



EMORY
UNIVERSITY

Emory Integrated Metabolomics and Lipidomics Core

Emory Integrated Core Facilities

EIMLC FACILITIES & OTHER RESOURCES

Emory Integrated Metabolomics and Lipidomics Core (EIMLC):

The EIMLC (<http://www.cores.emory.edu/eimlc>) is equipped to perform quantitative lipidomics and metabolomics analyses on a wide variety of biological samples (e.g. blood, serum, plasma, solid tissues, cell extracts, etc.) to support both clinical and basic research efforts on campus and in the broader research community. These analyses provide insights into lipids and small soluble metabolites whose abundance can be monitored as

biomarkers to predict and follow progression of a wide range of diseases, such as metabolic disorders (e.g. obesity, type II diabetes, and NAFLD), neurodegenerative diseases (e.g. Alzheimer's Disease and Parkinson's Disease), and cancer (e.g. prostate and breast cancer).

EIMLC Equipment: The EIMLC is located in Rms. S205-S210 in Health Sciences Research Building II on the Emory University campus. The EIMLC lab houses a Sciex QTrap5500 enhanced high performance hybrid triple quadrupole/linear ion trap LC/MS/MS mass spectrometer with mass range of m/z 5 to 1250 in triple quadrupole mode, and 5-1000 in LIT mode. Highly sensitive targeted mass spectrometry work is conducted using an Agilent 6495c mass spectrometer with a mass range of m/z 5-3000, 25msec polarity switching, and 17000 Da/sec scan speeds. For high resolution mass spectrometry, the EIMLC utilizes a Thermo ID-X tribrid mass spectrometer that boasts resolution up to 500,000 FWHM and scan speeds up to 30Hz. Each mass spectrometer is paired with a complimenting HPLC/UHPLC. These are the ExionLC AC HPLC/UHPLC system, the 1290 Infinity II, and Vanquish UHPLC, respectively. Additionally, the EIMLC has recently acquired an Agilent 6546 qTOF, a Shimadzu TQ4080 GC-MS, and Bruker TIMS-ToF. Data analysis is done using a 44 core Xenon workstation with 196 GB of RAM for processing large datasets. Computer workstations with lipid processing software, such as LipidView (Sciex), MassHunter (Agilent), and MetaboScape (Bruker), are also available. Minor equipment includes -80 °C freezers, nitrogen evaporators, Biotage Extraheras; robotic SPE instrument for fully automated specialized lipid extractions, tabletop centrifuges, a fume hood, rockers, analytical balances, and multisample vortexers.

Major equipment available in the EIMLC:

- Mass Spectrometers
 - Sciex QTrap 5500
 - Agilent 6495c
 - Agilent 6546 qToF
 - Shimadzu TQ8040 NX
 - Bruker TIMS-ToF Pro
- Chromatography
 - Sciex Exion AC HPLC
 - Agilent 1290 Infinity II
- Software
 - Sciex OS
 - LipidView
 - MassHunter
 - MetaboScape
 - GCMSolutions
- Sample Preparation
 - Biotage Extrahera Solid Phase Extraction Robot

- Biotage Extrahera LV-200 Solid Phase Extraction Robot
- Omni BeadRuptor

Computing: The EIMLC has computers networked locally with internet-accessible ethernet lines and to a dedicated 24 Tb backup drive (Synology DiskStation). The EIMLC office is outfitted with three Dell OptiPlex 9020 computers with dual 24" monitors for data processing and 1TB external storage for local backup.

Offices: The EIMLC has dedicated office space adjacent to the laboratory space on the 2nd floor of the Health Sciences Research Building II in offices N256 and N255, which provides space for data integration services and customer consultations.

Consultation: In addition to providing analytical services for a fee, the EIMLC provides the consultation services of Dr. Kristal Maner-Smith, Core Director, who has over 15 years of experience in the quantitative analysis of lipids. She will advise with experimental design and interpretation of data, providing insight into the activity of potential pathways, as well as provide written support for updates, reports, and future manuscripts.

Data Integration: The EIMLC offers data integration and statistics services to aide in the integration of 'omics datasets. This service is provided by two PhD level scientists with more than 10 years combined experience in bioinformatics methods. Using their expertise we have contributed novel findings to knowledge about the progression of Alzheimer's Disease, vaccine evaluation, and exercise biology as a part of the Religious Orders Study or Rush Memory and Aging Project (ROSMAP) consortia, Vaccine and Treatment Evaluation Unit (VTEU), and Molecular Transducers of Physical Activity Consortium (MoTrPAC), respectively.