

MAJOR EQUIPMENT (updated on 02-11-2025)

Q Exactive HF-X Hybrid Quadrupole-Orbitrap mass spectrometer (Thermo Fisher Scientific)

The Q Exactive HF-X mass spectrometer harbors a high-field (HF) Orbitrap mass analyzer and an Advanced Quadrupole Technology (AQT) resulting in higher resolution (240,000 at m/z 200) and scan speed (up to 40 Hz). A High Capacity Transfer Tube (HCTT) and electrodynamic ion funnel also contributes towards the improved sensitivity of the instrument. This mass spectrometer enables fast identification and analysis of peptides, label-free and TMT quantitation.

Orbitrap Fusion Lumos Mass Spectrometer with Electron Transfer Dissociation (ETD) (Thermo Fisher Scientific)

The Fusion Lumos mass spectrometer has three mass analyzers— quadrupole, orbitrap, and linear ion trap— as in the fusion tribrid system. The instrument houses an upgraded ion optics (High Capacity Transfer Tube and Electrodynamic Ion Funnel), an Advanced Quadrupole Technology (AQT), and a new ETD-HD feature. The MS/MS acquisition rates of Lumos is up to 20 Hz for both Orbitrap and linear ion trap measurements. Ultra-high-field Orbitrap mass analyzer increases the resolving power up to 500,000 FWHM at m/z 200. Synchronous Precursor Selection (SPS) feature significantly augments the number of peptides and proteins identified and improves quantitative accuracy in TMT experiments. This feature is also available in other Fusion instruments. Lumos offers several fragmentation modes, like CID, HCD, ETD, and EThcD, that are helpful for PTM analysis.

UltiMate 3000 RSLCnano (Thermo Fisher Scientific)

UltiMate 3000 RSLCnano system can be operated with nano-, capillary-, and micro-flow options. ProFlow technology in this system improves nano flow rate control resulting in high retention time precision that is crucial for LC-MS based proteomics methodology. The pressure capacity of this UHPLC is up to 860 bar (12473 psi).

Liquid Handling Station (LHS)

The BRAND Liquid Handling Station handles routine pipetting tasks (e.g., BCA assay, protein digestion, aliquoting, etc.) at high speed and with the highest precision.

Computing

The Emory Integrated Proteomics Core (EIPC) has multiple search engine platforms including Sequest and Andromeda. Core facility personnel have access to high-end workstations capable of processing both raw and post-analyzed data.

Shared equipment also includes gel imagers for chemiluminescence and fluorescence, equipment for protein, a LiCor fluorescent system for quantitative immunoblotting. Fluorescence and standard microplate readers are available for protein quantification. High-speed and ultra-centrifuges are available as core equipment. There are sliding microtomes, standard and dual beam spectrophotometers, cryostats, pH meters, balances, oven, refrigerators, hot plates, stirrers, -70° C freezers, and other standard equipment.