

TR-CageView™: A smart monitoring system for diet-controlled and comprehensive behavioral and phenotypical research *in vivo*

Problem & solution on rodent medical research
using Artificial Intelligence

WHITE PAPER

TR-CageView™

A smart monitoring system for rodent medical research



TACTILE ROBOTICS
Feel the Intangible

Biomedical researches using mice and rodents

Animal studies, as an inevitable part of biomedical research, require housing rodents in tightly controlled conditions. Researchers often require to measure precise food and water intake and monitor the behavior, drug ingestion, and exercise intensity and duration of the rodent. However, the cost of purchasing cages with such capabilities is high and there is no cage in the market meeting all of these expectations.

Manual switching between foods and alternating between fasting and fed status can be time-consuming and challenging, especially when high number of cages are involved and timing lies on the weekends or after hours.

Preparing the animals for positron emission tomography (PET) or measuring glucose tolerance test (GTT) are two major examples. For PET scan, animals are required to be fasted for 8 hours prior to administration of fluorodeoxyglucose (FDG) to visualize the maximum uptake of FDG to the affected tissue. In order to observe consistent data when dealing with high number of animals, their fasting should be scheduled in a timely manner. Also, for GTT measurements, the same principles apply and consistency will result in generation of data with the least deviation. On human resources front, this means that a technician/HQP has to remove food every hour between about 3 and 7 AM when a group of mice/rodents are studied. Furthermore, with respect to the recent COVID-19 pandemic and imposed limitation for in-person presence, the proposed solution will compliment researchers to carry out their research fully remotely.



Proposed solution: TR-CageView™

CageView is a programmable, sensorized and easy-to-handle cage monitoring system which can be used in different types of *in vivo* studies. It is designed to provide a tightly-controlled conditions where food and water intake, behavior, drug ingestion, and exercise intensity are required to be accurately measured. It reduces the work-load on the technicians to alternate between foods, fed/fast status and measuring intake. Although it has comprehensive and unique features, CageView has a competitive price compared to similar products and is completely affordable for research laboratories.



Easy-to-monitor cage

- Scheduled feeding and fasting mode available
- High Definition camera comes with features of Infrared and night vision
- Helps lab researchers to monitor mouse/rodent remotely
- Dispensing food or having it freely available at specific time for accurate results

Advantages over existing products

- Newly-developed technology which provides remote access to live monitoring
- Gives advantage of tracking mouse trajectory under experiment
- Comes with a user friendly software to store and interpret data
- Easy to schedule feeding and fasting times remotely



Cage 1: Test Grey <http://192.168.1.193:8081/>

Week Schedule

		12	1	2	3	4	5	6	7	8	9	10	11
		:30	:30	:30	:30	:30	:30	:30	:30	:30	:30	:30	:30
Sunday	AM:					F							
	PM:					F	F	F					
Monday	AM:		F	F	F	F							
	PM:					F	F	F	F	F	F	F	F
Tuesday	AM:	F	F	F	F	F	F	F	F	F	F	F	F
	PM:					F							
Wednesday	AM:		F			F			F			F	F
	PM:			F		F	F	F				F	F
Thursday	AM:				F	F		F	F		F		F
	PM:		F	F	F	F			F			F	F
Friday	AM:					F		F		F			F
	PM:			F		F	F		F			F	
Saturday	AM:		F	F	F	F	F	F		F	F		F
	PM:					F							

Saturday PM:

Features and Advantages

Food control

- Programmable to schedule feeding and fasting times for a given scenario
- Amount of feeding provided can be weighed and changed as per experimental needs for accurate results

Activity monitoring

- programmable to monitor and record the activities using a camera of a combination of a sensor and a marker on the body
- Remote monitoring of animal activities
- Comes with added advantage of effective software to track and store the animal position at different points in cage
- Compatible with a varied spectrum of light (using image/video processing techniques to eliminate the effect of light)

In most bio-medical and animal research studies, it is very important to provide rodents (mouse/rat) with food and water at accurate times. CageView can be programmed to open and close food gates at particular times, hence switching between fasting and food modes. All of these features can be set and assigned to the cage remotely.

Tactile Robotics other products and services

TeleRX™

DenTeach™

TR-Tracker™

DataRX-WMO™

XR-Sol™

TeleSignaller™

SC-Sol™

DataRX-W™

DataRX-C™

iManus™


Our Proud Collaborators and Funders



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