When Quality Counts, Count on...
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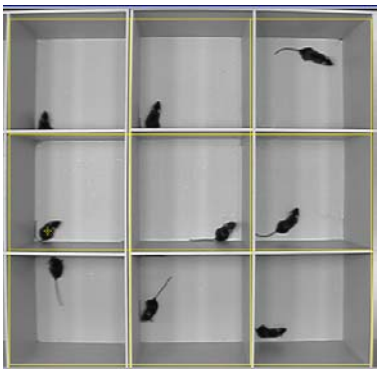
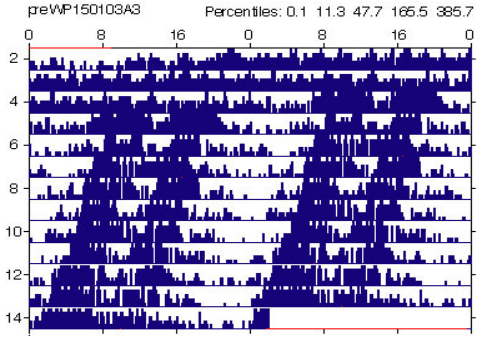
Big Brother

Affordable Video-based Activity Monitoring for up to 200 animals



Big Brother is a video-based activity monitor for behavioral neuroscience, neuropharmacology and circadian biology. Most conventional systems rely on switch closures triggered by running wheels, infrared beam-crossings, or burglar-alarm motion detectors. Such systems can be cumbersome to set up and run, and in some cases can be relatively insensitive. Big Brother tracks the **distance travelled** by each monitored animal using video cameras, reporting distance for each animal once per minute. The resulting data can be analyzed and viewed by the Big Brother **Analysis Program**. Or for long-term monitoring for circadian biology, records can be imported into the **ClockLab** program for the field of circadian analysis (see Figure below).

Track up to 200 animals. A complete system includes a video acquisition board and 1-4 cameras. Up to 50 animals can be tracked with each camera.



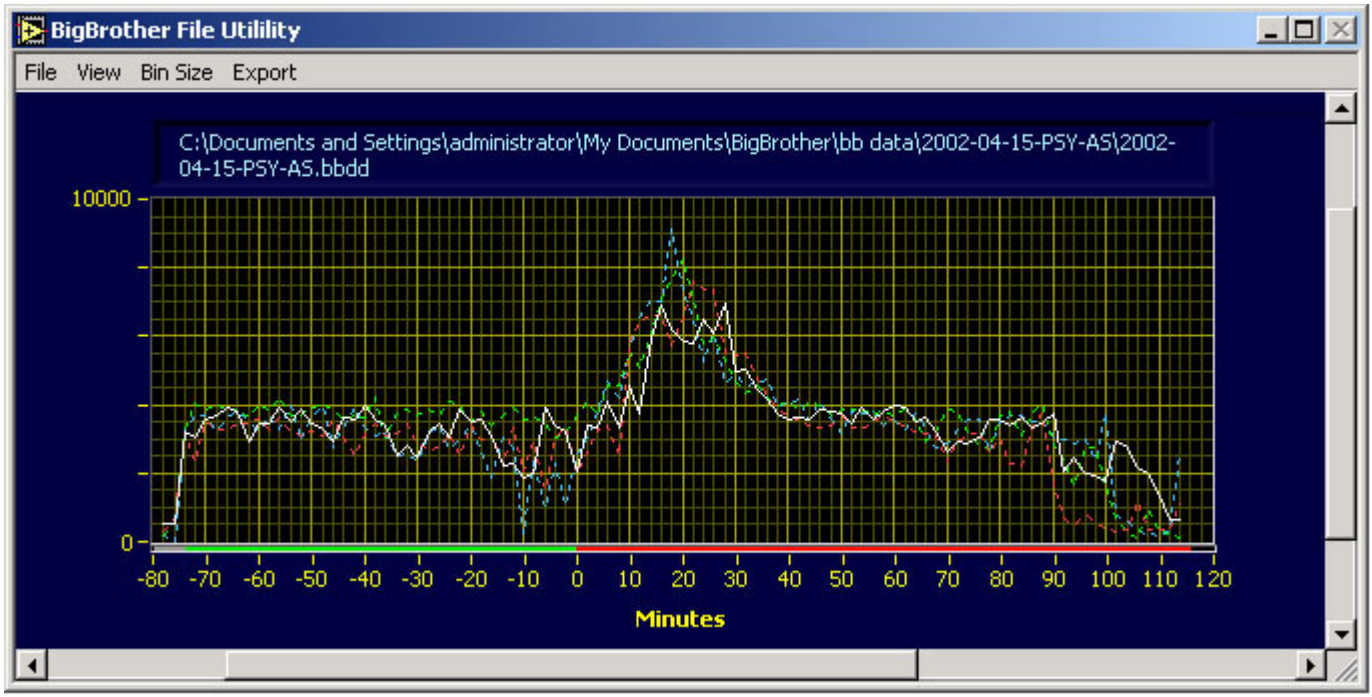
Insect activity data collected with Big Brother.

Easy setup and operation. Both the hardware and software for Big Brother are simple to install and set up. Installation takes only a few minutes.
Event markers for marking the time of drug application, environmental changes, etc. Multiple markers available for multiple treatments or events. Markers can be appled independently for each channel, or mark all channels at once.
Path tracking. Big Brother stores the complete frame-by-frame path of each animal for detecting stereotypy and other behaviors
Flexible. The image on each of 4 cameras can be divided into any number of zones, and the animal within each zone is tracked independently. Big Brother has tracked animals all up and down the phylogenetic tree, from *drosophila* to zebra fish to mice.
Affordable. Monitor animals for as little as $40 per channel.
High temporal resolution. Big Brother locates each animal up to 4 times per second (depending on the number being tracked). It calculates the distance travelled since the last time the animal was located, and adds the distance to the cumulative total for the current minute. At the end of each minute, the total distance is recorded and reset to zero.
Infrared Sensitive. Big Brother's cameras are infrared sensitive, so that tracking can be done under infrared or visible light, or on a light-dark cycle in which the

lighting changes from one to the other.
Extensive batch analysis. Export to a spreadsheet file or directly to an open Excel worksheet multiple analyses for all the animals in a file. For Circadian analysis, **Clocklab** also features numerous batch analysis features.

Big Brother Analysis

Below are records of 4 animals recorded simultaneously. The animals were given a drug at time 0, which significantly elevated their activity. Note that while the animals were recorded in the same run, they were not injeceted simultaneously. Instead, the user placed a unique event marker for each animal when the drug was given. In this display, the plots are aligned on the markers for better comparing the effects of the drug in synchrony. The markers are indicated by the green and red bar under the graph.
The **Export** menu give numerous options for exporting various measures for each animal to a spreadsheet file or directly to an open Excel worksheet.



The Big Brother Recorder window

In this user's setup, the program is monitoring 27 animals on 3 cameras. The view from camera 2 is shown.

- The **yellow cursor** on the animal in the second row-left, which indicates where Big Brother has located the animal.
- The **Distance** indicator shows how far this animal has travelled in the current minute of the trial.
- The **Motion** indicator shows which animals have moved since the last frame.
- The **Threshold** control is used to adjust the sensitivity of the motion detection.

Setting up the recording array is simple. In the setup window, just drag a set of cursors lying on top of the live image to outline the recording array, and then set the number of rows and columns in the array.