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Chemistry and DMPK Core Facility

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CHEMISTRY AND DMPK CORE FACILITY

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CORE OVERVIEW

Medicinal chemistry is one of the vital components of the iterative cycle of drug discovery.

This component is embedded in hit-to-lead and lead optimization stages.

Twelve years of collective experiences and services provided by this Chemistry DMPK Core support the view that a majority of investigators are faced with two significant hurdles in advancing their research programs: compound acquisition and early-stage compound evaluation.

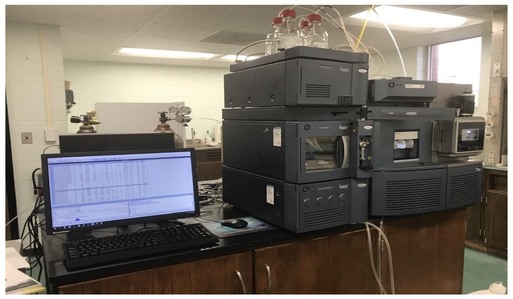
This Core has bridged the gap by providing investigators with consultation, training, and services in medicinal chemistry, drug metabolism, and analysis, helping alleviate the bottleneck associated with compound acquisition and evaluation.

CORE SERVICES

The Chemistry and DMPK Core of the NIH COBRE Natural Products Neuroscience (NPN) program at the University of Mississippi supports investigators with the following studies on a fee-for-service basis:

- Consultation
- Multi-step synthesis
- Compound purification and structure elucidation
- In vitro metabolism (microsomes)
- Bioanalytical method development (UPLC-MS)
- In vivo pharmacokinetic studies (plasma)
- Tissue distribution studies (homogenates)

INSTRUMENTATION



UPLC-Triple Quad MS

Combiflash

NMR

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SYNTHESIS WORKFLOW

Synthesis and Purification

Our core specializes in milligram to gram scale synthesis of small molecules including APIs, peptides, drug conjugates, reference standards, and natural products analogs.

Purification of intermediates and final target compounds are conducted using flash chromatography (automated preparative, Combiflash) and when suitable, crystallization methods.

Structure elucidation and purity assessment are accomplished using NMR and HRMS (electrospray).

DMPK WORKFLOW

Bioanalytical Method Development and Validation UPLC/MS-MS

We optimize compound and extraction protocols using MS/MS and optimize method using UPLC/MS-MS,

We determines lower limit of quantitation (LLOQ), trial precision and accuracy, specificity, selectivity, matrix effects, recovery, Intra- and inter-day precision and accuracy batches, and stability studies.

Bioanalysis UPLC/MS-MS

We analyze drug and metabolite concentrations from various biological fluids (plasma and tissues homogenates)

In Vitro Metabolism Studies - Liver Microsomes

We evaluate microsomal stability of compounds to identify metabolites formed and half-life of the compound at pre-determined time points.

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