

About Aggressive Behavior Measurement System, model ARM- II

The Aggressive Behavior Measuring System (Aggression Response Meter, ARM), developed by our research group (S. Kuchiiwa, T. Kuchiiwa, O. Murakami), is a research device designed to measure the intensity and frequency of aggressive biting behavior (ABB) in mice. The ARM was previously manufactured and sold by Muromachi Kikai Co., Ltd., but is currently produced by ExpressAP (<https://expresap.com> represented by Mr. Murakami), with sales handled by BioResearch Center Co., Ltd.

<https://product.brck.co.jp/maker/e/expresap/arm-2>

The usage of the ARM is very simple. The experimenter first introduces the mouse into the ARM's animal chamber. After allowing the mouse to rest for a bit, a series of mild mechanical stimuli are applied to the mouse's hind legs or abdomen to provoke and mentally agitate the mouse. Following this, two stimulus rods are presented in front of the mouse 30 times, and the frequency and intensity of the mouse's ABB are measured. If the mouse exhibits pathological irritability, it will engage in biting behavior toward the rods, but if the mouse is mentally stable, it will ignore this stimulus. This allows for the assessment of the mouse's aggression.

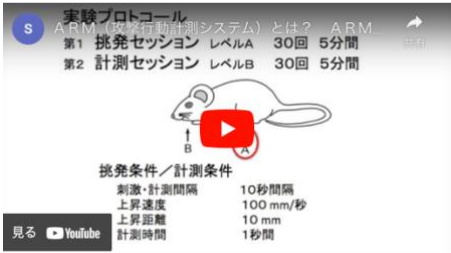


The Express AP's ARM (Model ARM-II) is used by connecting it to a personal computer. Through the dedicated software, the data during the experiment is displayed on the screen in graphs and measurements, allowing the experimenter to check the data after each trial. Additionally, all experimental data is automatically saved, and the measurements are automatically exported to a CSV file. After the measurement session is finished, the experimenter can immediately organize and evaluate the experimental data using spreadsheet software such as Excel. The ARM-II can assess the aggression of one experimental animal in less than 15 minutes.

The system configuration and usage of the ARM-II are almost identical to its predecessor, the Muromachi ARM-001. Therefore, please refer to Muromachi

ARM-001 instructional video for guidance. This video was created for graduate students but is also intended for use by researchers.

(Please watch the video below featured in the Japanese version, with English subtitles enabled.)

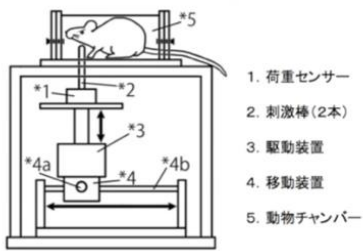


Aggressive Behavior Measurement System (ARM-001)
Manufactured by Muromachi Kikai Co. Ltd., Production and sales have been discontinued.



The ARM-II animal chambers come in three varieties. Left, for mice weighing around 30g; Middle, for mice weighing around 40g; Right, for mice weighing around 50g. In addition, chambers for mice weighing around 20g are also available.

ARMの構造と対物攻撃行動計測のしくみ



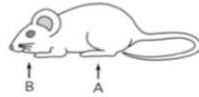
The structure of the ABM:

1. Load sensor
2. Stimulus rods (2 units)
3. Drive mechanism
4. Movable mechanism
5. Animal chamber

3.

実験プロトコール

第1 挑発セッション レベルA 30回 5分間
第2 計測セッション レベルB 30回 5分間



挑発条件／計測条件

刺激・計測間隔	10秒間隔
上昇速度	100 mm/秒
上昇距離	10 mm
計測時間	1秒間

Experimental protocol

1st: Provocation session-Level A, 30 times, 5 min.

2nd: Measurement session-Level B. 30 times, 5 min.

The provocation and measurement conditions are the same.

The stimulus rods rise at 10-second intervals, with a rising speed of 100 mm/s, and a distance of 10 mm from the floor, measurement time is 1 second.