Multi Conditioning



Multi-Purpose Platform for up to 10 Behavioral Paradigms

One system - 10 paradigms

The TSE Multi Conditioning System (MCS) is the first and only multi-purpose modular test platform on the market that can accommodate 10 paradigms to evaluate learning and memory, emotion and stress-related behaviors in mice and rats. The universal base unit can be equipped with modular components including a variety of arenas, accessories and the corresponding software package according to the researchers needs, thus offering maximal flexibility. Multiple test boxes can be started/stopped simultaneously or independently.

Available Modules

Fear Conditioning	**Open Field and Activity**	**Active and Passive Avoidance**
Place Preference	**Light-Dark Test**	**Learned Helplessness**
Latent Inhibition	**Panic Response**	**Hole-Board Exploration**

Explore Diverse Testing Arenas

Discover an Array of Testing Arenas, Tailored for Mouse and Rat Sizes. Choose from a Spectrum of Colors and Subjects for Personalization.



Passive Avoidance Arena



Place Preference Arena



Active Avoidance Arena



Fear Conditioning Arena

Discover more arenas on our website.

Advantages

• Reduced costs • Minimized space requirements • Enhanced data accuracy • Superior reproducibility

Hardware



- **Sound-attenuation housing** to minimize external factors, such as sound, scent, temperature, surrounding laboratory setting etc. and generate the most accurate data.
- **Infra-red camera** simultaneous video monitoring from up to 2 angles.
- **High-resolution 3D infrared light beam frame** for fast (100Hz) movement detection in 3 dimensions, with 21 sensor pairs, each at a distance of 14mm
- **White house lights of variable intensity**

Software

Depending on the behavioral paradigm you choose, the Multi Conditioning System offers three distinct software packages that can be purchased in any combination. Each of these software packages features a user-friendly interface with a highly flexible trial parameter selection window which guides the user step-by-step through experimental design. The software can control up to four test boxes simultaneously. Additionally, basic GLP functions such as user administration and the creation of an audit trail are included as well.

Package 1 - Fear Conditioning

- Ideal for fear conditioning, panic response, and cognitive decline models
- Adjustable shock amplitude with constant/pulsating current
- Easy setup with sound/light/shock/delay parameters
- Comprehensive freezing, movement, and shock response analysis
- Key metrics: number, time, duration, % freezing, event list

Package 2 - Two-Compartment Paradigms

- Paradigms: Active & Passive Avoidance, Place Preference, Learned Helplessness, Latent Inhibition, Light/Dark Test

Package 3 - Locomotor Activity/Open Field

- For assessment of exploratory behavior, activity & anxiety in an (open field) arena or the home cage
- User-defined regions of interest
- Calculation of nearly 100 parameters related to movement type, timing and path
- User-defined detection thresholds e.g. for hypo/hyperactivity
- Various graphical display options for activity/exploratory patterns incl. movement tracks

Selected Publications

• Keller C, Rading S, Bindila, L, Karsak M Behavioral Studies of p62 KO Animals with Implications of a Modulated Function of the Endocannabinoid System Cells 2022; 11: 1517

• Tan, H. L., Yin, L., Tan, Y., Ivanov, J., Plucinska, K., Ilanges, A., Herb, B. R., Wang, P., Kosse, C., Cohen, P., Lin, D., & Friedman, J. M. (2024). Leptin Activated Hypothalamic BNC2 Neurons Acutely Suppress Food Intake [Preprint]. Neuroscience. https://doi.org/10.1101/2024.01.25.577315

• Ineichen C, Greter A, Baer M, Sigrist H, Sautter E, Sych Y, Helmchen F, Pryce CR. Basomedial amygdala activity in mice reflects specific and general aversion uncontrollability. Eur J Neurosci (2020); Dec 18. Online ahead of print

• Khalaf O, Gräff J. Reactivation of recall-induced neurons in the infralimbic cortex and the basolateral amygdala after remote fear memory attenuation. Front Mol Neurosci 2019; 12: 70

• Richetto J, Polesel M, Weber-Stadlbauer U. Effects of light and dark phase testing on the investigation of behavioural paradigms in mice: relevance for behavioural neuroscience. Pharmacol Biochem Behav 2019; 178: 19-29.

• Wang G, Xie H, Wang L, Luo W, Wang Y, Jiang J, Xiao C, Xing F, Guan JS. Switching from fear to no fear by different neural ensembles in mouse retrosplenial cortex. Cereb Cortex 2019; 29(12): 5085-97.

• Paul AK, Gueven N, Dietis N. Age-dependent antinociception and behavioral inhibition by morphine. Pharmacol Biochem Behav 2018;168: 8-16.

• Luo W, Yun D, Hu Y, Tian M, Yang J, Xu Y, Tang Y, Zhan Y, Xie H, Guan JS Acquiring new memories in neocortex of hippocampal-lesioned mice Nat Commun 2022; 13(1): 1601

• Fan, Z., Ardicoglu, R., Batavia, A. A., Rust, R., von Ziegler, L., Waag, R., Zhang, J., Desgeorges, T., Sturman, O., Dang, H., Weber, R., Roszkowski, M., Moor, A. E., Schwab, M. E., Germain, P.-L., Bohacek, J., & De Bock, K. (2023). The vascular gene Apold1 is dispensable for normal development but controls angiogenesis under pathological conditions. Angiogenesis, 26(3), 385–407.



Our system comes with all-in-one warranty and excellent technical support service

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