

Major Equipment for Emory Glycomics and Molecular Interactions Core (EGMIC)

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EMORY
UNIVERSITY

Emory Glycomics and
Molecular Interactions Core
Emory Integrated Core Facilities

Agilent 6560 ion mobility Q-TOF Mass Spectrometer with 1290 UHPLC (Agilent, USA)

The Agilent 6560 Ion Mobility Q-TOF Mass Spectrometer integrates ion mobility separation with high-resolution Q-TOF mass spectrometry, providing enhanced separation, selectivity, and structural characterization of complex molecules. The additional ion mobility dimension allows resolution of molecular ions based on shape, enabling deeper structural insights. Equipped with an Electron Capture Dissociation (ECD) compartment, the system enhances top-down proteomics by enabling native protein and protein complex characterization while preserving fragile post-translational modifications (PTMs). It is particularly useful for resolving isobaric PTMs, such as Asp vs. iso-Asp or D- vs. L-amino acids, and for differentiating lipid isomers, where only double bond position or stereospecific numbering varies. The Agilent 6560 delivers high sensitivity, mass accuracy, and advanced separation capabilities, making it an essential tool for proteomics, structural biology, metabolomics, and lipidomics research.



Agilent 6545XT AdvanceBio QTOF Mass Spectrometer with 1290 UHPLC (Agilent, USA)

The Agilent 6545XT AdvanceBio Q-TOF Mass Spectrometer is a high-performance LC/Q-TOF system designed for biopharmaceutical characterization. It provides high-resolution, accurate-mass analysis to profile major and minor proteoforms, offering exceptional sensitivity and clarity in intact protein mass spectrometry. With time-of-flight (TOF) technology, the system delivers precise mass measurements, enabling researchers to confidently characterize proteins, peptides, and biomolecules. The Iterative MS/MS mode enhances peptide digest analysis, allowing deeper insight into complex protein structures. The 6545XT AdvanceBio Q-TOF is an essential analytical tool for biopharma workflows, supporting applications such as monoclonal antibody characterization, post-translational modification analysis, and biosimilar comparability studies. Its robust performance and versatility make it a cornerstone instrument for biopharmaceutical development and research.



TSQ Altis Triple Quadrupole MS (ThermoFisher Scientific, USA)

The TSQ Altis™ Triple Quadrupole Mass Spectrometer from Thermo Fisher Scientific is a high-performance instrument designed for ultra-sensitive and precise quantification of a wide range of molecules. It delivers high sensitivity, enabling the detection and quantification of metabolites, illicit drugs, contaminants, and other analytes at ultra-low levels in complex biological matrices. The system offers extra selectivity for peptide quantification through its Highly Selected Reaction Monitoring (H-SRM) capability, ensuring accurate and reproducible results. Its triple quadrupole design supports highly selective reaction monitoring (SRM), fast polarity switching, and a high-speed collision cell, making it ideal for pharmaceutical, biopharmaceutical, clinical research, forensic toxicology, food safety, and environmental testing applications.



LEAP HDX automation (Agilent, USA)

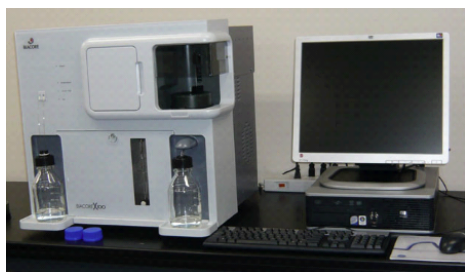
The LEAP HDX Automation System is a high-precision robotic platform for Hydrogen/Deuterium Exchange (HDX) mass spectrometry, enabling in-depth characterization of protein-protein interactions, protein-conjugate binding, and protein stability. Paired with the Agilent 6545XT AdvanceBio Q-TOF, it ensures high reproducibility and optimized analysis through automated control of temperature, pH, and in-line digestion, maximizing protein coverage. With advanced automation and precision, the LEAP HDX system is an essential tool for biopharmaceutical

research, supporting applications such as epitope mapping, conformational analysis, and drug discovery.



Biacore X100 (Cytiva, USA)

The Biacore X100 is a versatile surface plasmon resonance (SPR) system designed for laboratories studying molecular interactions. It provides real-time insights into protein function and biological mechanisms, making it an essential tool for molecular interaction research. The system enables kinetics, affinity, specificity, and concentration analysis in a single platform, allowing researchers to define structure-function relationships and understand molecular pathway dynamics. It supports assay development for low molecular weight (LMW) compounds and helps identify promising molecules for potential use in research, diagnostics, or therapy. Biacore systems are widely used in pharmaceutical drug discovery, antibody characterization, proteomics, immunogenicity studies, and biotherapeutic development.



MicroCal Auto-iTC200 (Malvern Panalytical, USA)

The MicroCal Auto-iTC200 is a fully automated, highly sensitive, low-volume isothermal titration calorimeter (ITC) designed for precise characterization of molecular interactions. It provides direct, label-free, in-solution measurement of binding affinity (K_D), reaction stoichiometry (n), enthalpy (ΔH), and entropy (ΔS) in a single experiment, offering a comprehensive thermodynamic profile of molecular interactions. Beyond measuring binding affinities, the system helps elucidate interaction mechanisms, making it a valuable tool for drug discovery, biopharmaceutical research, and structural biology. It is widely used to analyze interactions involving small

molecules, proteins, antibodies, nucleic acids, lipids, and other biomolecules, and can also be applied to enzyme kinetics studies.



InnoScan 1100 AL (Innopsis, France)

The InnoScan 1100 AL is a high-resolution, fully automated 3-color fluorescence scanner, ideal for high-density and three-color microarrays, as well as cell microarrays. With a resolution of up to 0.5 $\mu\text{m}/\text{pixel}$ (equivalent to a 20 \times objective), it provides high-quality whole-slide imaging for detailed microarray analysis. The scanner features a real-time autofocus system and confocal PMT detection, ensuring exceptional image clarity. Its user-friendly software and 24-slide autoloader enable fully automated scanning of up to 24 slides at a time, streamlining high-throughput workflows. Designed for multiplexed whole-slide imaging, the InnoScan 1100 AL can scan a variety of microscope slide substrates, including cells, tissue, proteins, DNA, glycans, and peptides. With three excitation channels, it allows multiplexed analysis, enabling the detection of multiple samples or markers on the same slide.

