

AMY-MELLON LECTURE

Precision Medicine: Proteomic Enablement of Biomarkers and Therapeutics

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Underlying precision medicine is the concept that an individual's Omic signature, including the proteome, will provide a physician with a clinically actionable diagnosis and a subsequent mechanistic therapeutic route. This requires: i) an array of mechanistically defined therapies for diverse disease states, and ii) high-resolution diagnostic approaches capable of identifying which therapy, or therapeutic combination, will be most effective for a specific patient. Proteomics has played a role in the discovery, and now, it is time to move into implementation. We will focus on how technology is now allowing scalable, robust automated protein measurements that enable translation. We illustrate this with our Molecular Twin program, where multi-omic data was used to determine an individual's molecular phenotype in context to cancer. By computationally aligning a patient's molecular profile with those of others, we identify their "molecular twin," revealing shared signaling networks, pathway perturbations, and therapeutic response patterns in plasma. Equally critical, precision medicine requires validated clinical interventions. We will discuss how proteomics has helped to shape the use of a new drug class for which a single dose of immediately following a heart attack is sufficient to stop heart remodeling and death, and how its differential effect at the single-cell level can have profound implications.



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3:30 pm



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