

## **Abstract**

Animal models of Alzheimer's disease display cognitive insufficiencies which mimic human symptoms and occur at a given age or post-treatment time. Animals are typically tested using canonical behavioral tests, lasting minutes and taking place mostly in the non-active period of the daily cycle. Animals are exposed to certain amounts of manipulation-induced stress.

Our work represents a validation study for the rat behavioral system IntelliCage. The tested individuals live freely in a group and their behavior is monitored continuously. It is however possible to set up individual tests for each animal or a group of animals. The rats are not subject to human manipulation and hence the results are not affected by manipulation-induced stress.

We tested early cognitive impairment in the transgenic rat model TgF344-AD at 6 - 8 months of age. Further, we tested two most common protocols of the streptozotocin model, i.e. single dose of intracerebroventricular 3 mg/kg streptozotocin and double dose 48 hrs apart. Results were compared with the canonical Morris Water Maze (MWM) test.

In the MWM test, transgenic animals did not differ from controls in any of the studied parameters. The streptozotocin model displayed a deficit only in the double dose group. However in the IntelliCage, transgenic animals displayed reduced number of corner visits as well as licks compared to wildtype controls. Both streptozotocin treated groups displayed a significantly reduced number of licks in the IntelliCage.

While more experiments are needed to explain the observed data, it can be concluded that behavioral testing in the IntelliCage system was more sensitive in determining the behavioral phenotype in both models as compared to the canonical MWM test.