

Neuroscience

CNS Pharmacology & Ion Channels

IN VIVO NEUROSCIENCE

TECHNOLOGY PLATFORMS: Laboras, Receptor Occupancy (RO), Microdialysis, & EEG

- Laboras vibration-sensing platform for quantification of multiple spontaneous behaviors
- Receptor Occupancy: ex vivo (radiotracer), & in vivo (LC-MS/MS), Brain Regional PK/PD
- Brain Microdialysis (LC-MS/MS) for monoamines, amino acids transmitters, and test compounds
- Quantitative Pharmco-EEG for sleep / wake / seizure / anesthesiology
- CNS Safety: Modified Irwin's, sLMA, Rotarod

NEURODEGENERATION

Alzheimer's Disease

- 5xFAD Transgenic mice

Parkinson's Disease

- Rodent 6-OHDA

Experimental Autoimmune Encephalomyelitis (AEA)

- MBP, MOG 35-55, PLP139-155 induced

Acoustic Trauma Induced Hearing Loss

- Guinea pig model using TDT hearing system

Visible Light-Induced Retinal Damage in Rodents

- Electroretinography (ERG) measurement

Readout:

- Morris Water Maze
- Y-maze (Alternation, DNMTTP)
- Novel Objective Recognition
- Nest Building test
- EEG power spectrum / sleep-wake analysis
- ERG, ABR, DPOAE
- L-DOPA challenged rotation
- Step test, Rotarod, sLMA, LID-AIMs, Beam Walking

PAIN

Acute Pain

- Hot/Cold Plate; Tail Flick

Visceral Pain

- Acetic Acid Writhing (persistent)

Inflammatory Pain

- Acute Inflammation: Formalin, Carrageenan
- Chronic Inflammation: CFA; Arthritis

Neuropathic Pain

- Nerve Injury
- Diabetic Neuropathy (STZ)
- Chemotherapy Neuropathy (Paclitaxel, Vincristine)

Readout:

- Locomotion and noxious behaviors (Licking, climbing, drinking, weigh bearing balance)
- Latency To Thermal Stimulation (Hot/Cold plate)
- Acetone spray
- Threshold To Mechanical Stimulation (von Frey; Randall-Salitto pressure)

NEUROPSYCHIATRIC, SLEEP, EPILEPSY

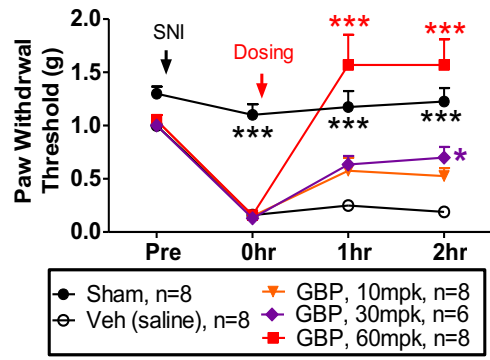
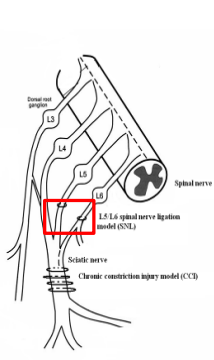
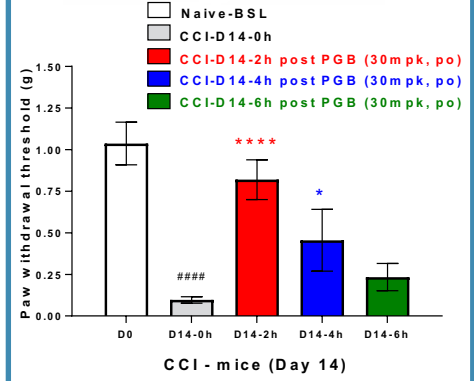
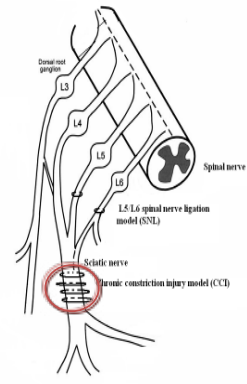
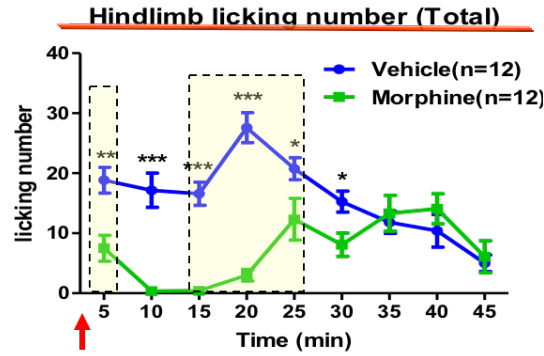
- Forced Swim in rats and mice
- Tail Suspension in mice
- Vogel Conflict Test in rats
- Elevated Plus Maze in mice
- Prenatal Stress rat model
- Induced hyperlocomotion (Ketamine, MK-801; DOI, mice and rats)
- Pre-Pulse Inhibition (PPI, mice)
- Laboras Automatic Spontaneous Behavioral Screening,
- CNS Safety: Modified Irwin Tests, EEG (mice and rats)

Full set of Epilepsy models

- PTZ (CD1 mice)
- 6 Hz Electroshock (CD1 mice)
- Maximal Electroshock (MES, CD1 mice)
- Maximal Electroshock Seizures Threshold (MEST, C57 mice)
- Maximal Electroshock Seizures Threshold (MEST, Wister rats)
- LiCl and Pilocarpine-induced Status Epilepsy (SD rats)

FORMALIN PAIN & NEUROPATHIC PAIN

Laboras Measurement of Formalin-induced Pawlicks



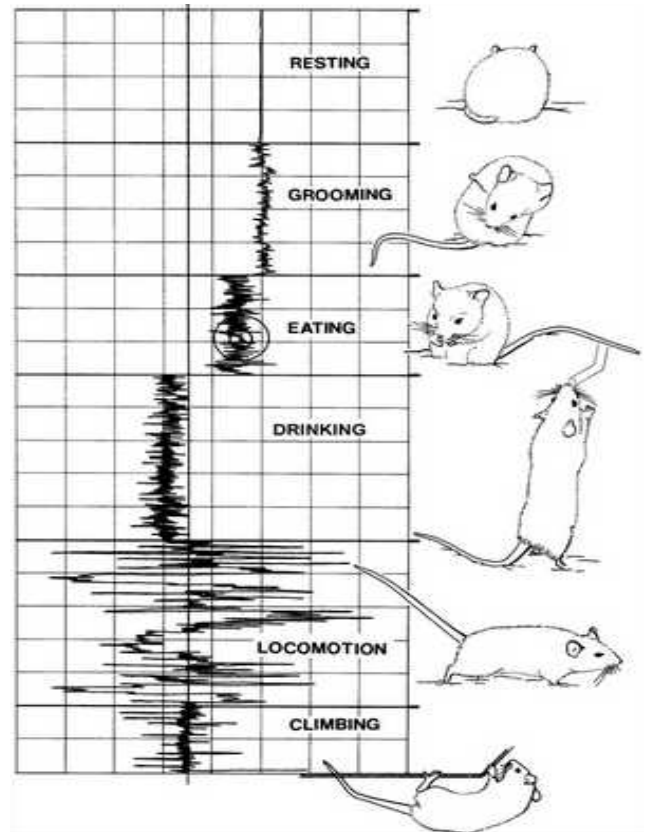
HIGH THROUGHPUT MULTIPLE BEHAVIORAL SCORING SYSTEM WITH 16 LABORAS PLATFORM



For assessing (climbing, locomotion, immobility, rearing, grooming, eating, drinking, scratching, seizure, purposeless chewing, hindlimb licking, turning, wet-dog shakes, head shakes and twitches) to test for:

- Sedatives/stimulants, anxiolytics,
- Anti-Parkinsonian
- Social preference (place, avoidance)
- Cognitive enhancers
- Anti-epileptics
- Analgesics
- Skin protective/dermatological/allergic reactions

MOVEMENT SENSITIVE TECHNOLOGY TO ASSESS RODENT BEHAVIOR



ION CHANNELS & BRAIN SLICE

Ligand-Gated

- TRP family (TRPV1, V3, C6)
- P2X family (P2X3, 4, 7)
- GABAaR ($\alpha 1$, $\beta 2$, $\gamma 2$)
- GluR (AMPA, NMDA) family

Voltage-Gated

- (K⁺) hERG,
- (Na⁺) Nav1.5, Nav1.7

Brain Slice

- Whole cell patch
- Field potential (LTP/LTD)