The mission of the Animal Behavior Core facility is to improve the scope and competitiveness of functional CNS research at UMMC, COBRE and INBRE facilities in Mississippi by:

- Providing these neuroscientists with the tools and technical assistance to identify and monitor animal behavior across a variety of species.
- Training these neuroscientists in state-of-the-art techniques in the analysis of animal behaviors.
- Assisting these neuroscientists with the interpretation and presentation of data and results relating to animal behaviors.

The CPN-funded Animal Behavior Core conducts state of the art rodent behavioral testing for investigators at UMC and other nearby institutions. The core facility is equipped to perform a comprehensive battery of behavioral tests to thoroughly phenotype overall motor and sensory function of rats and mice as well as specific behaviors of interest to specific investigators (learning and memory, motor function and gait, place/fear conditioning, pain/analgesia, depression- and anxiety-related behaviors). The Core is equipped to assist in all aspects of rodent behavioral testing including design and execution of behavioral tasks as well as data analysis and interpretation.

CORE PERSONNEL

- Ian A. Paul, Ph.D., Animal Behavioral Core Director. G-114, x4-5883
- Xiu Liu, Ph.D., Animal Behavioral Core Co-Investigator
- James Shaffery, D.Phil., Animal Behavior Core Co-Investigator
- Ashish Meshram, MBBS, Animal Behavioral Core Technician. G-114, x4-5743
SERVICES

- Behavioral and neurological phenotyping including neurological assessment (righting, reflex response, arousal, startle, seizure activity), activity, balance/coordination, simple pain/sensory testing, aggression
- Testing relevant to affective disorders and antidepressant activity (acute – forced swim and tail suspension tests and chronic social defeat, chronic mild/unpredictable stress, learned helplessness)
- Testing relevant to fear and anxiety and anxiolytic activity (Plus maze, zero maze, marble burying)
- Learning and memory (active/passive avoidance, spontaneous alternation, water maze, Barnes maze)
- Assistance with specialized/custom testing as needed (e.g. Sexual behavior, maternal behavior, social interaction)
- Assessing ultrasonic vocalization for pain, anxiety, stress, and sexual and social behaviors.
- Sleep and circadian rhythm monitoring and/or disruption.

BEHAVIORAL TESTING FACILITIES ARE EQUIPPED WITH:

- Overhead video camera + slave computer + Noldus Ethovision (movement tracking)
- Noldus Observer (complex analysis of individual and social behaviors)
- Metris Sonotrack 4 channel ultrasonic detection and analysis system with four isolation cubicles for analysis of vocalizations such as distress and social encounter
- Automex activity monitors + slave computer
- Horizontally and overhead video cameras
- Elevated Plus, Zero mazes
- Plexiglas observation chambers with mirrors
- 4 Swim test cylinders + dividers
- Tail suspension frame (G-318, mouse only)
- Rheostat-controlled lights
- Sound Meter
- T-maze
- Water maze
- Barnes maze
- 2 Shuttle boxes (G-118, rat only)
- Focused beam nociception apparatus
- Rotorod
- Red lights
- Light meter

LOCATIONS

- Rat Behavioral Laboratory G118 (250 sq ft)
- Mouse Behavioral Laboratory G317 (250 sq ft)
- Rat/Mouse Water Maze Laboratory G318 (100 sq ft)
- Rat/Mouse Ultrasonic Analysis Laboratory G114 (100 sq ft)
- Rat Sleep EEG/Circadian Rhythm Laboratory G010 (100 sq ft)
Funds for the Animal Behavioral Core of the Center for Psychiatric Neuroscience (CPN) were awarded by the National Center for Research Resources (NCRR Grant #P20 RR017701) to the University of Mississippi Medical Center (UMC) for its psychiatric neuroscience research program.

### FEE SCHEDULE

Fees in the ABC will vary depending on whether ABC personnel conduct and analyze the experiments or the individual investigator’s personnel conduct the study with ABC personnel advice and supervision. The fee schedule below represents typical fees for ABC personnel conducting a variety of types of experiments. Please consult with the ABC Director for a quote for your experiment. The ABC does not charge for consulting during project development.

<table>
<thead>
<tr>
<th>Protocol</th>
<th>Species</th>
<th>Category</th>
<th>Days req’d</th>
<th>Hrs/Day</th>
<th>Hrs Total</th>
<th>Typical Group Size</th>
<th>UMMC Group Cost</th>
<th>External Group Cost</th>
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<tbody>
<tr>
<td>1. Active/Passive avoidance (5, 9)</td>
<td>rat, mouse</td>
<td>Learning, Memory</td>
<td>6</td>
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<td>9</td>
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<td>2. Challenge beam (10)</td>
<td>mouse</td>
<td>Balance, Coordination</td>
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<td>3. Chronic unpredictable stress (3, 35)</td>
<td>rat</td>
<td>Depression, Antidepressant Activity, Stress</td>
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<td>$4,524</td>
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<td>4. Developmental milestones (1, 2, 13, 31)</td>
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<td>5. Electroconvulsive shock (23, 25)</td>
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<td>6. Elevated plus maze (26, 29)</td>
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<td>7. Female sexual behavior (29)</td>
<td>rat</td>
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<td>Analgesia, Pain</td>
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<td>9. Tail flick (6)</td>
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<td>10. Forced swim test (12, 28)</td>
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<td>Antidepressant Activity</td>
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<td>11. Forced swim test (7, 27)</td>
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<td>Antidepressant Activity</td>
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<td>12. Gait measurement (inkpad)</td>
<td>mouse</td>
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<td>13. Novel tone reactivity (29)</td>
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<td>Novelty Response</td>
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<td>14. Juvenile play behavior (29)</td>
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<td>15. Locomotor activity testing (16) (12)</td>
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<td>16. Male sexual behavior (16, 19)</td>
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<td>2.5</td>
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<td>18. Morris water maze (20, 30, 34)</td>
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<td>Duration (min)</td>
<td>Max Score</td>
<td>Low Score</td>
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<td>Novel object exploration (29)</td>
<td>rat</td>
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<td>Object-Conspecific preference (29)</td>
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<td>Social Behavior</td>
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<td>2</td>
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<td>Passive avoidance (17)</td>
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<td>Rat</td>
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<td>Rotorod (8)</td>
<td>rat, mouse</td>
<td>Motor Function, Coordination</td>
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<td>24</td>
<td>Seizure rating</td>
<td>rat, mouse</td>
<td>Convulsions, Anticonvulsants</td>
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<td>Social defeat (11, 18)</td>
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<td>Rat</td>
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<td>28</td>
<td>Tail suspension test (14, 33)</td>
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<td>Antidepressant Activity, Stress</td>
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<td>29</td>
<td>Ultrasonic vocalization (4, 15, 36)</td>
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<td>30</td>
<td>Zero maze (32)</td>
<td>rat, mouse</td>
<td>Anxiety, Anxiolysis</td>
<td>2</td>
<td>1.5</td>
<td>3</td>
<td>8</td>
<td>$135</td>
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</tbody>
</table>

**INSTITUTIONAL ANIMAL CARE & USE COMPLIANCE & TRAINING REQUIREMENTS**

All Core users must submit and receive protocol approval by the UMC Institutional Animal Care and Use Committee (IACUC) and Dr. Ian Paul (Director, Animal Behavioral Core) prior to use of the Core. For off-site investigators, a memorandum of agreement must be arranged in advance prior to usage of the facility. All investigators planning to use the Core (see below) must already have IACUC approval for rodent use. Individual protocols will be modified and approved by the IACUC to include Core testing areas and any additional behavioral tests desired by the individual investigator. All personnel using the Core must receive training from the IACUC in basic animal care and handling.

**ACKNOWLEDGEMENT OF CPN / NCRR SUPPORT**

**Publications.** Publications resulting from research supported by the CPN’s Animal Behavioral Core must acknowledge the Center for Psychiatric Neuroscience (P20 RR017701).

**Grant applications.** Grant applications including preliminary data supported by the CPN Animal Behavioral Core must be reported to the CPN Principal Investigator, Dr. Craig Stockmeier. If the grant application receives funding, the awardee must provide written notification of the type and amount of funding to Dr. Stockmeier.

**CPN AUTHORSHIP POLICY**

Animal Behavioral Core personnel assist in all aspects of rodent behavioral testing (including design and execution of behavioral tasks as well as data analysis and interpretation), conduct behavioral testing, and
in some circumstances may provide rodent tissue samples. Core personnel further provide administrative oversight and ensure all equipment is maintained, serviced and functioning properly.

Core users should send their publication drafts to the Animal Behavioral Core Director for review prior to submitting abstracts or journal publications to societies or journals. The Animal Core Director and appropriate Core Investigators will automatically be included as co-authors on the first or initial abstract and journal publication resulting from Core expertise and support. Authorship on subsequent publications after the first should be considered and negotiated on an individual basis with the Animal Behavioral Core Directors.

**NIH Public Access Policy.** NIH Public Access Policy ensures that the public has access to the published results of NIH funded research. It requires scientists to submit final peer-reviewed journal manuscripts that arise from NIH funds to the digital archive PubMed Central upon acceptance for publication. Any publication resulting from CPN support should be submitted to Catherine Kaime (Ckaime@umc.edu) upon acceptance for publication to ensure compliance with NIH Public Access Policy.

### Abbreviated Bibliography