

## **Environmental enrichment: potential effect in the context of novel appetitively motivated behavioral tests for mice in the IntelliCage**

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The IntelliCage (IC) is a fully programmable automated system that offers a unique approach to investigate spontaneous behaviors and learning abilities in group-housed mice. The IC offers two main advantages: increased standardization and reproducibility of the outcome, and omission of confounders associated with classical behavioral tests. Even though the system offers a less stressful environment, it still uses water deprivation as the main motivational driver in assessing cognitive abilities. In order to overcome water deprivation and therefore to improve animal welfare, the first aim of the present work is to introduce a series of novel protocols of appetitive learning in which the animals, having permanent access to normal water, gain access to sweetened water when solving the task. C57BL/6 showed a strong preference to sweetened water upon normal water, indicating that this motivational driver is strong enough to induce learning. Sweetened water as stimulus was then used to test motor impulsivity, place preference and spatial sequence task including a reversal test. In addition, the novel protocols were used to investigate the effect of environmental enrichment on learning abilities. Preliminary results demonstrated that enriched housing increases explorative behavior compared to standard housing, preferences to sweetened water and learning performance are still under investigation.