

Life Science Group

Product and Research Application Areas within Neuroscience





The Lafayette Instrument Family

Our mission is to deliver industry-leading data acquisition, measurement, and analysis instrumentation and software to advance safety, security, science and medicine. Lafayette Instrument prioritizes people and ethics above all else. We are constantly striving to innovate, perfect our products and processes, and help our customers make an impact.



Established 1947

From Activity Monitoring Systems, Operant Test Chambers, to Motility Testing Solutions, Lafayette Instrument Company (LIC) offers an extensive range of products for behavioral neuroscience studies. These products are designed to support researchers with conditioning, learning, activity monitoring, cognitive evaluation, and sleep deprivation studies.



Joined 1998

Well known for their vibrating microtome, the Campden Instruments (CI) vibrotome has been used for over 30 years to produce high-quality, industry-leading tissue slices for visual patching, extracellular recording and imaging. Their offerings also include advanced touch screen chambers for cognitive testing in rodents and non-human primates, and customizable modular systems.



Joined 2023

In the olfaction field, Aurora Scientific (ASI) offers olfactometers for reliable odor generation, and miniPID photoionization detectors for precise odor detection. Beyond these solutions, ASI provides state-of-the-art Dual-Mode Indenters for mechanical stimulation in touch, pain and stretch research.

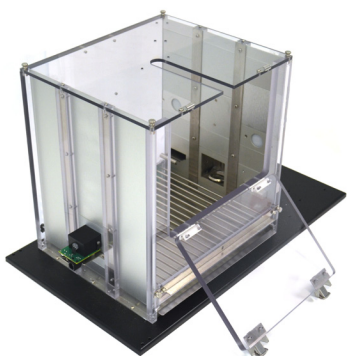


Joined 2023

Within neuroscience, Actimetrics is known for creating tools that seamlessly integrate with animal behavior experiments. Actimetrics has pioneered several new analysis methods, creating easy-to-use programs for behavioral experiments, circadian biology, and luminometry.

Activity Systems - Activity Wheel Systems + Scurry

Lafayette Activity Wheel Systems for rodents include both free and forced running along with systems that include living chambers designed for both long term circadian rhythm and general activity studies.

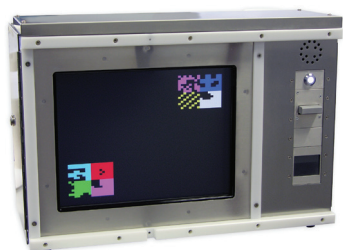
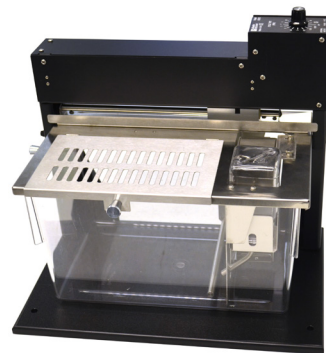


Operant Behavior - Standard and Modular Chambers + ABET

Built for durability and powered by our robust ABET software, our operant chambers are designed to support a large number of research areas while providing both the ease of use for those with minimal operant conditioning experience and the power to run complex schedules for the experimental analysis of behavior.

Sleep Deprivation - Sleep Fragmentation Chamber

Sleep Fragmentation Chamber for studying sleep patterns in rodents, designed for controlled exercise and sleep deprivation studies in both mice and rats. The chamber supports continuous and cyclical sweeps while maintaining a normal living environment for the animal.



Cognition - CANTAB

The Monkey CANTAB Intellistation™ was designed to administer the Cambridge Neurological Test Automated Battery, offering configurations with liquid or pellet rewards. The CANTAB portfolio allows for versatile testing of cognitive functions for a variety of animal types - not only primates.

Cognition - Bussey-Saksida Touchscreen Systems + ABET

The Bussey-Saksida touchscreen system was developed as a partnership with Professors Tim Bussey and Lisa Saksida of the Translational Cognitive Neuroscience Lab at Cambridge University. It is a progression of the CANTAB touch screen systems for NHP and Human subjects used in cognitive testing and diagnosis. Originally featuring a unique trapezoidal wall shape in order to focus the animal's attention, these chambers have also been adapted for modular usage.

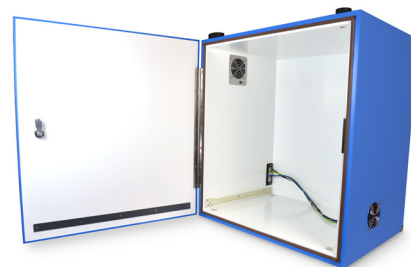


Tissue Slicing - Vibrating Microtomes and Tissue Choppers

Campden vibrating microtomes have been used for over 30 years to produce tissue slices for visual patching, extracellular recording and imaging of neurological (e.g. brain slice, spinal cord), heart and lung tissue. Boasting high-precision, these microtomes also offer user-friendly controls and customizable configurations cater to diverse laboratory needs, ensuring optimal performance in tissue preparation.

Experiment Isolation - Environmental Cabinets

Available for standard and electromagnetic isolation, these cabinets were designed in consultation with the Institute of Sound and Vibration University of Derby to provide a controlled environment for sound, light, and electromagnetic interference. Ergonomic design enhances animal handling and welfare, with custom sizes and optional accessories available.



Episodic Memory - cNOR OL Chamber and Tasks + ABET

These tasks were developed by Prof. Alexander Easton as tests of memory. The tasks rely on the rodent's natural behavior and not food restriction. Our chambers offer many solutions to reduce experimental time, handling confounds and numbers of animals used.

Muscle Function Systems - Whole Animal System

Measures muscle contractility in rodents and small animals for in-situ, in-vivo, and in-vitro applications. Features a Dual-Mode lever system for precise force and length measurements to enable dynamic contraction measurements along with a high-power bi-phasic stimulator. Pre-loaded software simplifies experimental setup and data analysis, supporting protocols like twitch, tetanus, fatigue, eccentric and force-velocity.



Odor Delivery - Olfactometer

The 220A Olfactometer generates precise and reliable odors for olfaction experiments, configurable with 4, 8, 12, or 16 vials. Fluid design ensures consistent odor profiles with a rapid 25 ms switching time, allowing multiple applications without vial changes. The 220A utilizes a three mass flow controller setup for repeatable odor delivery and features continuous washing of odorant residues to minimize cross-contamination.

Mechanical Stimulation - Dual-Mode Indenters

The 300E-I Dual-Mode Indenter is an automated, computer controlled device for precise mechanical stimulation. It measures and controls force and length at a single application point, enhancing experimental reliability by reducing variability. The indenter ensures consistent delivery by applying constant force for set durations and adjusts force at predetermined rates.



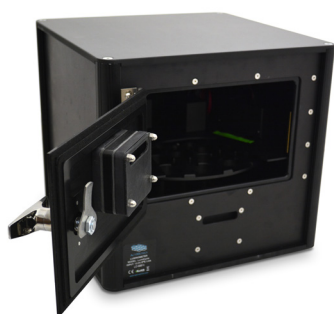
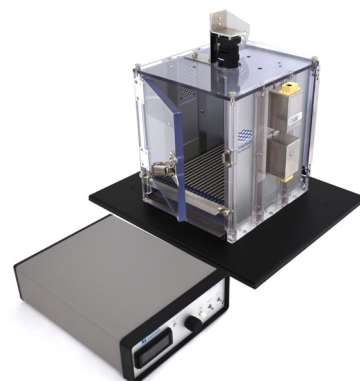
Odor Validation - miniPID

The 200C miniPID Fast Response Olfaction Sensor is a fast, compact photo-ionization detector for olfaction experiments used for numerous olfaction studies involving humans, mice, rats, dogs, Drosophila, moths, mosquitoes, ants, and more. Researchers and manufacturers have been using the miniPID to characterize olfactometers, including Aurora's 220A.



Fear Conditioning - Fear Conditioning Chamber + FreezeFrame

Fear conditioning test chamber package was designed from the ground up to be easy to order, easy to set up, easy to run and easy to maintain. Up to four test stations may be run on a single computer. Features a unique camera mount may be top or rear panel mounted making this chamber suitable for all fear conditioning protocols including optogenetics. Integrates FreezeFrame software with a sensitive motion detection algorithm to capture minute movements for detailed analysis beyond traditional methods.

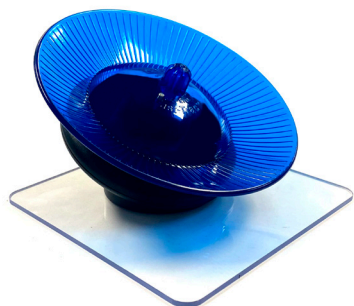


Luminometry - LumiCycle

The LumiCycle is a luminometer designed for high-throughput analysis in circadian biology. The systems are equipped with photon-counting photomultiplier tubes, each selected for low dark counts and high sensitivity in the green portion of the spectrum. LumiCycle software offers real-time data analysis, data export for statistical processing, and advanced features for effective assessment of circadian rhythms

Operant Feeder - mealPOD

A robust pellet dispenser when combined with Actimetrics' innovative wireless protocol, it becomes an unlimited, cable free data collection hub residing within existing rodent home caging. Each connected unit can be monitored and programmed in real time, to administer different simple operant schedules.



Activity Systems - Low Profile Wheel + ClockLab

ClockLab provides a comprehensive data collection and analysis system designed for circadian biology research. Powered by ClockLab, our low-profile wheel is a mainstay in activity monitoring while fitting in a standard shoebox home cage. A standard ClockLab set up includes light-tight cabinets with programmable lights, temperature, and humidity sensors, along with vertical and horizontal running-wheel cages.

Supported Research Applications

Research Area	Product	Provider
Activity Tracking	Operant Feeders	Actimetrics
	Video tracking	
	Activity Wheels and Monitoring Systems	Lafayette Instrument
	Eating and Drinking Analysis	
Aging	Fear Conditioning Chamber + Freezeframe	Actimetrics
	Lumicycle, Clocklab, Cell cycle	
	Operant Feeders	
	Muscle Function systems	Aurora Scientific
	Odor delivery and validation Tools	
	Bussey-Saksida Touchscreen	Campden Instruments
	Novel Object Recognition	
	Vibrating Microtome	
	Activity Wheels	Lafayette Instrument
	CANTAB	
	Forced Exercise / Walking Wheel System	
	Sleep Fragmentation Chamber	
Circadian Biology	Lumicycle + Cell Cycle + Clocklab	Actimetrics
	Operant Feeder	
	Muscle Function Systems	Aurora Scientific
	Forced Exercise / Walking Wheel System	Lafayette Instrument
	Sleep Fragmentation Chambers	
Exercise and Metabolism	Operant Feeders	Actimetrics
	Muscle Function systems	Aurora Scientific
	Activity Wheels and Monitoring Systems	Lafayette Instrument
	Eating and Drinking Analysis	
	Forced Exercise / Walking Wheel System	
	Treadmill with Shocker	
Excitation-Contraction Coupling, Muscle Spindles and Pharmacology	Muscle Function systems	Aurora Scientific

Research Area	Product	Provider
Learning and Memory	Lumicycle, Clocklab, Cell cycle	Actimetrics
	Fear Conditioning Chamber + Freezeframe	
	Operant Feeders	
	Odor delivery and validation Tools	Aurora Scientific
	Bussey-Saksida Touchscreen	Campden Instruments
	Novel Object Recognition	
	Vibrating Microtome	Lafayette Instrument
	CANTAB	
Olfaction	Sleep Fragmentation Chamber	
	Forced Exercise / Walking Wheel System	
	Activity Wheels	
	Odor delivery and validation Tools	Aurora Scientific
Operant Behavior	Bussey-Saksida Touchscreen	Campden Instruments
	Operant Chambers	Lafayette Instrument
	Operant Feeders	Actimetrics
	Bussey-Saksida Touchscreen	Campden Instruments
	Novel Object Recognition	
Pain and Somatosensation	CANTAB	Lafayette Instrument
	Operant Chambers	
	Sleep Fragmentation Chamber	
Sleep	Fear Conditioning Chamber + Freezeframe	Actimetrics
	Mechanical Stimulator	Aurora Scientific
	LumiCycle, Clocklab, Cell cycle	Actimetrics
Tissue Biology and Histology	Operant Feeders	
	Bussey-Saksida Touchscreen	Campden Instruments
	CANTAB	Lafayette Instrument
	Eating and Drinking Analysis	
	Sleep Fragmentation Chambers	
	Forced Exercise / Walking Wheel System	
	Tissue Choppers	Campden Instruments
	Vibrating Microtome	
Tissue Biology and Neurophysiology	Muscle Function systems	Aurora Scientific
	Tissue Choppers	Campden Instruments
	Vibrating Microtome	



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