Multiplexing Spatial Proteomics of Matrix Biology in Human Health and Disease

Peggi Angel

Ph.D., Associate Professor, Department of Cell & Molecular Pharmacology & Experimental Therapeutics, Medical University of South Carolina, Charleston, SC, USA

The extracellular matrix plays a significant role in cellular messaging, disease initiation & progression and is predictive of outcome and response to therapy. Here, we discuss emerging technology to report the spatial proteomics of matrix biology, including new capabilities to spatially investigate previously hidden post-translational codes within the extracellular matrix. Flexible workflows for spatial matrix biology from clinical specimens include defining approaches to target specific extracellular matrix proteins and strategies to multiplex workflows to synergize with microscopic, metabolic, and cellular information. A long-term goal is to leverage spatial workflows for matrix biology to precisely define health & disease status and predict therapeutic efficacy.

Biography:

Peggi Angel is Associate Professor at Medical University of South Carolina, where she works on technology advancements in MALDI imaging mass spectrometry (IMS) and biomarker imaging analyses in cancer disparities. Dr. Angel attended graduate school at the University of Georgia's Complex Carbohydrate Research Center, graduating with a PhD in 2007. Her graduate research was on development of technologies for mapping N-linked glycan sites in mammalian development. After a postdoctoral fellowship at Emory University focused on membrane proteomics of fetal alcohol syndrome, she won a competitive Postdoctoral Fellowship with the Systems-based Consortium for Organ Design and Engineering. With the Fellowship, she worked at Vanderbilt University in the laboratory of Richard Caprioli on new methods using MALDI IMS for developmental biology. Dr. Angel has developed mass spectrometry methods increasing sensitivity of protein detection from tissues, identifying signaling lipids in negative mode, targeted metabolomics for tissues, cells, biopolymers, and screening assays, extracellular matrix protein detection in clinically archived tissues, and N-glycomic strategies for proteins, cells, tissues and biofluids. Dr. Angel has worked out several strategies

multiplexing enzymatic activity for tissues and biofluids studies towards spatial systems biology information. Dr. Angel is a co-founder of Glycopath, a company that focuses on glycosylation patterns for diagnosis and prognosis. She serves on the board of N-Zyme Scientifics, a company that produces enzymes for mass spectrometry. Dr. Angel is committed to serving the imaging mass spectrometry community and is a founding member of the Executive Committee for the US Imaging Mass Spectrometry Society.