

## **The IntelliCage system: a review of its utility as a novel behavioral platform for a rodent model of substance use disorder**

### **ABSTRACT**

The use of animal models for substance use disorder (SUD) has made an important contribution in the investigation of the behavioral and molecular mechanisms underlying substance abuse and addiction. Here, we review a novel and comprehensive behavioral platform to characterize addiction-like traits in rodents using a fully automated learning system, the IntelliCage. This system simultaneously captures the basic behavioral navigation, reward preference, and aversion, as well as the multi-dimensional complex behaviors and cognitive functions of group-housed rodents. It can reliably capture, and track locomotor and cognitive pattern alterations associated with the development of substance addiction. Thus, the IntelliCage learning system offers a potentially efficient, flexible, and sensitive tool for the high-throughput screening of the rodent SUD model.

**Keyword:** IntelliCage system; Addiction; Behavior; Home cage; Rodent model; substance use disorder (SUD)