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Biomarker discovery using mass spectrometry-based proteomics/metabolomics and biospecimens

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The introduction of sensitive ionization methods and continuing improvement in resolving power in the past decades has made mass spectrometry an ideal tool for biomarker discovery. The coupling of chromatography and mass spectrometry emerged to be the most powerful profiling techniques for global characterization of proteins and metabolites in biological systems. In this "omics" era, many researchers rely on mass spectrometry-based proteomic and metabolomics experimental approaches to search for potential biomarkers. In this talk, I will describe how I applied these approaches to (1) discover metastasis-promoting secretory proteins of lung cancer cells; (2) discover virulence factors secreted from Streptococcus pyogenes in response to wound environments; and (3) discover biomarkers for assessing exposure to toxicants. Challenges and limitations will be discussed.

Biography

Dr. Pao-Chi Liao completed his Ph.D. in Analytical Chemistry from Michigan State University (MSU) in 1995 before doing postdoctoral research in the Department of Biochemistry at MSU. Dr. Liao joined the faculty at Department of Environmental and Occupational Health, National Cheng-Kung University, Taiwan in 1997, where he was promoted to full professor in 2006, and named Distinguished Professor in 2011. Dr. Liao's research interests and fields of specialty include analytical chemistry, mass spectrometry, proteomics, biomarker discovery, cancer biomarkers, lung cancer metastasis, and environmental and occupational health.

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