

Approaching standardization of behavioral testing in mice: inter-laboratory strain comparisons of manually conducted tests versus automated procedures using IntelliCage

Alexei L. Vyssotski, Dmitry L. Vyssotski, Oxana Litvin, Anton E. Rau, Samuel Morf, Hanno Würbel, Roger M. Nitsch, David P. Wolfer & Hans-Peter Lipp

Division of Neuroanatomy and Behavior, Institute of Anatomy and Psychiatry Research Department, University Hospital Zürich, University of Zürich, Switzerland, Institute of Veterinary Physiology, University Giessen, Germany

Even by using stringent standardization criteria, behavioral tests of mice often reveal discrepancies between laboratories, especially in tests depending on spontaneous activity or involving fear and exploration. In a recent, carefully standardized multi-lab study, we noted that enriched environment did not alter the strain rank order in the open-field, 0-maze, water maze and object exploration. On the other hand, the comparison of absolute values revealed several significant differences between laboratories, or strain-by-laboratory interactions. A subset of 47 female mice was also tested in fully automated cages (INTELLICAGES) located in different animal facilities of the university of Zurich, each cage housing 12 transponder-tagged mice from different strains. The system measured continually visits of drinking sides (4 per cage), development of place preference and reversal, and other parameters, usually over periods between 24-48 h. Thus far, INTELLICAGE always showed statistically indistinguishable behavioral scores from the two locations, but also revealed significant strain differences in several yet not all measures. This implies (i) that much of the previously observed differences between laboratories must be attributed to human handling and uncontrollable environmental variations in test set-ups, and (ii) that optimal standardization and comparability is best achieved by the use of automated procedures. @
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