

ホームケージ内活動量・社会的行動測定システム<運動活性・活動量・リズム・社会性>
24 hour home cage activity and social behavior monitoring
<locomotion activity / amount of activity / biological rhythm / social behavior>

※Multi chamber system (1 – 8 chamber)

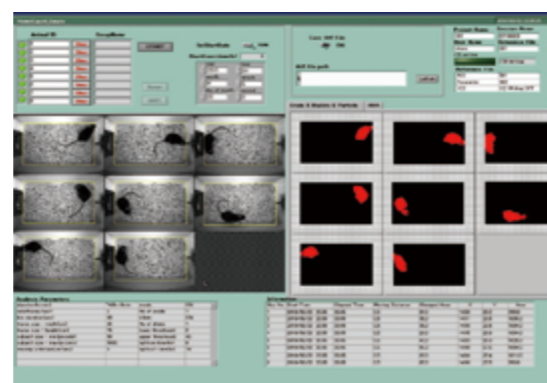
行動量・摂食量・摂水量測定<生体リズム測定>

Three-points Meter

Activity, food intake and water intake monitor

<amount of activity, food intake and water intake / biological rhythm >

※Multi chamber system (1 – 16 chamber)



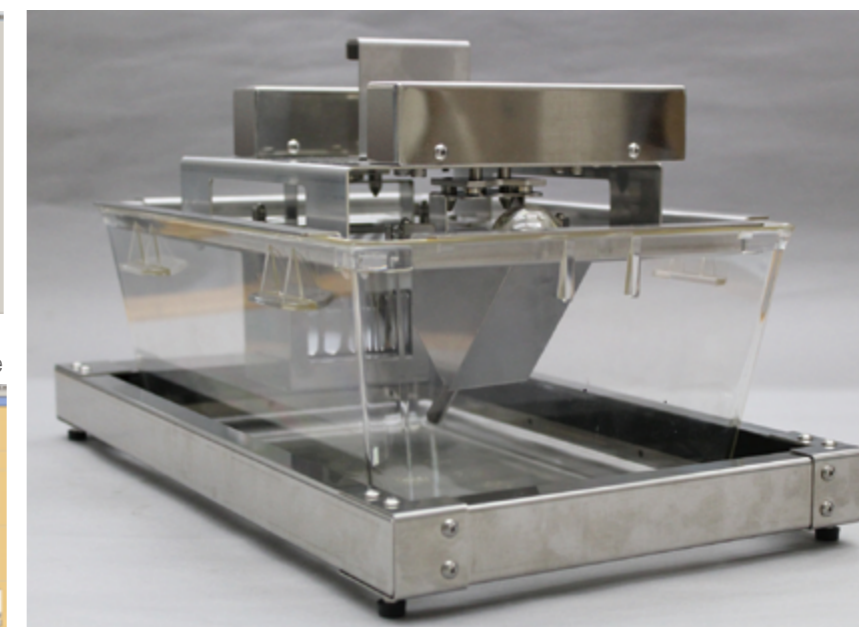
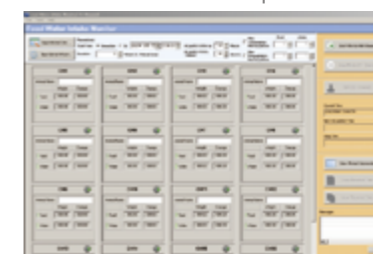
Special cages designed to house up to four subjects are utilized in this test. Each cage is equipped with a CCD camera placed directly above and captures images at 1 - 2 frames/sec. To reduce any interruptions during image capture, both water bottle and food box are fixed on the sides of the cage. When only analyzing a single subject within the cage, each image frame is converted to a binary image and the elliptical subject particle is tracked by using the center of the particle. With this analysis, the software can measure the subject's distance traveled every minute. When two to four subjects are housed in the cage, each image is converted to a binary image and the software calculates the difference of changed area from the previous image to measure the amount of activity. Furthermore, to analyze whether the subjects come in contact with another during testing, the software analyzes the number of particles in each image frame. This analysis shows when the subjects are in contact with others or are separated. If a large capacity hard disk is connected to the computer, the software can also store serial images during testing. The software automatically analyzes and stores all data files and images throughout testing.

カメラと白色&赤外線LEDを内蔵した天井を持つ専用の飼育ケージをご利用いただけます。撮影に邪魔にならないよう、餌箱と給水ビンがケージ側面に固定されます。飼育ケージに1匹飼育する場合には、被験体の1分毎の移動距離を算出します。飼育ケージに2~4匹飼育する場合には、各フレームにおける各被験体の塊をプロットし、前のフレームとの差分面積を算出します。この差分面積こそが群全体の活動量を表します。さらに被験体どうしがいくつの塊にわかれているのか、その塊の数を記録します。この指標から社会的行動を数値化することができます。1~8ケージ同時に、数日~1週間程度の連続した測定が可能です。

Activity data acquisition software



Food and Water intake data acquisition software



Food intake and water intake are calculated by the difference between the measured weights. The apparatus is designed to eliminate dropped food, bedding material, and defecations to be added into the measurements. By using the software, time series data can automatically be saved as text files.

一般的なホームケージにおける動物の活動量と摂食量と飲水量を測定します。摂食量と摂水量を測定するインテイクモニターシステムと、活動量を測定するXYビームセンサーシステムで構成され、最大16ケージ用(16個体)をコンピューター1台で同時に測定することが可能です。食べこぼしを摂食とみなさない餌箱と、乾燥と漏水のない給水瓶を利用しており、正確な測定が可能です。1~8ケージ同時に、数日~1か月程度の連続した測定が可能です。(餌と水の補充と床敷交換が必要です。)

This system can measure for 3 kinds of amounts: 1 ambulatory activity, 2 food intake and 3 water intake, at the same time within one cage. It is possible to measure at the same time such amount within 16 cages at the maximum (16 individuals) by means of a computer. For measuring activity, the position of the target is detected by interrupting the infrared beams positioned in the X and Y axis around the cage. This device detects the movement in position of the whole body of the target animal, without being misled by the movement of the tail and any other body. The position and movement of the target within the cage are automatically measured. The food box and the water bottle are placed under a precision scale and the software periodically measures the weight of the box.