Biomolecular Resource Lab (BRL)
CCSG – Bioanalytical Core
NCORP – Biospecimen Core

Mark O. Lively, PhD, Professor Emeritus
Scientific Value and Focus of Core Biomolecular Resource Laboratory

- Bioanalytical chemistry expertise
- Study planning, budgeting, management
- Method development, data analysis
Services Available
Bioanalytical Core

• Quantitative analysis of:
  • Proteins, peptides, amino acids,
  • Drugs, drug metabolites, cell metabolites
  • Synthetic DNA, RNA, and analogs
Services Available Biospecimen Core

• Clinical study method design, planning, budgeting

• Participant specimen kit design, assembly, shipping, and receipt

• Specimen collection, processing, analysis and long term storage
Primary Methods Available

• High Performance Liquid Chromatography (HPLC)
  • Gradient and isocratic
  • Reverse phase, ion exchange, molecular exclusion, silica
• UV, VIS, diode array, fluorescence
• 0.20 to 100 mL/min
• Digital instrument control, data collection, and analysis (Waters Empower 3)
Primary Methods Available

• Enzyme Linked Immunosorbent Assays (ELISA)
• DNA/RNA synthesis
• MALDI-TOF analyses of peptides, small proteins, and various biomolecules
• Protein sequence analysis
• 1D and 2D gel electrophoresis
• Protein digestion for mass spec analysis
Examples of HPLC Analytes

• Amino acids from hydrolyzed proteins
• Peptides – protein mapping, synthetic
• Vitamins and cofactors: Vitamin D, Co-enzyme Q10, phyloquinone, tocopherol, carotene, vitamin K, retinol, vitamin E
• Metabolites: glyoxylate, oxobutyrate, oxoglutarate, pyruvate
• Drugs: Orlistat
Examples ELISA methods

- C-reactive protein – a measure of inflammation
- Pepsin – measure of oropharyngeal reflux
- Creatinine – a measure of renal health
- Cotinine – a nicotine metabolite
- 8-oxo-2’-deoxyguanosine – DNA damage
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