CLEVER Sys. Inc.

Behavior Recognition Technology Hardware Brochure 2009-2010

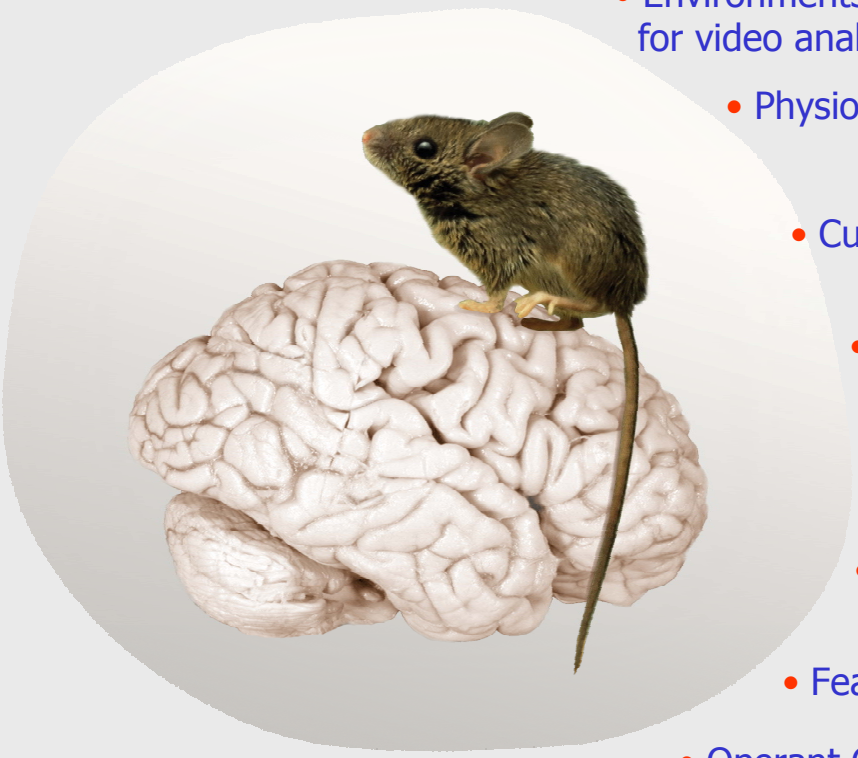







Complex, Natural, and Stereotypic Behaviors

- Hardware Apparatuses & Accessories
- Environments designed for video analysis
- Physiology & Behavior
- Customized Lighting
- Gait Analysis
- Open Field
- Mazes
- Fear Conditioning
- Operant Chambers
- Novel Paradigms (Parallel Rod, Empathy)



..... and much MORE !

Visit us on the web @
www.cleversysinc.com

11425 Isaac Newton Sq
Suite 202
Reston, VA 20190
Phone: (703) 787-6946
Fax: (703) 757-7467

Empathy (Social Learning) Test

Clever Sys, Inc. introduces a new system for the assessment of social learning behavior. The Empathy Chamber (Chen et al., 2009) allows researchers to measure social behaviors and social fear learning in rodents.

Social learning can take many forms and requires the animal to learn from a variety of conditions, including the distress of another and environmental cues that occur simultaneously with social distress.

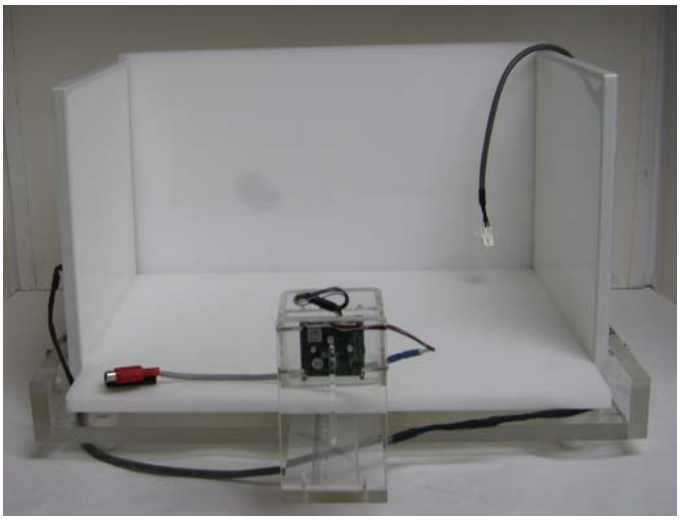
Conspecific distress detected in another can induce behavioral as well as physiological changes in rodents and parallels features of human empathy.

Apparatus	Scale	Dimensions	Animal Type
Empathy Chamber	Metric	26 x 23 x 21 cm (main chamber) 35 x 44 cm (base)	Mouse
	Inches	10.2 x 9.1 x 8.3” (main chamber) 17.3 x 13.8” (base)	
Empathy Holding Chamber	Metric	27 x 13 x 21 cm	Mouse
	Inches	10.6 x 8.3 x 5.1”	

Home Cage Environment

Clever Sys, Inc. has created a customized environment w/ specialized lighting, camera enclosure, and TTL control capability for 24 hour home cage monitoring.

This set up was specially designed for use with our HomeCageScan software program in mind. For optimized home cage video analysis get your complete system today. Ideal for circadian rythym data, phenotyping, pain, drug efficacy, and much more !!!



Apparatus	Scale	Dimensions	Animal Type
Base	Metric	43 x 33 cm	Rat or Mouse
	Inches	16.9 x 13"	
Light Panel	Metric	45 x 27 cm (back light) 27 x 27 cm (side light)	Rat or Mouse
	Inches	17.7 x 10.6" (backlight) 10.6 x 10.6" (sidelight)	

Social Behavior Environments

Social behavior is a widely used data point in behavioral science. We recognize this need for social paradigm diversity and offer multiple solutions for specific research needs. Clever Sys currently has a premier software program SocialScan to meet these needs, and also provides environments to meet the requirements of certain paradigms.

As you can see pictured we offer both a social recognition and social preference environment. These environments offer multiple arenas for social behavior observation. Specially designed to work with our video analysis tools for social interaction, these ideal setups are the perfect addition to any lab with social behavior data collection needs.

Apparatus	Scale	Dimensions	Animal Type
Social Recognition	Metric	30 x 20 x 17 cm 7.6 cm (OD) openings	Mouse
	Inches	11.8 x 7.9 x 6.7 “ 3” (OD) openings	
Social Preference	Metric	60 x 40 x 23 cm (20 cm compartments)	Mouse
	Inches	23.6 x 15.7 x 9.1" (7.9" compartments)	

Operant Conditioning

Clever Sys' Operant Chamber systems are for use in fear conditioning, self-administration, or any operant or classical conditioning behavioral paradigm.

We offer sound attenuating boxes, operant chambers, and multiple stimulus cue options including: speakers, lights, levers, food pellet dispensers, shockers, nose pokes, etc.

Shock floors for rats and mice, open top design for self-administration packages. Optimal design for easy clean-up and animal removal as well as easy conversion to multiple interchangeable chamber set ups.

Apparatus	Scale	Dimensions	Animal Type
Operant Chamber	Metric	26 x 32 x 21 cm (chamber) 42 x 35 cm (base)	Rat or Mouse
	Inches	12.6 x 10.2 x 8.3" (chamber) 16.5 x 13.8" (base)	
Sound Attenuating Box	Metric	43.2 w x 45.7 h x 43.2 d cm 61 x 43.2 cm (base)	Rat or Mouse
	Inches	17 w x 18 h x 24 d" 17 x 24" (base)	

Runway for Gait Analysis

Our newly designed Runway for free walking (as opposed to forced) gait analysis is now available. It has been completely redesigned to provide a much better platform for gait analysis. The new Runway features multi-modal lighting for analysis: light through the glass for viewing reflections of foot contact area and/or light from underneath via light panels that distribute adjustable intensities of light uniformly over the entire runway under-surface enabling detection of feet for our traditional foot modeling approach. All light options, runway size, and camera position are adjustable per user requirements.

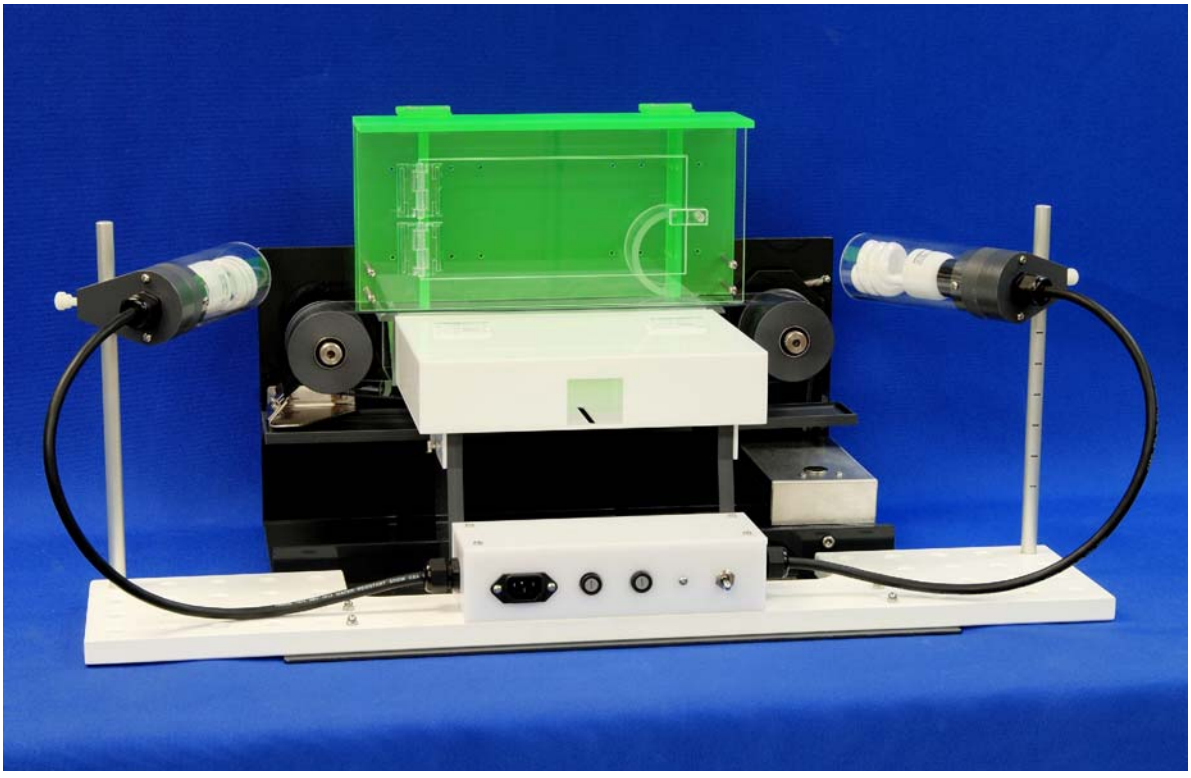
Runway w/ adjustable camera stand and specialized light panels

Treadmill for Gait Analysis

Clever Sys, Inc. uses a treadmill for forced walking gait analysis of both rats and mice. The treadmill, manufactured by Colombus Instruments, is combined with a specially designed light box and camera setup to work in conjunction with our TreadScan analysis software.

Many researcher's find that forced walking is necessary for certain animal models where gait is being analyzed. GaitScan gives researches the choice of forced or free walking, utilizing both for comprehensive gait measures.

Purchase yours today along with our TreadScan or GaitScan software programs.



Treadmill with customized light box and camera enclosure

Parallel Bar Test

Clever Sys introduces our Parallel Bar Test system. This setup includes a Parallel Bar apparatus and associated software that measures two behaviors: foot slips, which are measured by a touch sensor underneath the parallel rod floor, and locomotor activity measured by video analysis from the top.

The parallel rod floor test and apparatus have been designed as a measure for ataxia in mice and was created as a replacement for the rotarod test (Kamens & Crabbe, 2007).

Parallel Rod Apparatus and Foot Slip Counter

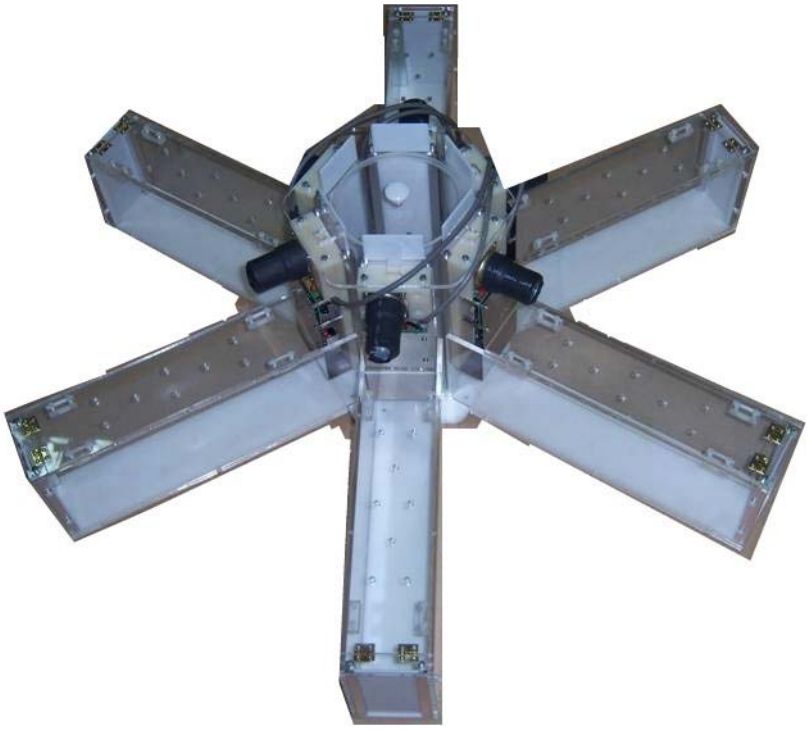
Scale	Dimensions	Animal Type
Metric	20 x 17 x 17 cm (chamber) 22 x 22 cm (base)	Mouse
Inches	7.7 x 6.7 x 6.7 “ (chamber) 8.7 x 8.7” (base)	Mouse

Radial Arm Maze

Fully automated programmable 6 arm- radial arm maze. Easy to assemble, operate, and clean.

This multi component maze makes for easy conversion to Y-maze or T-maze configurations. In addition the sturdy construction of acrylic and polycarbonate make this an excellent addition to any lab.

For comprehensive data acquisition partner this maze with our TopScan or MazeScan software for the best in behavioral analysis.



Apparatus	Scale	Dimensions	Animal Type
Arms	Metric	37 x 12.22 x 7.5 cm	Mouse
	Inches	14.5 x 5 x 3 "	

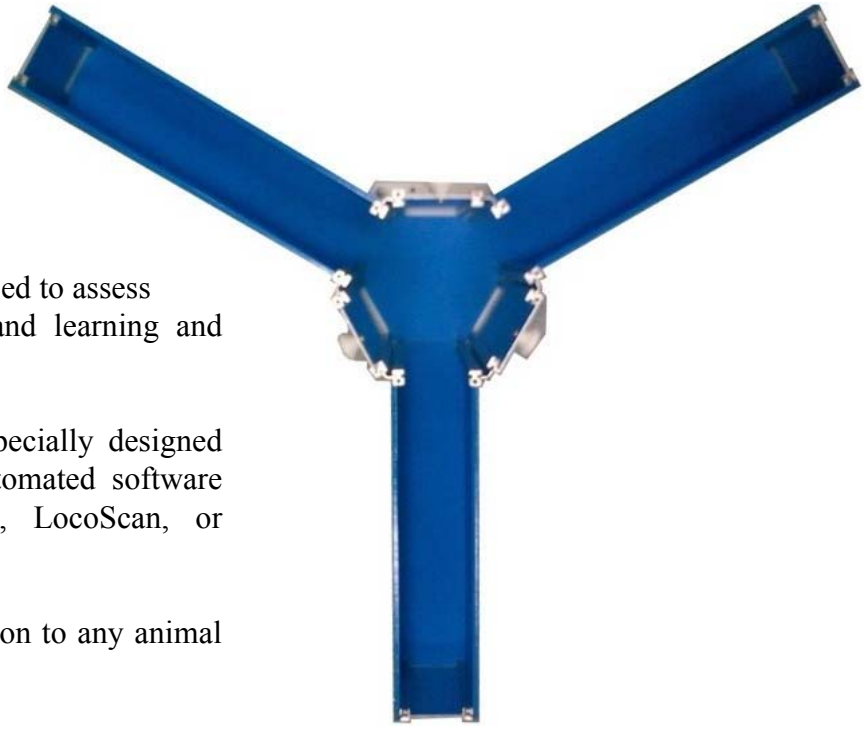
Zero Maze

Clever Sys introduces a Zero Maze, specially designed for use with automated video analysis tools. Traditionally the maze is used as a measure of anxiety in rats and mice. However, it is also a good addition to any phenotyping battery of assessments.

This maze will work well with our TopScan, LocoScan, or MazeScan software. This maze makes a great addition to any behavior lab, get yours today !

Apparatus	Scale	Dimensions	Animal Type
Maze	Metric	600mm (OD) 150cm (ID) 130cm (h)	Mouse
	Inches	23.622 “ (OD) 19.685 “ (ID) 5.906 “ (h)	

Y-Maze



The Y-maze is a basic maze used to assess locomotor, side preference, and learning and memory behaviors.

Clever Sys, introduces this specially designed maze for usage with our automated software packages such as TopScan, LocoScan, or MazeScan.

This maze makes a fine addition to any animal research lab, get yours today !

Apparatus	Scale	Dimensions	Animal Type
Long Arm Short Arm	Metric	200 x 165 x 70 mm 160 x 165 x 70 mm	Mouse
	Inches	7.9 x 2.76 x 6.5 “ 6.3 x 6.5 x 2.8 “	

Forced Swim & Tail Suspension

Clever Sys Inc.'s Forced Swim and Tail Suspension cabinet was designed for two depression related tasks. The color was specifically chosen to maximize animal detection for video analysis. The separation walls are designed for high throughput screening allowing multiple animals to be tested at the same time. This cabinet is for either forced swim tank separation or the tail suspension task.

The optional forced swim tanks are made of durable and easy to clean acrylic. Optional features include an automatic water temperature control and drainage system. This hardware is ideal for use with our ForcedSwimScan, TailSuspScan, or DepressionScan Suite Software.

Apparatus	Scale	Dimensions	Animal Type
Forced Swim Cabinet	Metric	100 x 45 cm (base) 100 x 25 cm (back) 45 x 22 cm (walls)	Rat or Mouse
	Inches	39.4 x 17.7" (base) 39.4 x 9.8" (back) 17.7 x 8.7" (walls)	
Forced Swim Tank	Metric	20.3 cm (OD) 45.7 cm (h) x .6 cm (thick)	Rat
	Inches	8" (OD) 18" (h) x .25" (thick)	

Open Field

Clever Sys, Inc. introduces its open field apparatus, which has been specially designed for video analysis.

The apparatus comes in 3 sizes: 2 for mice and one for rats. This design is optimal for locomotor activity observation, novel object, and avoidance behaviors just to name a few.

The ideal software programs for this open field are LocoScan, ObjectScan, or TopScan. With our software and hardware solutions designed to work together we are able to provide the most accurate and reliable automated video analysis technology. Get yours today!!

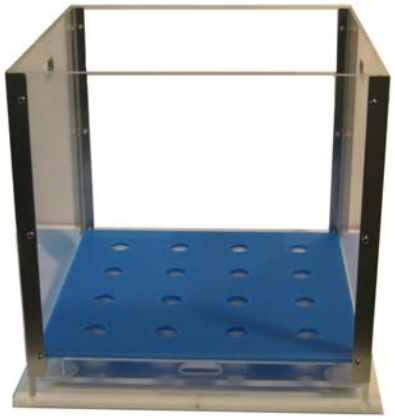
Apparatus	Scale	Dimensions	Animal Type
Open Field	Metric	50 x 50 cm or 40 x 40 cm	Mouse
	Inches	19.65 x 19.65" or 15.75 x 15.75"	
Open Field	Metric	60 x 60 cm	Rat
	Inches	23.6 x 23.6"	

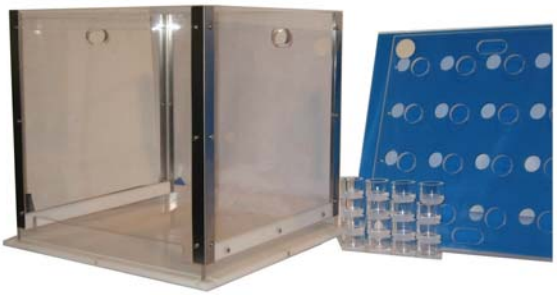
Hole Board

The Hole Board apparatus is a widely used and simple method to assess responses in mice to a novel environment (Boissier & Simon, 1962). The test is often used to determine drug effects and over the years has been extended to rats (File, 1973).

Clever Sys has manufactured a Hole Board apparatus that is easy to assemble, clean, and utilize for your behavioral research needs. The device has a pull out tray with 16 removable cups for reward storage, a light blue overlay for optimal video analysis, and acrylic walls for easy clean up.

Ideal for use with our TopScan, LocoScan, or ObjectScan software packages. Get yours today and start collecting the data you need with our quality hardware!





Apparatus	Scale	Dimensions	Animal Type
Experimental Arena	Metric	41 x 41 x 35 cm	Mouse
	Inches	16 x 16 x 13.75	

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 Envrionments for ideal video analysis

Seizure Detection & Classification
- Specialized Chambers
- In synergy with EEG
- Biobehavioral Information

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 with Other Bio-signals
- EEG, EKG, 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

Mazes
- Water maze
- Radial arm maze
- Y-Maze
- EP maze

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

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

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