


CTTC Contact:

Tom Utley, PhD

 thomas.j.utley@vanderbilt.edu

 615.343.3852

 **VU Reference:**
VU23120

VU Lead Inventors

Marie Doyle

Summary

Research on rodent drinking behavior has provided insight into drivers of thirst, circadian rhythms, anhedonia, and drug and ethanol consumption. Traditional methods of recording fluid intake involve weighing bottles, which is cumbersome and lacks temporal resolution. In addition, recent designs are limited by the use of infrared photobeam sensors and incompatibility with prolonged undisturbed use in ventilated home cages. Beam-break sensors lack accuracy for bout microstructure analysis and are prone to damage from rodents. Thus, there is a need for an instrument that is easier to use and provides higher resolution for bout microstructure.

TECHNOLOGY DESCRIPTION

Researchers at Vanderbilt University designed an instrument capable of higher accuracy and analyzing lick microstructure compared to current available models. This device is compatible with classic ventilated home cages, making it easy to build and use with an intuitive touchscreen graphical user interface. The system tracks two-bottle choice licking behavior in up to 18 rodent cages, or 36 single bottles, on a minute-to-minute timescale controlled by a single Arduino microcontroller. Ultimately, the system measures drinking preference over time and changes in bout microstructure, with undisturbed recordings lasting up to 7 days.

Application

- This device is used to measure drinking behavior in the home cage of mice.
- This contact-lickometer system replaces the need for investigators to manually weight the bottles themselves and greatly improves on the level of detail gained related to these drinking behaviors, which includes individual lick counts and drinking bout microstructure.
- Multiple devices can be utilized simultaneously, allowing for high-throughput experimentation involving the study of rodent drinking behavior.

Intellectual Property Status:

A provisional patent has been filed.

Novelty:

The novelty of this device is based on the highly accurate recording of contact lickometer-based data in a true mouse home cage environment.