

Bankhead-Coley Cancer Research Program

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*Medicinal Chemistry
Burnham Institute for Medical Research*

*2009 Program
Shared Instrument Grant
(1-year project)*

Project Title: HTS Using Affinity Selection Mass Spectrometry

Project Summary: The process of cancer drug discovery starts with the identification of a cellular protein that is believed to play a key role in cell growth or death. In order to study the function of the protein and to determine its precise role in cancer, scientists must find a molecule that can specifically interact with that protein. This search is known as high throughput screening, and a million or more compounds are often tested against a protein in an automated manner. This intersection of basic chemistry and biology, resulting in the discovery of a biologically active compound, initiates the process where further studies occur with the active compounds and where they are developed into a new medicine. Overall, the discovery of a new medicine can take up to 10-12 years of research with costs near \$1 billion. Technologies that speed the drug discovery process are welcomed. Mass spectrometry has emerged as a powerful high throughput screening technology for drug discovery and can allow for the screening of large mixtures of compounds in an efficient manner. Protein assays are developed very rapidly on this platform and allow a cancer researcher to find chemical probes that interact with the proteins of interest. This grant allows the purchase of a 'high-definition' liquid chromatography-mass spectrometry system and the establishment of an open access laboratory for Florida's cancer researchers.