**Metabolomics Core**

**Mission:** Our facility measures metabolites in human and rodent tissues and body fluids (serum) and can also assist clinicians and basic science researchers in the design and interpretation of metabolomics results.

**Goals:** To provide a state-of-art facility metabolomics research.

**Capabilities:**

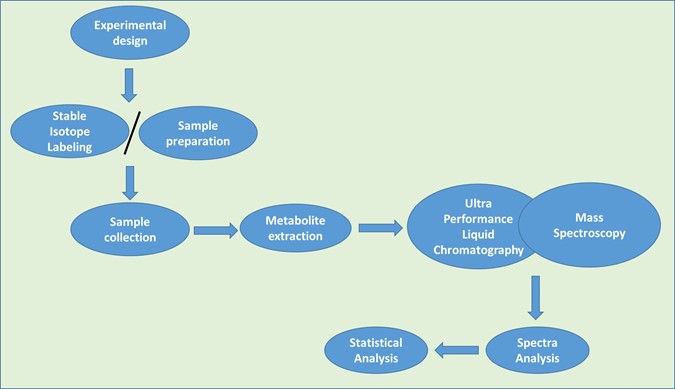
1. Targeted metabolomics – We perform targeted metabolomics, which refers to the analysis of defined subsets of molecules (molecular weight less than 1500 Daltons).
2. Fluxomics – This involves approaches that seek to determine the rates of metabolic reactions within a biological entity.  Specifically, we perform isotope-labeling studies to measure the flow of atoms through metabolic pathways, such as glycolysis, the tricarboxylic acid cycle, beta-oxidation and the urea cycle.
3. Assays for measuring mitochondrial oxygen consumption and glycolytic rates using Seahorse Bioanalyzer.

**Major Equipment:**

ACQUITY UPLC System with Xevo TQ-S Mass Spectrometer

Seahorse XFp Analyzer

**Workflow:**



**Detailed services**:

Metabolites measured:

|  |  |  |  |
| --- | --- | --- | --- |
| **Glycolysis intermediates** | | **Pentose pathway intermediates** | **TCA Cycle intermediates** |
| * Glucose * Glucose 6-phosphate * Fructose 6-phosphate * Fructose 1,6-bisphosphate * Dihydroxyacetone phosphate * Glyceraldehyde 3-phosphate * 1,3-Bisphosphoglycerate * 3-Phosphoglycerate * 2-Phosphoglycerate * Phosphoenolpyruvate * Pyruvate * Lactate | | * 6-phosphoglucono-δ-lactone * 6-phosphogluconate * ribulose 5-phosphate * ribose 5-phosphate * xylulose 5-phosphate * sedoheptulose 7-phosphate * erythrose 4-phosphate | * Acetyl CoA * Oxaloacetate * Citrate * cis-Aconitate * Isocitrate * Oxalosuccinate * α-Ketoglutarate * Succinyl-CoA * Succinate * Fumarate * Malate |
| **Amino acids (Amino compounds)** | | **Urea Cycle intermediates** | **Nucleotide** |
| * alanine * arginine * asparagine * aspartic acid * cysteine * glutamine * glutamic acid * glycine * histidine * isoleucine * leucine * lysine * methionine * phenylalanine * proline * serine * threonine * tryptophan * tyrosine * valine | * α-Aminoadipic acid * Hydroxyproline * Ethanolamine * β-Aminoisobutyric acid * 1-Methylhistidine * 3-Methylhistidine * Hydroxylysine * Sarcosine * Phosphoethanolamine * Citrulline * α-Amino-n-butyric acid * allo-Isoleucine * Ornithine * Carnosine * β-Alanine * Taurine * Cystathionine * Anserine * γ-Amino-n-butyric acid | * carbamoyl phosphate * citrulline * ornithine * aspartate * argininosuccinate. * Arginine * Fumarate * urea | adenine  cytosine  guanine  thymine  uracil  purine  pyrimidine |
| * **Fatty acyls (Fatty acids)** * **glycerolipids** * **glycerophospholipids** * **sphingolipids** * **sterols** | | FADH2  NAD+  NADH  NADP+  NADPH  adenine nucleotides (AMP, ADP, ATP)  Guanosine triphosphate (GTP) |  |

Please contact us for more information on the types of isotope labeling studies performed and for information on consulting serves.

Note: We do not accept samples that were exposed to radioactive or infectious materials.

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