



## CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:  
RP130397

Project Title:  
A Proteomics and Metabolomics Core Facility at the University of Texas MD  
Anderson Cancer Center

Award Mechanism:  
Core Facility Support Awards

Principal Investigator:  
Weinstein, John N

Entity:  
The University of Texas M.D. Anderson Cancer Center

### Lay Summary:

Genomic and proteomic research are leading the drive toward personalized cancer therapy. Not so often publicized but coming up fast, however, is metabolomic research — which aims to profile the many types of small molecules (the metabolites) in a biological sample, and to do so comprehensively. Those small molecules constitute the functional business end of our biology — the amino acids, the vitamins, the simple sugars and complex carbohydrates, the lipids, the energy currency molecules such as ATP, and the legions of molecules that signal within and between cells. Increasingly recognized are the key roles played by those metabolites in the origin, growth, metastasis, and response of cancers to therapy. We need to understand how the various metabolites differ between normal and cancer cells and among different types of cancers. In other words, we need to paint a molecular portrait of the constellations of such molecules and use that information to identify targets of opportunity for cancer prevention and therapy. We, therefore, propose to leverage our experience in metabolomics with the existing equipment and expertise of the UT MD Anderson Proteomics Facility to develop a new Proteomics and Metabolomics Core to advance key projects that have direct implications for the biology and management of cancer. The proposal focuses on one particular type of technology, mass spectrometry, because it is extremely precise, highly sensitive, capable of high throughput, effective with small amounts of tissue, and useful for both proteomics and metabolomics. Because MD Anderson is the nation's number one cancer center, with by far the deepest clinical experience and the most active clinical cancer research program, this institution is ideally situated to translate metabolomic findings directly into patient care. For the enterprise, we have enlisted the collaboration of a pioneer in the metabolomics field, who brings with him a game-changing technology that he recently invented.