UC Irvine 趙 Chao Family Comprehensive Cancer Center

Mass Spectrometry Shared Resource

Felix Grün, PhD

2026 Scientific Retreat

November 5, 2026

Mission and Leadership

MISSION

Support researchers with expertise and services in mass spectrometric analysis of proteins, oligo nucleotides, metabolites and drugs

To fulfill this mission, **MS**:

- Consists of three facilities/labs that provide specialized expertise and high-end instrumentation
- Provides consultation on project goals, choice of analytical pipelines, instrument selection, method development
- Provides access to instruments (open or staff operated)
- Provides staff services and user training as appropriate
- Provides data analysis and interpretation from self-guided to intensive collaborative projects
- Assists with publications and grant submissions

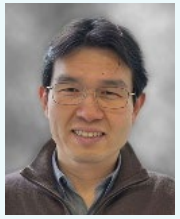
LEADERSHIP



Sergey Pronin, PhD
Director



Felix Grün, PhD
Director, MSF



Cholsoon Jang, PhD
Director, NMDL



Lan Huang, PhD
Director, HMSF



Clinton Yu, PhD
Manager, HMSF

Services

High-end Mass Spectrometry Facility (HMSF)

High-end Orbitrap Instruments:

- ThermoSci Orbitrap Fusion Lumos Tribrid
- ThermoSci Orbitrap XL
- Qualitative and quantitative profiling of whole proteomes
- Multiplexed, targeted, and label-free quantitative proteomics
- Characterization of post-translational modifications (PTMs)
- Protein interaction and structural analysis using cross-linking (XL-MS)

- **NEW** Thermo Scientific Orbitrap Astral**



Staff Services:

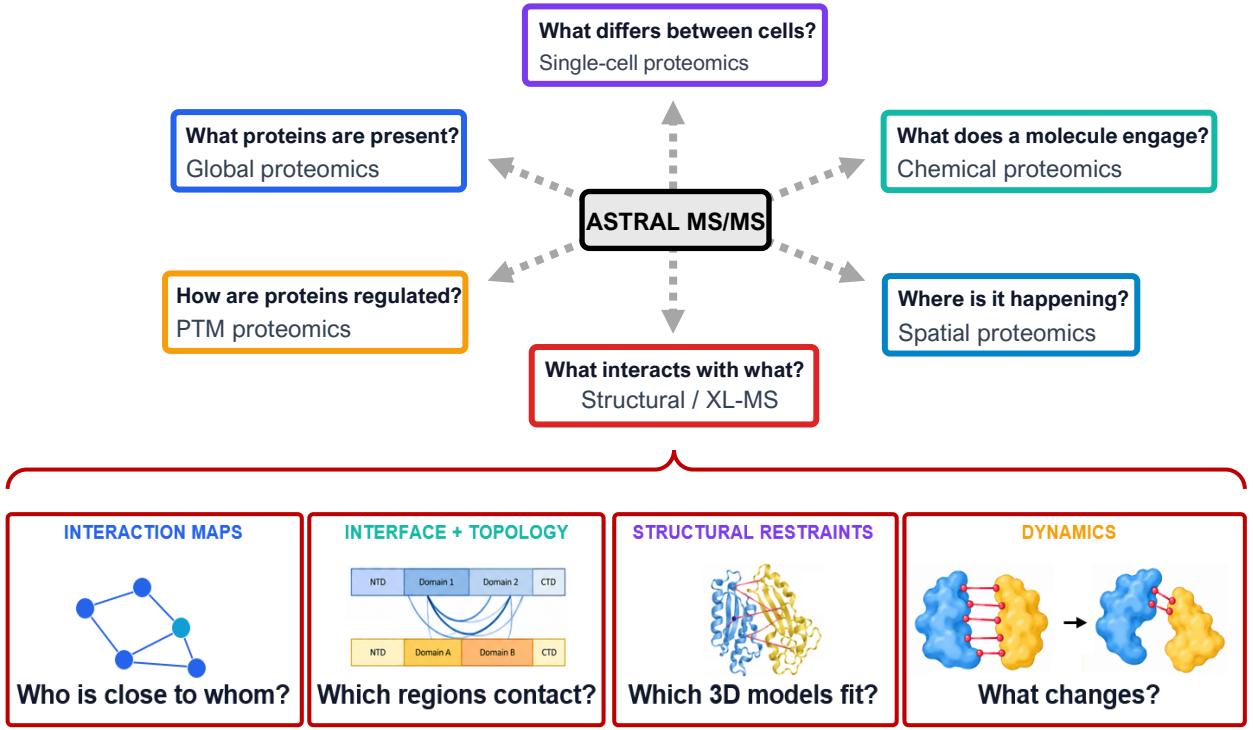
- Per sample, project or longer term collaborative support
- Project seed funding
- Fully staff operated

Services

High-end Mass Spectrometry Facility (HMSF) cont.

Services

- Qualitative and quantitative profiling of whole proteomes
- Small-scale proteomics (single-cell, spatial proteomics)
- Multiplexed, targeted, and label-free quantitative proteomics
- Characterization of post-translational modifications (PTMs)
- Drug/chemical probe-protein interactions
- Protein interaction and structural analysis (XL-MS)



For services and consultations, please contact:



Clinton Yu, PhD
clinton.yu@uci.edu
https://sites.uci.edu/hmsf
D224 Med Sci 1

Services

Nutrient Metabolism & Disease Lab (NMDL)

NMDL Research Focus:

- **The link between diets, metabolic diseases and cancers:** investigate how genetic factors and other dietary nutrients (e.g., alcohol, fiber) influence fructose-induced pathogenic mechanisms.
- **Organ communications**: To understand how organs communicate and affect each other, measured circulating molecules in arterial blood (organ input) and venous blood (organ output) to quantify organ-specific molecule release and uptake.
- **Untargeted Metabolomics and Isotope Tracing Technology Development**

Project Services:

- Orbitrap and triplequad LC-MS/MS instruments
- Untargeted metabolomics/lipidomic analyses
- Targeted metabolomics/lipidomic analyses
- Stable isotope tracing experiments
- Focused research on metabolic changes in health and disease

Staff Services:

- Fully staff operated
- Data acquisition
- Bioinformatic analysis
- Isotope Tracing

Contact us:

choljang@uci.edu

Services

Mass Spectrometry Facility (MSF, Chemistry)

Walk-up Open Access for 20 instruments:

- LC-MS and GC-MS for polar and non-polar small molecule analysis (low resolution)
- LC-MS/MS for peptide/protein characterization; sequencing; PTMs; (high resolution ± 3ppm)
- LC-MS/MS for untargeted metabolomics/lipidomics
- LC-MS/MS for quantitative targeted metabolomics (e.g. custom assays, PK/PD studies)
- MALDI for proteomics and polymers
- MALDI IMS for spatial metabolomics/lipidomics

Pricing/Service time:

- Low cost ($3-20 per sample)
- High-throughput: results from 5 mins to 2-3 day
- Open 24/7

Staff Services (B. Katz, K. Campos, F. Grün):

- User/instrument training (weekly)
- Molecular formulae (MF) validations
- Protein characterization (exact mass; sequencing; PTMs; conjugates)
- Oligonucleotide (exact mass; conjugate validation)
- Imaging Mass Spectrometry
- Data processing and software packages: onsite or via Server & Remote Desktop

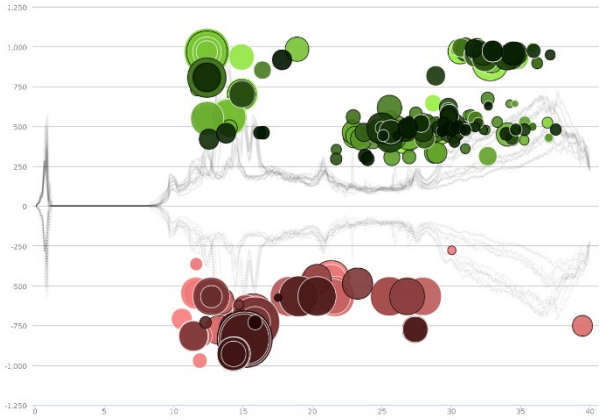
- **New SRA-1 position (Cancer Center funded)**

Contact us:
https://ucimsf.ps.uci.edu

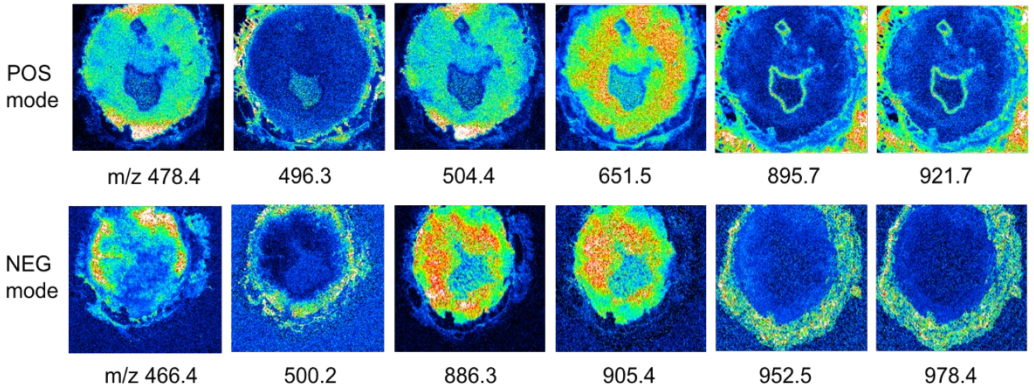
Example Services

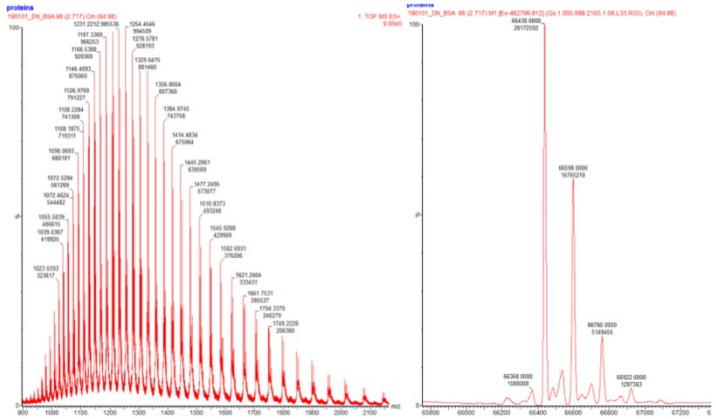
Mass Spectrometry Facility (MSF, Chemistry)

Untargeted Metabolomics: Biomarkers



Tumor Imaging: Spatial Metabolite Profiling





Electromotive Drug Administration (EMDA): Mitoxantrone in Pig Ureter



NIH S10: Shimadzu iMScope

UC Irvine 趙 Chao Family
Comprehensive Cancer Center

Mass Spectrometry

Questions? Contact us!

cancer.uci.edu/mssr
spronin@uci.edu

- **HMSF:** sites.uci.edu/hmsf | clinton.yu@uci.edu
- **NMDL:** choljang@uci.edu
- **MSF:** ucimsf.ps.uci.edu