PrimateScan

Features:

- **Fully automated complete Primate Home Cage Analysis**
- **Circadian Rhythms**
- **Side-view based analysis allows analysis on stacked cages or racks!**
- **Real-time or offline**
- **Continuous 24-hour or greater recording capable**
- **Easy plug-n-play functionality**
- **No user intervention required during experiment**
- **Can split video into small video files on the fly!**
- **Detailed statistics about behaviors that occurred during the experiment**
- **Automated Binned Data and Advanced Behavior Sequencing Analysis**
- **High-Throughput capable with 4 cages simultaneously (more possible)**
- **Full color-analysis**
- **Automatic adaptation to changing environment, day/night changes**
- **Result review, Visualization of Acquired Experiments**
- **Batch-mode allows user to run multiple videos successively without human intervention**

Behaviors PrimateScan can detect:

- **Stand Up**
- **Come Down**
- **Sit**
- **Move Left**
- **Move Right**
- **Hang**
- **Jump**
- **Land**
- **Turn**
- **Pace**
- **Groom**
- **Crouch**
- **Sleep**
- **Twitch**
- **Pause**
- **Awaken**

Primate is a product similar to HomeCageScan, that is applicable for the analysis of Primate behaviors in a transparent primate cage. Essentially, it can be used for almost anything and everything! Our premise for developing PrimateScan is that behavioral phenotypes are often best detected when the primate is unconstrained by experimenter manipulation. Thus, automated high throughput analysis of behaviors in the home cage would be a powerful tool for performing phenotyping for gene manipulations or drug administration.
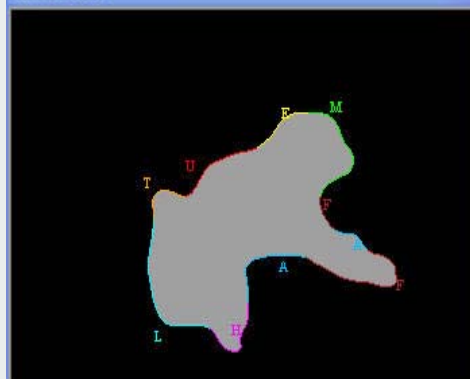
Automation of analysis would allow quantification of all behaviors and their circadian rhythms over extended periods of time. Thus, the automated analysis can be used to build a profile of the behaviors, their amount, duration, and circadian rhythm for each commonly used primate type. This profile can then be compared to the subject in question and differences from the profile expressed quantitatively. Because gene defects or drug administration that cause developmental disorders in humans usually result in changes in the circadian rhythm of behavior, analysis of organized patterns of behavior across the day should be effective in detecting phenotypes in primates.

Clever Sys Inc.

Behavior Recognition
Innovation makes the difference

PrimateScan
(Continued from front)

Applications:

- Disease Progression Studies
- Genetic Research
- Toxicology Studies
- Foot/Liquid Intake Studies
- Obesity/Metabolism Studies
- Pain
- Motor Deficiency
- Aging/Longitudinal Studies

Results:

- Objective Primate Behavior Recognition Results
- Automatic Export to Excel
- Complete Experiment Database Management
- Summary of All Occurred Behaviors and their Durations
- Circadian Plots for each behavior
- Binned data at user-defined bin intervals
- Second-order Behavior Sequencing Analysis!

Product Options:

- High-Throughput Option (H Option)
- Realtime Option (R Option)
- Training Option (T Option)
- Any combinations of these 3 options are available!

Requirements:

- Windows-based PC
- Intel High-speed Processor
- Special Videocard for realtime analysis
- Large HDD space for storage
- Good lighting conditions
- IR-switchable camera or red-light for night
- Video-multiplexer for multi-camera feed

The automated system is also able to detect abnormal behaviors that do not normally occur and present the investigator with video clips of such behavior. Abnormalities may also result from a deviation from the regular circadian rhythm of normal behaviors. That is, detection of novel abnormal behaviors is achieved by detecting segments of behavior that do not fit the standard profile for a particular primate type whereas detection of abnormal amounts of a normal behavior is detected by comparing the statistical properties of the standard profile.

PrimateScan is a perfect fit for longitudinal studies where several animals are studied and tested over long periods. For example, PrimateScan can be used in disease progression studies by analyzing several animals one day every week for several weeks. The behavior profile for each week can then be compared with other weeks' data to see what behaviors are altered over the course of the study.

The techniques for automation of the categorization and quantification of all home-cage behaviors throughout the daily cycle will be a powerful tool for detecting phenotypic effects of gene manipulations or drug administration in primates. These techniques have been applied to achieve high throughput drug screening as well. System architecture for high throughput screening has been designed that involves analysis of 4 cages on a system. Moreover, with multiple cameras hooked up to PrimateScan systems, the number of cages analyzed simultaneously can be increased further. Up to 4 animals can be analyzed simultaneously with the High-Throughput Option. Realtime Option provides the ability to perform analysis in realtime while the video is compressed and saved to the hard-drive of the computer.

Many advanced features are incorporated, including supporting full color analysis, automatic adapting of changing environment, automated handling of day/night switches, variable speed playback of specific video segment for specific detected behavior, etc.

Complete Turn-key systems including all necessary Hardware and Software are available. Custom design of your environment to facilitate analysis, including lighting condition setup, IR/red light setup, cage enclosures, video integration, and video-feed to computer is also available.

Unique Capabilities:

- Complete Hardware and Software Solution
- Analyzes 640x480 at 30 frames per sec
- Detects animals in low contrast also!
- Works with primates of all colors/sizes
- Integrates with 3rd party devices/bio-signals
- Records video into storage during analysis

Clever Sys Inc.
The Behavior Recognition Company

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