Award ID:
RP120092

Project Title:
Proteomics and Metabolomics Core Facility

Award Mechanism:
Core Facility Support Awards

Principal Investigator:
Edwards, Dean P

Entity:
Baylor College of Medicine

Lay Summary:

The purpose of a Core research facility is to maximize the efficiency and cost of doing research by sharing of expensive high-end instrumentation, specialized technologies and resources in a manner that substantially expands the research capabilities of the research community. This application seeks to develop and operate a combined metabolomic and proteomic Core facility that will provide instruments and technical support for cancer research projects of up to 45 faculty members of the Dan L. Duncan Cancer Center at Baylor College of Medicine. We have an existing proteomic Core that requires substantial upgrades; a metabolomics Core currently does not exist. Therefore, we are proposing to expand proteomics coupled with creating a new metabolomics Core. Technology platforms proposed are: mass spectrometry for identification of endogenous protein complexes and their interacting networks and pathways, 2) reverse phase protein arrays for high throughput quantitative analysis and validation of proteomic pathways and 3) targeted profiling of metabolites by single reaction monitoring (SRM) mass spectrometry. These technologies are well suited for a Core since the mass spectrometers and protein arrayers are expensive sophisticated instruments that require a dedicated staff for operation and maintenance. Metabolomics and proteomics, the study of global changes in cellular metabolites and proteins, is a high priority for the overall goals of our cancer research community. Proteins, the products of gene expression, and metabolites (small molecules) synthesized by proteins (enzyme), are the molecules that directly regulate and carry out cellular functions, and when altered are effectors of the cancer cell phenotype. Thus, metabolomic and proteomic profiling of cancer cells and tissues has great promise in identifying novel biomarkers for diagnosis, prognosis and targeted therapies that can alter the future for improved personalized management and treatment of cancer patients.