



MEDICINAL CHEMISTRY (MEDCHEM) CORE

The MedChem Core supports the acceleration of drug development and research on the UTHSC campuses and in the Memphis area research community by providing consultation and laboratory services in medicinal chemistry, synthetic chemistry, and analytical chemistry.

Synthetic chemistry resources are a necessary cross-cutting platform to support a robust drug discovery and drug development research program. The MedChem Core assists UTHSC investigators in all aspects of small molecule drug development and research, including target validation, lead optimization, tool compound custom synthesis, small scale and multi-gram scale synthesis and purification, structural determination, and purity analysis. The core also provides small molecule qualitative and quantitative analysis, purity analysis, stability analysis, as well as pharmacokinetic (PK) analysis based on LC-MS/MS techniques.

FACILITIES

Our 400 sq. ft. synthetic chemistry laboratory is equipped with chemical fume hoods, balances, heating mantles, stirrers, refrigerators, freezers, Buchi R-300 rotary evaporators with V-300 vacuum pumps, a lab oven, a Labconco Freezone 4.5 Liter Lyophilizer, a Buchi Melting Point M-565, a Discover SP Microwave Synthesizer and a Reveleris PREP Purification System. A Janus robot for high throughput screening was added in FY23.

The MedChem core also has access to the College of Pharmacy shared analytical facility directed by Dr. Wei Li (uthsc.edu/pharmacy/research/analytical-facility.php), which includes NMRs (a Varian Inova 500 and a Bruker Avance III 400), LC-MS instruments (Waters Xevo G2-S QTOF with Waters Acquity UPLC and AB SCIEX TQ5500 with Shimadzu Nexera XR HPLC), and other essential analytical instruments, such as IR spectrometers, UV spectrometers, fluorometers and a polarimeter.

SERVICES

Medicinal and Synthetic Chemistry Platforms

- Target Validation and Drug Design
- Lead Optimization
- Small Molecule Custom Synthesis
- Scale-Up Synthesis and Purification
- Structural Determination by NMR, MS, Elemental Analysis, etc.
- Consultation on any issue related to medicinal chemistry and drug development

Analytical Chemistry Platforms

- Absolute Quantitation of Small Molecules by LC-MS/MS
- Purity and Stability analysis
- Pharmacokinetic (PK) Analysis

STAFF



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Dr. Jiawang Liu earned his BS in Pharmaceutical Science and his PhD in Medicinal Chemistry from Peking University Health Science Center, College of Pharmaceutical Science, Beijing, China. He has over 15 years of experience in drug design, synthesis, and screening, with 60 scientific papers published in peer-reviewed journals.

For more information:

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uthsc.edu/research/institutional-cores/medicinal-chemistry/