

# Lipidomics & Lipid Analysis Services



Lipids play critical roles in cell biology, physiology, and metabolism. Disruptions in lipid signaling or metabolism are commonly observed in a wide range of pathological conditions. Comprehensive analysis of lipid profiles is a uniquely valuable tool for detecting biologically relevant lipids. The experts at Cayman offer untargeted lipidomics and targeted lipid analysis services to analyze lipid profiles in biological samples.

## Untargeted (Discovery) Lipidomics

### Purpose:

Identify changes in lipid levels across multiple classes

### Applications:

- Generate new hypotheses
- Identify putative biomarkers
- Observe broad metabolic changes
- Inform targeted profiling strategies

Untargeted lipidomics provides a semiquantitative overview of many of the more abundant molecular species across most lipid categories, including fatty acyls, glycerolipids, glycerophospholipids, sphingolipids, sterol lipids, and prenol lipids.

Identification and relative quantitation of lipid species is facilitated by the use of Lipostar software and the LIPID MAPS® Structure Database (LMSD).

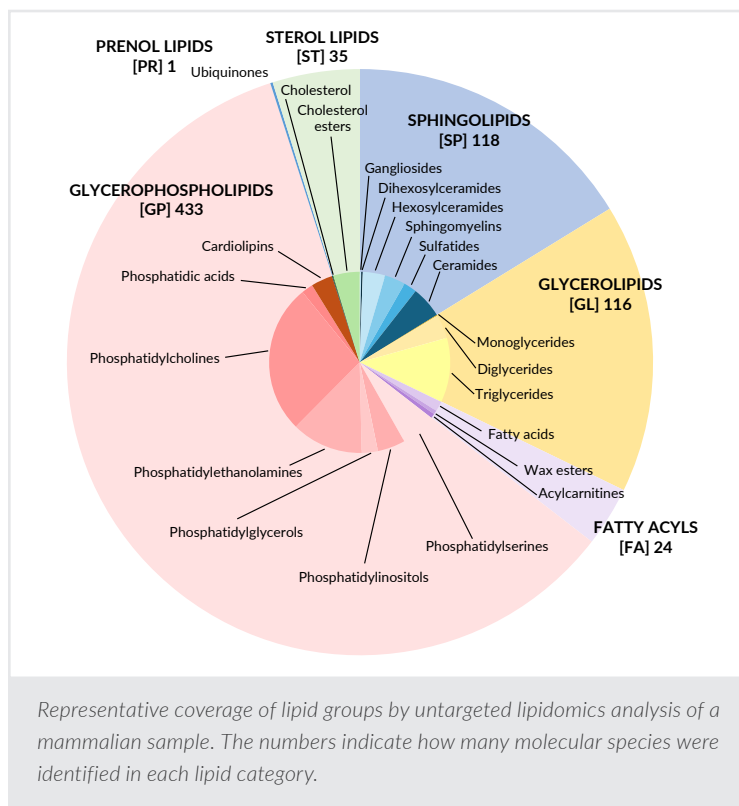
## Targeted Lipid Analysis

### Purpose:

Quantify changes in the levels of specific lipids

- Applications:
- Test a current hypothesis
  - Investigate specific lipid biochemical pathways
  - Verify or validate biomarkers
  - Detect and quantify lipid mediators

Targeted lipid analysis provides semiquantitative or quantitative analysis of specific molecular species, typically within a class or subclass of lipids.



Learn more about our Lipidomics & Lipid Analysis methods, panels, data analysis, and reporting at [www.caymanchem.com/lipidomics](http://www.caymanchem.com/lipidomics)

## Available Panels for Targeted Lipid Analysis:

We have a variety of established targeted lipid panels available, as well as options for customization, method development, and analysis of smaller groups of lipids or single lipid analytes.

### Fatty acids

- GC-based analysis of fatty acids C12-C26

### Short-chain fatty acids

- LC-MS-based analysis of fatty acids C2-C6

### Polyunsaturated fatty acids

- LC-MS-based analysis of selected fatty acids C20-C34 with 3-6 double bonds

### Oxylipins

- Eicosanoids (prostaglandins, leukotrienes, thromboxanes)
- Hydroxy-, hydroperoxy-, & epoxy-fatty acids
- Specialized pro-resolving mediators

### Endocannabinoids

- Arachidonoylglycerol, anandamide, & related molecules

### Glycerophospholipids

- CL, PA, PC, LPC, PE, LPE, PG, BMP, PI, PS

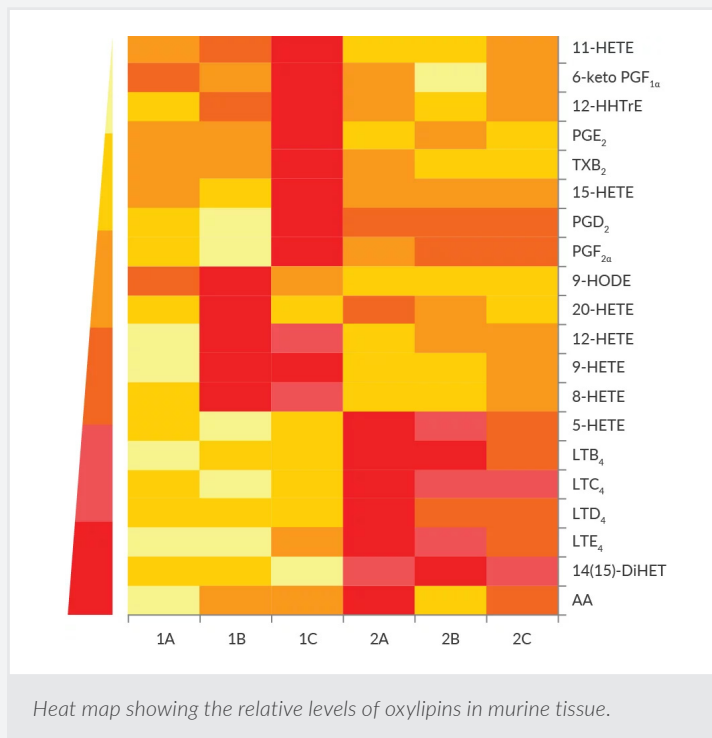
### Oxidized phospholipids

- Hydroxy- and hydroperoxy-PC, -PE, & other phospholipids

### Bile acids

- Primary, secondary, & murine-specific

### Cholesterol esters



Heat map showing the relative levels of oxylipins in murine tissue.

### Sphingolipids I

- Ceramides
- Mono- & di-hexosylceramides
- Sphingomyelins

### Sphingolipids II

- Sphingosine & S1P
- Sphinganine
- Ceramide phosphates

### Sphingolipids III

- Glucosylceramides
- Galactosylceramides
- Glucosphingosine

### Sphingolipids IV

- Gangliosides

### Sphingolipids V

- Globosides
- Other complex glycosphingolipids

## Why Cayman?

- Decades of collective expertise in lipid synthesis, purification, and characterization
- State-of-the-art facilities equipped with UPLC systems coupled to triple-quadrupole or Orbitrap mass spectrometers, as well as advanced analysis software
- Well-established, optimized methods for sample preparation, lipid extraction, LC-MS/MS, and data analysis to provide accurate results with a quick turnaround time
- Rigorously validated internal and calibration standards from our catalog of high-quality lipids
- Experience analyzing lipids in a wide range of tissue types, biological fluids, and both prokaryotic and eukaryotic cells
- Flexibility to support projects ranging from small pilot studies to large-scale analysis
- Our lipid analysis has been published in high impact journals including *Nature*, *Cancer Cell*, and more

Learn more about our Lipidomics & Lipid Analysis Services and request a quote at [www.caymanchem.com/lipidomics](http://www.caymanchem.com/lipidomics)