



Jack Lay, PhD

Director, Arkansas Statewide Mass Spectrometry Facility

University of Arkansas, Fayetteville

Phone: 479 575 5480

Email: jlay@uark.edu

Academic interests: Biological applications of mass spectrometry, proteomics and mass spectrometry, spectral-activity relationships (SAR), structure elucidation, analytical toxicology.

Research Focus & Techniques of Expertise: Focus is on the broad area of bio-analytical applications of mass spectrometry and the development of methods needed to complete specific research aims within this general area. Examples of some research aims include:

- (1) bacterial taxonomy using proteins, small peptides, and our lipid profiles,
- (2) determination of protein folding energies by H/D exchange,
- (3) identification of proteins and peptides,
- (4) characterization of protein-Hapten complexes,
- (5) identification of natural products and
- (6) analytical toxicology.

The tools employed in this research include both low and high resolution mass spectrometry, direct analysis or analysis in conjunction with HPLC and GC, and ionization using MALDI, ESI, LD, EI and CI. This group has a particular interest in developing rapid screening methods employing little or no separation of mixture components when this is feasible.

Grants

(P3-205) Perception and Modification of Biopolymers by Filamentous Fungi: Towards the Metabolic Engineering of Fungi to Complement Plant-Based Bioproduction Strategies

PI: Burton H. Bluhm (UAF); **Co-PI:** Jackson Lay (UAF)

To produce ethanol from crop residues, plant matter must first be broken down into fermentable sugars. However, crop residues are made of complex carbohydrates that are not easily digested. We are studying fungi that naturally digest crop residues, with the long-term goal of genetically engineering these organisms to maximize bioethanol production.