other risks are described more fully in Seer's filings with the Securities and Exchange Commission ("SEC") and other documents that Seer subsequently files with the SEC from time to time. Except to the extent required by law, Seer undertakes no obligation to update such statements to reflect events that occur or circumstances that exist after the date on which they were made.

Media Inquiries:
Elizabeth Eaton
pr@seer.bio

Investor Inquiries:
Carrie Mendivil
investor@seer.bio