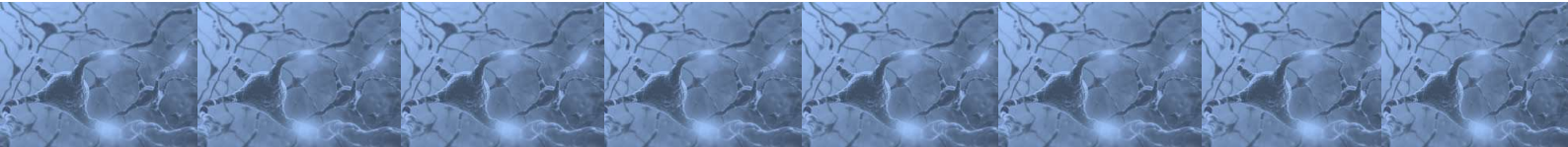# Optogenetics and Fiber Photometry

Integration with Behavior Analysis

Behavior Recognition Technology

Optogenetics and filber photometry are neuro-modulation technologies in neuroscience that utilizes a combination of light and genetics to control and monitor neurons in vivo.

Clever Sys Inc., programs can be sychronized with optogenetic actuators and sensors and filber photometry devices allowing for acquistion of behavioral data during experiments.

Any of our software programs can be integrated with optogenetics/fiber photometry by using TTL and a specially developed software interface. This brings research into a new realm with the possibility of simultaneous control of biochemical events of living freely behaving animals and the collection of this data in both high-throughput and real-time.
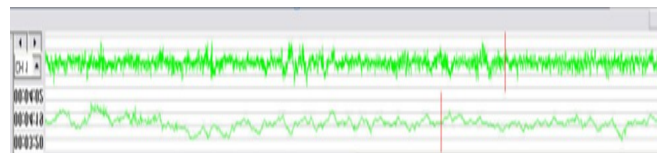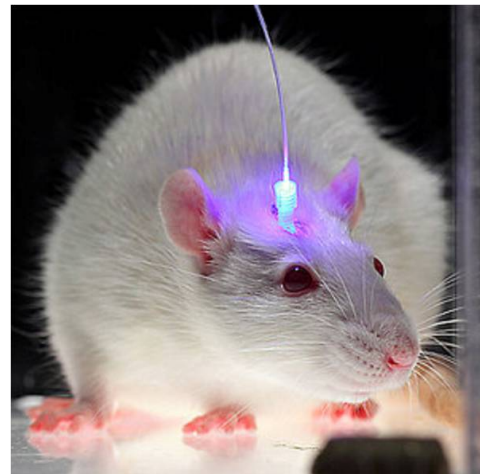
Many of our hardware devices such as our treadmill, runway, operant chambers are fully equipped to accommodate the need for fiber optic tethers so animal movement during behavioral testing will not be inhibited.

Ideal for experiments mapping function of the amygdala such as fear conditioning, studies for targeting pharmacotherapies and addiction via nucleus accumbens, expression of pyramidal neurons in PFC and genetic components of social behavior and drug efficacy in neuropsychiatric disorders etc.

Whatever your experimental needs Clever Sys, will work with you to provide the best system for your data collection needs to provide high quality reliable results and the best behavioral analysis software available.

Although any of our programs can be integrated with optogenetic/fiber photometry systems optimal candidates include:

- *SeizureScan*
- *HomecageScan*
- *GroupHouseScan*
- *FreezeScan*
- *ChamberScan*
- *GaitScan*
- *TreadScan*
- *RunwayScan*
- *TopScan*
- *SocialScan*

Clever Sys Inc

The Behavior Recognition Company

Behavior Recognition

What the animal is doing
When the behavior occurs
Where the animal is
Which is which
Waves (integration w/ bio-signal waves)

Leading the Technology in Behavior Analysis

Supporting Novel Behavior Paradigms

Home Cage Monitoring
• Customized lighting (IR & White)
• 24 x 7 monitoring capability
• Specialized Environments for ideal video analysis

Seizure Detection & Classification
• Specialized Chambers
• In synergy with EEG
• Synched Bio-signal& Behavior Data

Operant Conditioning
• Self Administration
• Sign tracking/Goal Tracking
• Interchangeable Environments

Social Behaviors
• Customized environments
• Automated multiple animal detection
• Minimal marking and varied color detection
• Empathy Chamber

Gait Analysis
• Treadmill (forced walking)
• Runway (free association walking)
• 4 limb asymmetry (cylinder test)
• Parallel rod apparatus (ataxia)

Synchronization of Video w/ Bio-signals
• EEG, EKG, Optogenetics
• Pulse, heart rate, BVP
• Sonic Waves, Telemetry

Providing New Parameters in Behavior Studies

Stereo View for Behavior Analysis
• Analysis from two views
• More precise results
• New Behaviors and Parameters

Open Field
• Easy construction for easy cleaning
• Sturdy design for multiple uses
• Constructed for video analysis

Watermaze
• Rat or Mouse
• Automated Atlantis Platform
• Standard Platform

Mazes
• Water maze
• Radial arm maze
• Y-Maze, T-Maze
• EP maze, Zero Maze
• Barnes Maze

Classical Conditioning
• Sound attenuating environments
• Fully automated with control of shock, acoustics, and lighting
• Fear Conditioning, Empathy, Startle

Forced Swim & Tail Suspension Tests
• Customized cabinet for video analysis
• Tanks and drainage system
• Water temperature control