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Research Interests:

- Neurological disorders including addiction, neurodegenerative disease
- Rodent models
- Genetic and pharmacological manipulations
- Omics and bioinformatics approaches for the identification and validation of novel mechanisms and interventions
- Nicotinic acetylcholine receptors, nuclear receptors (PPAR), ERK MAPK, CREB, CBP, protein-protein interactions

Rodent In Vivo Assessment (RIVA) Core
Providing Assessment Tools to Further Translational Research

utmb Health Center for Addiction Research

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RIVA Rodent In Vivo Assessment CORE

INTRODUCTION

The Rodent *In Vivo* Assessment Core was established by the Center for Addiction Research with collaborative support from the Department of Pharmacology & Toxicology and the Department of Neurology to promote interdisciplinary and translational research in order to further the understanding of brain and behavior.

Our purpose is to provide services to investigators both on and off campus who are interested in using rodent behavioral paradigms to explore behavioral, neurological, psychiatric and other biomedical disorders.

We are a fee-for-service core facility and will gladly provide a quote!

SERVICES OFFERED

- Consultation & study design
- Protocol preparation
  - PI must have approved IACUC protocol prior to initiating behavioral studies
- Equipment training
  - PI personnel will be trained to properly perform the experiment with minimal supervision
- Data collection
  - RIVA personnel will perform experiment
- Data analysis & interpretation

BEHAVIORAL ASSAYS

- General Health Assessment
- Grip Strength
- Gait Analysis
- Blood Pressure
- Tail Flick
- Rota-Rod
- Open Field
- Elevated Plus Maze
- Tail Suspension
- Forced Swim Test
- Morris Water Maze
- Barnes Maze
- Fear Conditioning
- Novel Object Recognition
- Social Discrimination
- Pre-Pulse Inhibition
- Acoustic Startle
- 2-Bottle Choice
- Drinking in the Dark
- Conditioned Place Preference/Aversion
- 1/5-Choice Serial Reaction Time Task
- Self-Administration
- Drug Discrimination

CONTACT INFORMATION

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AVAILABLE RESEARCH TOOLS

GENERAL HEALTH SCREEN

A common approach to assessing overall health utilizes the Paylor Screen for General Motor and Sensory Responses. This method provides guidelines for observing physical characteristics, General behavior, sensoriomotor and motor reflexes. The RIVA facilities are equipped to Perform the wide variety of tasks to obtain the basic health profile.

General Health Assessment

The GHA room is equipped to assess overall heath and general reflexes

Our automated systems are capable of assessing analgesic threshold, blood pressure and grip strength

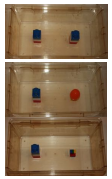
Rota-Rod

The Rota-Rod task is used to assess motor learning and coordination by measuring latency to fall from a rotating beam.

This apparatus is adaptable for either mice or rats

LEARNING & MEMORY

Novel Object Recognition



Short- and long-term memory impairment may be assessed using Novel Object Recognition. Animals are first habituated to two identical objects.

Memory is assessed 7 minutes (short-term) and 24 hours (long-term) after habituation.

For each test, one familiar object is replaced with a novel object.

Non-impaired animals will spend more time exploring the novel objects.

Social Discrimination

Social Discrimination is another memory function. Adult animals are habituated to a juvenile animal for 30 minutes. After this time, a second juvenile is introduced to the chamber for 5 minutes.

Non-impaired animals will spend more time investigating the second juvenile during the last 5 minutes of testing.

Fear Conditioning

Our fear conditioning chambers are equipped with FreezeFrame motion tracking software. Animals are placed in the chambers with a distinct environment and exposed to repeated pairing of a tone and foot shock. Cued and Contextual testing occurs 24 hours after training.

Context Test

The context test measures the animals' ability to remember the environmental and contextual cues present during foot shock delivery.

Cued Test

The cued test measures the animals' ability to remember the auditory cue paired with the foot shock during training.

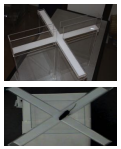
ANXIETY & DEPRESSION

Elevated Plus Maze

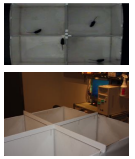
The Elevated Plus Maze is a measure of anxiety-like behavior and consists of two open and two closed arms.

More time spent in the open arms indicates an anxiolytic phenotype, while increases in closed arm time suggests an anxiogenic phenotype.

The TopScan Software is used to measure time spent on each arm.



Top Scan Open Field



The Top Scan Software allows for video tracking of rodents on four open field arenas at one time.

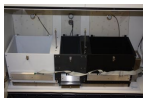
This system may be adapted to measure anxiety-like behaviors, social interactions and memory deficits.

DRUG & NON-DRUG REWARD

Conditioned Place Preference

CPP is used as a measure of reward. Rodents are conditioned to associate a specific context with the rewarding properties of a drug. When tested in a drug-free state, animals will spend more time in the previously drug-paired environment.

The fully automated system records time spent in each of the three chambers.



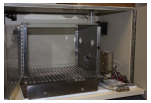
Self-Administration

The self-administration chambers allow animals to respond for a food or drug reward while recording correct and incorrect lever press responses.

Several aspects of reward seeking behavior may be manipulated to investigate differences in acquisition, maintenance, motivation, extinction and/or cue reactivity.

OPERANT BEHAVIOR

Two-Lever Chambers



Our retractable two-lever operant chambers can be modified to administer a food, fluid or intravenous drug reinforcement. These chambers may be used for a variety of assays, including self-administration, drug discrimination, delay discounting and Pavlovian conditioned approach.

5 Hole Nose Poke Chamber

These chambers are equipped with 5 nose poke holes containing stimulus lights along one wall of the chamber. Proper responding to the illuminated hole results in a food reward, which may be collected on the opposite wall.

These chambers may be used to measure attention, impulsive and compulsive action, and a variety of other measures.

Strengths or unique resources:

Expertise in neurobehavioral analysis of rodent models for neurological and neuropsychiatric disorders, including addiction