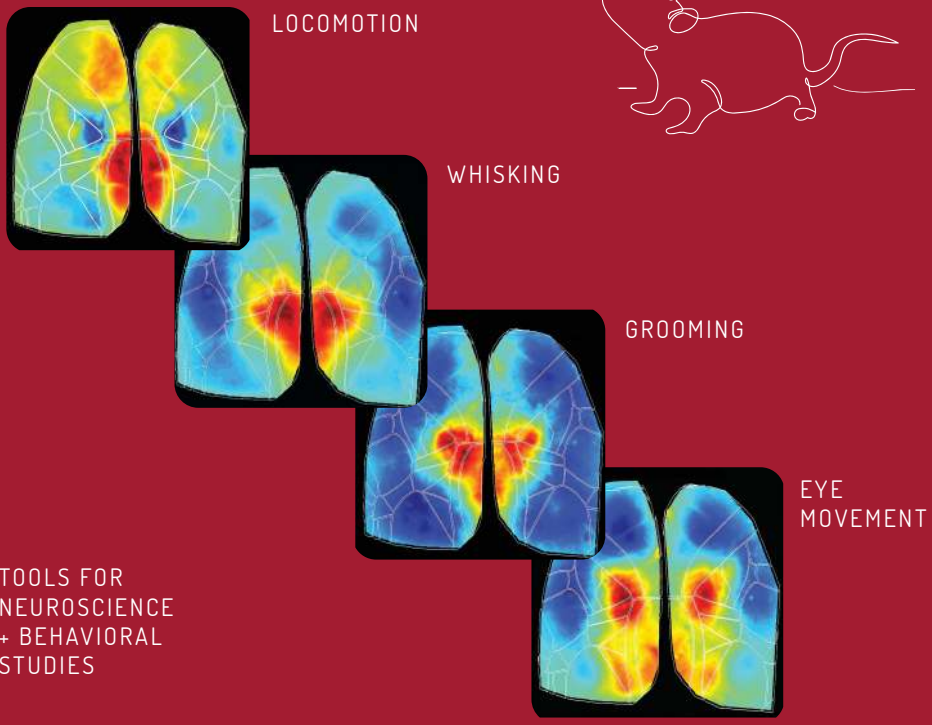
MediLumine

Vision without Sacrifice™



TOOLS FOR
NEUROSCIENCE
+ BEHAVIORAL
STUDIES

PRODUCT CATALOG

SYSTEMS +
ACCESSORIES

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IMAGING SYSTEM

LightTrack OiS200 03

SYSTEMS + ACCESSORIES

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Start Discovering.
Keep Customizing.




FUTURE READY

MediLumine delivers the LightTrack OiS200 for cortex-wide imaging of GCaMP, jrGECO, and GRAB sensors for dopamine, norepinephrine, and acetylcholine, with intrinsic signal imaging, speckle contrast, built-in hemodynamic correction, and optogenetic stimulation from full-field to targeted.

Full integration for the open-source tools neuroscientists already use: PsychoPy, Open Ephys, and custom behavioral rigs.

Pair it with our full ecosystem of behavioral accessories: treadmills, head-fixation, whisker and olfactory stimulators, lickometers, and decision wheels. All PsychoPy-ready.

SENSORY STIMULATION

INFO

Our sensory stimulation products deliver controlled inputs, helping researchers study neural responses in animal models while capturing real-time changes in behavior and brain activity.

Mechanical Whisker Stimulator

SKU #MDL-33171

The Mechanical Whisker Stimulator is a high-precision device designed to facilitate controlled whisker stimulation in neuroscience and behavioral research.

It enables researchers to perform experiments with reproducible parameters, ensuring accurate and reliable data collection.

PRECISION CONTROL & CONFIGURABILITY

This stimulator features two BNC input/output connectors, for an easy integration with other laboratory equipment.

It can be triggered externally through a 5V TTL signal, ensuring precise synchronization with additional research instruments. The system is USB-C powered and configured, providing a streamlined setup with minimal wiring and no need for external power supplies.

Researchers can customize stimulation parameters through our intuitive software, adjusting frequency, amplitude, and the number of repetitions to meet specific experimental needs. This flexibility allows for a wide range of applications, from sensory response studies to neurophysiological research.

ADJUSTABLE DESIGN FOR OPTIMAL POSITIONING

A key feature of the Mechanical Whisker Stimulator is its adjustable hollow tube, which securely holds the whisker while offering modifications in length. Moreover, this adaptability ensures precise positioning, accommodating different experimental setups and whisker sizes.

Ganzfeld VUS200
Visual Uniform Stimulator

SKU #MDL-38451

The Ganzfeld VUS200 Visual Uniform Stimulator, is an advanced system for providing precise, uniform light stimulation in visual electrophysiology experiments.

It is primarily used to assess retinal function and visual responses in research and clinical settings. This makes it a reliable tool for studying visual disorders and neurophysiological processes.

The VUS200 features a spherical dome, called the "Ganzfeld," which ensures uniform light distribution across the subject's visual field.

This even illumination is essential for avoiding shadows or variations in light intensity that could affect results.

The Ganzfeld ERG Device integrates seamlessly with the VFS200 Visual Flash Stimulator, delivering a comprehensive solution for advanced retinal analysis and research.

The system enhances the accuracy and reproducibility of electrophysiological measurements, including electroretinograms (ERG) and visual evoked potentials (VEP).

SPECIFICATIONS

- 36 cm inner diameter
- aperture
- Top: 9 cm
- Bottom: 28 cm
- Potentiometer controlled
- Up to 120 Candela
- Optimized for mouse
- Lock in upright position

Ganzfeld VUS200
Visual Uniform Stimulator con't

PRODUCT FRONT VIEW

A key feature of the VUS200 is its ability to deliver a wide range of light intensities and wavelengths.

This flexibility makes it suitable for various experimental setups. It can simulate lighting conditions from dim scotopic (low-light) to bright photopic (daylight) environments.

This allows researchers to study how the retina and visual pathways respond under different conditions.

Additionally, the system offers customizable protocols, allowing precise control over stimulus parameters like frequency, duration, and intensity.

Overall, the Ganzfeld VUS200 is a powerful and versatile tool for visual electrophysiology.

It provides researchers and clinicians with a reliable platform to explore and understand retinal and visual function with high precision and consistency.

Air Puff Whisker & Olfactory Stimulator

SKU #MDL-33161

The Air Puff Whisker & Olfactory Stimulator delivers highly controlled air puffs to mouse or rat whiskers with precise timing and repeatability.

It minimizes mechanical and electrical noise, making it ideal for sensitive neuroscience experiments.

SPECIFICATIONS

- Adjustable air pressure and frequency
- Input trigger control for precise synchronization
- Minimum pulse duration: 4 ms
- Maximum frequency: 25 Hz
- Maximum pressure: 30 PSI

OLFACTORY STIMULATION MODE

Use the stimulator as a modular olfactometer for odor delivery during experiments.

- Connects to a vial or container with gauze or solid odorants
- Multiple units can be combined to deliver different odors or concentrations
- Excellent for studies of olfactory processing and multi-modal integration
- Odor vials are not included but can be supplied on request.
- See our blog post for an example of dorsal olfactory bulb (dOB) recordings using this setup.

AIR PUFF FOR BEHAVIORAL MOTIVATION

The device is fully compatible with our Rodent Treadmill, where it delivers a brief, targeted air puff beneath the animal to encourage consistent running.

Designed as a humane, non-invasive alternative to traditional electric shock grids, it triggers automatically as soon as the treadmill reaches a pre-configured set point. By significantly reducing animal stress, this system preserves the accuracy and integrity of your behavioral data.

Visual Flash Stimulator VFS200

SKU #MDL-38455

The VFS200 is an advanced visual flash stimulator designed specifically for electroretinogram (ERG) studies in small animals, including mice.

It utilizes a high-power xenon bulb to emit intense pulsed light, enabling precise control over pulse duration and intensity through a user-friendly interface with a single knob and display.

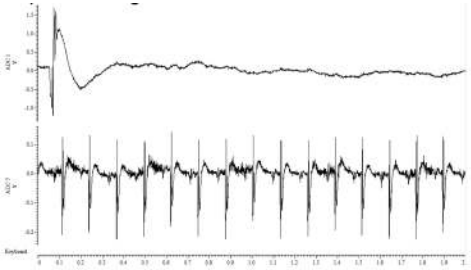
Additionally, the unit supports standard 0-5V TTL signal control, allowing seamless integration with other equipment.

The VFS200 is also compatible with our Ganzfeld VUS200, offering enhanced versatility for comprehensive visual stimulus research.

TYPICAL RESULT

In addition, a visual flash stimulator is crucial for generating an electro-retinogram (ERG), a diagnostic test that measures the electrical activity of the retina in response to visual stimuli.

Here's how the visual flash stimulator is used in the process. Typical mouse ERG response using the VFS200 with 40 cd/m2*s



SPECIFICATIONS

- Xenon bulb
- 0 – 5 000 cd/m2
- Adjustable Power: 150V – 330V
- Adjustable Pulse duration: 10 us – 1 ms
- Knob and display for adjustments
- Trigger Input: 0 – 5V
- AC 100-230V, 50/60Hz

High-Frequency Acoustic Stimulator

SKU #MDL-38801-1 | SKU #MDL-38801-2 |
SKU #MDL-38802-1 | SKU #MDL-38802-2

The High-Frequency Acoustic Stimulator is a versatile and precise system designed to deliver controlled acoustic stimuli in the audible to ultrasonic range, up to 90 kHz.

IT IS OFFERED IN FOUR CONFIGURATIONS

- Single-channel (no generator)
- Dual-channel (no generator)
- Single-channel with integrated waveform generator
- Dual-channel with integrated waveform generator

When purchased without the integrated generator, the user simply connects their own analog waveform generator to the analog input ports (ANA IN1 / ANA IN2).

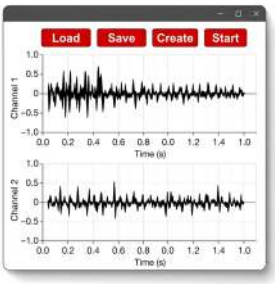
The device then amplifies this signal and drives the ultrasonic emitters. When equipped with the built-in generator, users can create, edit, and manage acoustic stimuli entirely through the included software.

SPECIFICATIONS

- Sound level: 90 dB SPL at 40 kHz
- Maximum frequency: 90 kHz
- Number of channels: 1 or 2
- Emitter dimensions: Ø 47 mm × 29 mm height
- Mounting: 6.35 mm rod holder, compatible with our magnetic stand
- Connectivity: Trigger IN, Trigger OUT, ANA IN1, ANA IN2

SOFTWARE (OPTIONAL)

The comprehensive control software (included with models featuring the built-in generator) enables full stimulus design and automation. Users can create and save audio files, execute frequency sweeps, and manage timing protocols with ease.



VIRTUAL REALITY

INFO

We develop advanced virtual reality systems for mouse neuroscience research, enabling precise studies of navigation, decision-making, and sensory processing in controlled environments.

Spherical Treadmill for Mice

SKU #MDL-38361

The Spherical Treadmill for Mice is an advanced system designed for controlled locomotion studies in animal research.

It features a lightweight, air-supported spherical ball that allows subjects to move freely while enabling accurate real-time data capture.

A key aspect of the treadmill is its optional unidirectional running control, achieved through a built-in brake system that limits the ball's movement to a single direction, ensuring precise control during experiments.

The device also offers an analog output for speed measurement, providing continuous real-time speed data for seamless integration with data acquisition systems.

Additionally, the treadmill includes fan power control, allowing researchers to adjust airflow for optimal ball support and smooth operation.

A USB interface is included for easy connection to computers, facilitating quick data transfer and system control, therefore making this treadmill a versatile and precise tool for behavioral and neuroscience research.

PRODUCT SIDE VIEW

SPECIFICATIONS

- 8-inch Styrofoam ball
- Quiet air delivery system
- 2 analog outputs (0-5V) for X and Y speed
- Potentiometer-controlled airflow
- 2 brakes to provide unidirectional running
- USB: data, brake control and air flow
- Calibrated for X and Y axes
- Optical IR motion sensor
- Two 40 mm mounting posts, one on each side
- U-shaped head restrainer assembly
- Flexible 1-inch air pipe with ultra-quiet airflow system
- Low-profile design to fit under a microscope
- Accessories holder for air-puff or water delivery

TRAINING PROTOCOL

Proper habituation to the treadmill and VR setup is essential for reducing animal stress. To support your work, explore our free step-by-step training protocols designed to guide the habituation of head-fixed mice on our treadmill and help streamline your experiments.

VIRTUAL REALITY INTEGRATION

Our spherical treadmill for mice integrates seamlessly with virtual reality systems, enabling efficient behavioral and neural research. The USB interface connects directly to engines like Unreal or Unity, while real-time analog outputs translate mouse movement into precise virtual actions.

Virtual Reality Headset for Mice

Our Virtual Reality (VR) Headset for Mice is a compact and powerful tool for immersive behavioral neuroscience experiments.

Featuring two high-resolution 480×480 displays, the headset provides a wide field of view, enabling immersive visual environments tailored to rodent vision.

Its low-profile design minimizes space requirements, making it fully compatible with advanced imaging modalities, including widefield and two-photon microscopy.

Ideal for head-fixed experimental setups, this headset allows seamless integration with optical systems and behavioral paradigms.

For researchers who prefer not to use a head-mounted system, we also offer a dual-display monitor setup as a flexible alternative.

Note - Regional compliance, product specifications, and commercial availability of the Virtual Reality Headset for Mice vary by country jurisdiction. This specific hardware configuration is currently available for commercial purchase and delivery in Canada and the United States, and remains subject to regional clearance in other territories.

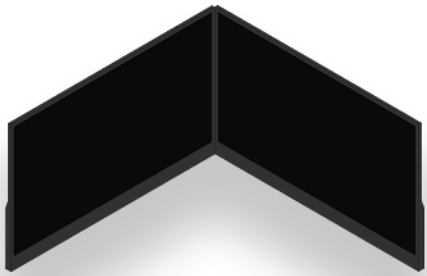
SKU #MDL-38703

SPECIFICATIONS

- Dual 480×480 pixel displays for immersive visual stimulation
- Wide field of view coverage tailored for mice
- Space-efficient form factor compatible with widefield imaging, two-photon imaging, and optogenetics
- Optimized for integration in head-fixed setups
- Perfect for labs developing visually guided tasks or studying perception, navigation, and sensorimotor processing

Virtual Reality Dual Display for Mice

Our 15.6" dual monitors are a robust and flexible solution for creating immersive visual environments in rodent behavioral experiments.



SKU #MDL-38707

With a 720p resolution and a large screen size, these monitors provide sharp, wide-angle visuals suitable for head-fixed configurations with or without our treadmills.

Their size and resolution strike a practical balance between visual clarity and system integration, making them ideal for VR arenas, mazes, or multi-display setups.

This dual-display setup is a simpler, screen-based alternative to our Virtual Reality Headset for Mice, suitable for labs preferring external displays over head-mounted systems.

SPECIFICATIONS

- 15.6" displays with 1280×720 resolution for high-quality visual presentation
- Large screen area for wide field of view coverage
- Space-efficient form factor compatible with widefield imaging, two-photon imaging, and optogenetics
- Compatible with head-fixed experimental designs
- Ideal for immersive mazes and retinotopy
- Easily integrates with motion tracking, stimulation systems, and behavioral monitoring
- Perfect for labs building immersive virtual environments to study navigation, decision-making, and sensory-guided behavior in rodents.

VRLab Suite

Our intuitive VRLab Suite includes a library of pre-designed environments with configurable parameters such as trial count, reward conditions, and task difficulty.

You can also design and purchase custom environments tailored to your experimental needs. The software offers full control over behavioral paradigms and integrates seamlessly with electrophysiology or imaging systems.

BUILT IN

The software comes with several built-in environments optimized for common experiments with mice:

- Y-Maze
- Predator
- Infinite Corridor
- Retinotopy
- Custom Environment

SYSTEM COMPATIBILITY

VRLab Suite is designed for use with head-fixed mice on our spherical treadmill (preferred) or linear treadmill, enabling navigation through virtual environments.

The software synchronizes with:

- **Water dispensers** (standard or sweet water) for positive reinforcement
- **Air puff whisker stimulators** for negative reinforcement

SKU #MDL-38751 | SKU #MDL-38755

Visual stimuli can be presented using either our VR Goggles or a dual 15.6" display setup. Looking for hardware? All devices can be purchased separately.

LICENSING

This package includes a full-featured software license for a single computer, which is included and preconfigured to support real-time 3D rendering and multi-display performance.

- **Operating System:** Windows 11 Pro
- **Storage:** 1 TB SSD
- **Display:** 24" monitor
- **Accessories:** Wireless keyboard and mouse

IMAGING ACCESSORIES

INFO

Our imaging accessories enhance workflows by improving signal quality, precision, and experimental flexibility.

Light Tight Optical Enclosure

SKU #MDL-33001
SKU #MDL-33003

SKU #MDL-33002

The light-tight optical enclosure with a front door opening ensures a completely dark environment, essential for high-precision imaging with the OiS200 or other advanced imaging systems.

By eliminating external light sources, the enclosure enhances the signal-to-noise ratio, allowing for clearer and more accurate image capture, especially when dealing with 2-photon microscopy and other fluorescence applications.

Beyond light control, the enclosure is designed to reduce ambient noise, which is critical in minimizing vibrations and other environmental interferences that could compromise the integrity of sensitive experimental data.

This combination of light isolation and noise reduction ensures the highest possible fidelity in imaging results, making it an indispensable component in rigorous research settings.

SPECIFICATIONS

- Dimensions are: width X depth X height.
- Without soundproofing foam:
- Outside dimensions: 25.5" X 25.5" X 25.5".
- Inside dimensions: 23.5" X 23.5" X 24.5".
- With soundproofing foam:
- Outside dimensions: 28" X 28" X 26".
- Inside dimensions: 24" X 24" X 24".
- 2 lift support offers minimal force from user and stays in the opened or closed position (door models).
- Ergonomic design allows user to access both side of the system when opened (door models).
- 1 Cord Grommets located in the back to allows multiple cables.

You can customize the dimensions of the enclosure to fit your application needs. Contact us for a quote on a custom enclosure.

Note* While this enclosure is light-tight for most applications, including photography, imaging, and fluorescence, it is not suitable for bioluminescence imaging with deep-cooled cameras capable of counting individual photons.

Anesthesia Box for Mice

The Anesthesia Box for Mice has been engineered for precision and durability. This high-performance box features dedicated input and output ports for precise and controlled delivery of anesthesia gas. It includes two pairs of ports: one for the entire chamber and another specifically for the anesthesia mask.

Constructed from durable powder-coated aluminum with a clear plexiglass top, it offers both robustness and excellent visibility while maintaining a hermetically sealed design.

Fully autoclavable for easy sterilization, the chamber is designed to transfer heat effectively due to its metal construction.

Users have the option to place a heating plate underneath to ensure even heat distribution across the chamber's surface. This design is ideal for consistent and reliable anesthesia administration in research settings.

Compatible with bioluminescence, SWIR, and other imaging systems, this anesthesia box ensures seamless integration with a variety of imaging techniques. Additionally, its design is optimized to minimize anesthesia gas consumption.

SKU #MDL-38511

SPECIFICATIONS

- Inner Dimensions (width x depth x height) 24.4 x 19.3 x 4.6 cm
- Outer Dimensions (width x depth x height) 33 x 21 x 6 cm
- Gas Ports
- For 1/4" (6 mm) tubing. Whole chamber and anesthesia mask ports.
- **Materials:** Powder coated aluminum, plexiglass,stainless - steel lock
- **Compatible Gas:** Any anesthesia gas, such as isoflurane

Screen Synchronization Device

SKU #MDL-33165

This Screen Synchronization Device facilitates the synchronization of monitor with a wide range of imaging systems. It features circuitry designed to initiate an acquisition process when the monitor transitions from a black to a white image.

In fact, only part of the screen could transition while the visual stimulus occurs in order to trigger the imaging process.

So, the device includes an adjustable gain function, allowing for fine-tuning to accommodate different monitor types and brightness levels.

This ensures optimal performance and reliability in diverse imaging scenarios, enhancing the precision and effectiveness of synchronized data capture. Moreover, synchronizing a visual stimulus with the recorded data from an imaging system is crucial for achieving accurate and reliable experimental results.

When visual stimuli are not properly synchronized, discrepancies between the stimulus presentation and the recorded data can lead to misinterpretations and unreliable outcomes.

Accurate synchronization ensures that the timing of the visual stimulus aligns precisely with the data acquisition, allowing for a clear and direct correlation between the observed responses and the stimulus events.

This is essential for analyzing the dynamics of visual processing and for understanding the underlying neural mechanisms. Proper synchronization thus enhances the validity of the experimental findings and supports the development of precise models of sensory perception.

SPECIFICATIONS

- Monitor brightness: 50 to 500 cd/m2.
- Response time: < 10 ms
- Low-pass filter: 50 Hz

Behavioral Camera with Infrared Illumination

SKU #MDL-33011-02

Unlock the full potential of your research with our behavioral monitoring camera with infrared illumination designed specifically for monitoring mice and rats behavior.

Whether you're conducting behavioral studies, neurological research, or any other scientific investigation, our behavioral monitoring camera with infrared illumination provides the reliability and performance you need to achieve your research goals.

KEY FEATURES

- High-Speed Recording: Capture rapid movements and subtle behaviors at up to 900 fps (256 x 128).
- Infrared Illumination: Monitor your subjects in dark conditions without disturbing their natural behavior and the imaging system.
- Adjustable Zoom: Focus on specific areas or behaviors with ease, such as the pupil, whiskers or paws, thanks to the adjustable zoom feature.
- Flexibility: Equipped with articulated positioning arms to place the camera and illumination anywhere. The arm can be fixed with an M6 screw to your setup or mounted to a metal table using our magnetical stand.

OTHER OFFERS

Combine our Behavioral Camera with our Mouse Head Fixation System or Treadmill to monitor your animal while it is head-fixed.

This product is also available as an add-on to our OiS200 Imaging System. Contact us if you require this option.

Mouse Head Fixation System

This ergonomic mouse head-fixation system ensures comfort and exceptional stability for two-photon imaging, OCT, and use with our OiS200 modular system.

Custom titanium bars and simple thumb screws allow quick, secure release, while adjustable body height relieves spinal and neck pressure.

The system includes a 40 mm transparent acrylic body tube and mounts directly onto a 150 × 150 mm breadboard (M6 taps), with space for behavioral or sensory equipment.

The intuitive head bar design locks the mouse quickly and securely, minimizing stress and movement for consistent, precise experiments and reliable results.

STANDARD FEATURES

- 10 mm vertical travel to optimize animal comfort
- Designed for awake mice
- Compatible with our 25 mm bar holders available here. Contact us to design a custom holder for your 25 mm bar holders.
- 40 mm acrylic tube
- Comes on a 150 x 150 mm metric breadboard (M6 taps)

SKU #MDL-38251
SKU #MDL-38252

- Can be combined with our behavioral camera to record the animal's paws, whiskers, or pupil while its head is fixed.

FEATURES U-SHAPED

- 20 mm vertical travel to optimize animal comfort
- Designed for awake mice
- Compatible with our 25 mm head bars available here. Contact us to design a custom holder for your head bars.
- Compatible with custom titanium head bar (1.0 mm thick).
- 40 mm acrylic tube
- Comes on a 150 x 150 mm metric breadboard (M6 taps)
- Can be combined with our behavioral camera to record the animal's paws, whiskers, or pupil while its head is fixed.
- Pitch and yaw adjustment of ±30 degrees.
- Compatible with small working distance imaging systems, such as two-photon and OCT.

Titanium Headbars

(Pack of 25)

SKU #MDL-38271

Made of high-quality titanium, these headbars are almost 2 times lighter than a conventional steel bar (1.1 g/bar for standard). Every bar is inspected, and all sharp edges are filed to prevent any animal discomfort.

The standard bars measure 25 × 3.2 × 3.2 mm and are compatible with the Mouse Head Fixation System and the Low Friction Rodent Driven Belt Treadmill with the Head Fixation Add-on. The flat bars are 1.0 mm thick and are also compatible with our systems.

Multiple models are available; custom models are also possible. An additional cost of +100 USD is added. Price is based on mouse headbar size. For larger headbars or headplates, a custom quote is required—please contact us. For detailed dimensioning, please contact us.

SPECIFICATIONS

- Pack of 25
- Material: Titanium
- Dimensions: 25 X 3.2 X 3.2 mm(standard #1)
- Weight: 1.1g (standard #1)

Titanium headbars present an optimal solution for research environments that require secure and reliable animal head fixation.

Notably, their installation is straightforward. Thanks to their design, you can affix them easily using a simple adhesive application.

This method eliminates the need for complex mounting procedures or additional equipment. To install, simply apply a specialized adhesive to the designated surface. This approach simplifies the process, ensuring a secure and stable fixation without requiring extra tools or hardware.

Furthermore, our installation protocol is available upon request. We invite researchers to contact us to receive comprehensive instructions and guidelines.

The protocol includes detailed steps for adhesive application, surface preparation, and best practices for achieving a strong bond. By adhering to these instructions, researchers can ensure reliable and consistent results, reducing potential complications during installation.

Behavioral Lever

The behavioral lever is intended for fine motor tasks. It can measure the lever position and apply a programmable force that will move the lever out of the reward zone.

It can be used with our Air Puff Whisker Stimulator and our Water Dispenser for reward or punition, or it can be controlled through a 5V TTL interface or a serial interface.

A PsychoPy plugin is also available. The system is compatible with our treadmill, our mouse head fixation system, and our automatic home cage system.

FEATURES

- PsychoPy component interface
- Communication with another device
- Configurable reward zone position
- Auto calibration mechanism
- Open-source firmware and software for customization
- Multiple arms available (2in. and 4in. included)
- 2x M4 supports for direct mount to Thorlabs 0.5" optical posts
- Magnetic
- Can be positioned to any ferrous surface for easier handling and placement

SPECIFICATIONS

- Measures lever position at 20 Hz: 0.15°
- Clockwise and counterclockwise
- Interval between perturbation: 1s to 255s
- Random probability: 0 to 10
- Configurable speed: 1 to 100%
- Configurable amplitude: ±30°
- Small footprint: 33x28x80 mm
- Behavioral Lever programming through PsychoPy

Motor assessment experiments in mice and other small animals are essential for evaluating neurological function and detecting abnormalities. They allow researchers to:

- Identify motor deficits linked to disorders such as Parkinson's, Huntington's, or multiple sclerosis.
- Assess the efficacy of therapeutic drugs by observing their impact on motor function.
- Gain insights into disease mechanisms, enabling development of targeted treatments.
- Conduct critical preclinical testing before human trials.

BEHAVIOR & LOCOMOTION

INFO

Behavioral and locomotion systems enable precise tracking of movement, coordination, and activity in rodents, supporting neuroscience research throughout experimental environments.

Water Dispenser with Lickometer

SKU #MDL-38161 | SKU #MDL-38162

The Water Dispenser with Lickometer provides on-demand water delivery for mice or rats. It includes an input trigger control for precise timing and volume adjustments.

The integrated lickometer records the number of licks, allowing for accurate estimation of water intake. This system can be used with both plain and sweet water to deliver positive reinforcement in behavioral experiments.

The dispenser features digital control via software, a PsychoPy plugin, and a comprehensive list of serial commands. This design ensures seamless integration with experimental setups, enabling researchers to program and automate water delivery protocols with ease. Additionally, for enhanced functionality, pair the dispenser with our Behavioral Camera to capture high-speed recordings of animal behavior and licking activities.

The peristaltic pump in this product offers superior reliability and precision compared to a solenoid valve.

Unlike solenoid valves, which can suffer from mechanical wear and inconsistent performance, the peristaltic pump maintains accuracy...

...over time due to its simple design and lack of moving parts that contact the fluid.

This design also ensures cleaner operation by isolating the fluid from the mechanical components, reducing the risk of contamination. Widely used in various applications for its robustness and dependability, the peristaltic pump consistently delivers superior performance and reliability.

OPERATION OF THE WATER DISPENSER

Our device offers three flexible operating modes for a wide range of experimental needs.

Researchers can trigger programmed sequences through an external signal for seamless integration with existing setups, control the pump directly via digital signal, or use serial command mode through our software or PsychoPy plugin.

These advanced capabilities provide precise, reliable control for efficient and accurate experimentation.

Low-Friction Rodent-Driven Belt Treadmill

SKU #MDL-38201 SKU #MDL-38202 SKU #MDL-38203 SKU #MDL-38204
SKU #MDL-38205 SKU #MDL-38206 SKU #MDL-38241 SKU #MDL-38242

Researchers can save time and resources with the pre-assembled, fully tested Low-Friction Rodent-Driven Belt Treadmill, developed at HHMI's Janelia Research Campus.

Designed for behavioral neuroscience, it supports mouse studies with optional accessories such as head-fixation and motorization.

User-friendly software records speed and distance in CSV format, with full PsychoPy compatibility. Each unit includes an extra belt for convenience.

SPECIFICATIONS

- Low-friction, manually rodent-driven treadmill for natural behavior studies
- Low-profile design fits under most microscopes, including the OiS200 modular optical imaging system
- Compatible with the Behavioral Camera with Infrared Illumination to record and analyze animal behavior
- Inclination (front-back) and translation adjustments for optimal rodent comfort
- USB serial interface for real-time speed and accumulated distance data

Low-Friction Rodent-Driven Belt Treadmill con't

SPECIFICATIONS CON'T...

- 0-3.3V analog output for speed and direction signals
- USB-C powered (includes wall adapter and cable)
- Compatible with M6 or 1/4" breadboards for flexible mounting

OPTIONAL MOTOR ADD-ON

- Wide 90 mm belt version
- Easily detachable for manual low-friction operation
- Drive speed adjustable from 10 mm/s to 800 mm/s
- Belt-driven with potentiometer speed control or USB/serial software control
- Enable/disable switch and slow ramp start feature
- Mounted on 150 x 150 mm metric breadboard (M6 taps), imperial breadboard available on request

OPTIONAL HEAD FIXATION ADD-ON

- Compatible with our 25 mm headbars (Standard #1), available here
- Custom holders available upon request for other headbar models
- Mounted on 150 x 150 mm metric breadboard (M6 taps), imperial breadboard available on request

Treadmill for Rats or Mice

SKU #MDL-38306 I SKU #MDL-38306-B
SKU #MDL-38307 I SKU #MDL-38307-B

Compact benchtop treadmill for laboratory mice or rats. It features a manual knob and can also be controlled by a computer for programming running sequences.

An adjustable air puff system (sold separately) can encourage the animal to run with less induced stress than a conventional electrical shock grid.

SPECIFICATIONS

- Commands: USB serial through user interface
- Sound Level: <65 dB
- Speed: 0-1800 mm/s
- Mode: Constant, ramp (accelerating), multi-step personalized ramp through .csv
- Slope: ±15°
- Animal Tracking: Reflective IR
- Results: .csv with speed, position of mice (25Hz), and time of air puff trigger.
- TTL Output: Air puff trigger (air puff sold separately)
- Belt Dimensions :
- Mice: 68 x 280 mm
- Rats: 115×460 mm

ENCLOSED LANE DIMENSIONS

- Mice: 55 x 280 mm with 50 mm grid (55 x 330 mm total)
- Rats: 105x 460mm with 100mm grid (105x 560 mm total)

Treadmill for Rats and Mice

The treadmill's clear walls facilitate pose estimation using camera-based algorithms such as DeepLabCut and SLEAP.

By enabling precise posture tracking, researchers gain valuable insights into the motor condition of animals.

This enhances the depth of information gathered during experiments.

Users can easily configure specific ramps and protocols on the compact benchtop treadmill for mice and rats using the intuitive graphical user interface (GUI).

Start and stop commands can be executed directly through the GUI, and users can conveniently save and load ramps for future use.

Additionally, the ability to save animal positions along with current speeds facilitates further analysis, allowing for comprehensive data interpretation.

Position estimation is built-in through reflective IR sensors, providing accurate tracking of the animal's movements for enhanced research insights.

Rotarod

SKU #MDL-038305 I SKU #MDL-038311

Built as a premier foundation for motor impairment assessment, our mouse rotarod system features custom rod designs inspired by the eNeuro article, “Customizable Open-Source Rotating Rod (Rotarod) Enables Robust Low-Cost Assessment of Motor Performance in Mice” by Widjaja et al.

Whether you’re conducting behavioral studies, neurological research, or any other scientific investigation, our rotarod systems for mice and rats provide the reliability and performance you need to achieve your research goals.

Advanced Sensor Technology: Cutting-edge sensor, to provide precise time of fall.

Custom Rod Materials: Customizable rod materials to accommodate diverse research needs, offering flexibility in experimental design.

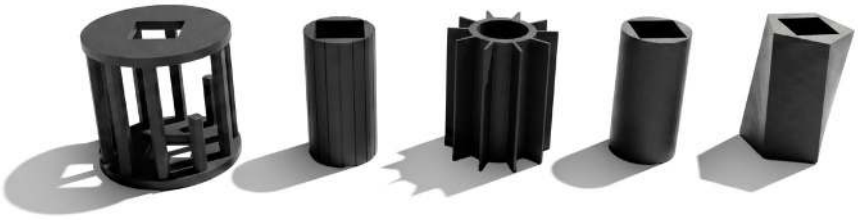
User-Friendly Software Interface: Real-time monitoring, and efficient data export (.csv).

Variable Rod Diameters and Shape: Enable interchangeable rod diameters to cater to different mouse sizes and experimental protocols, ensuring adaptability.

Enhanced Safety Features: Emergency stop mechanism and automatic shutdown to prioritize the safety of experimental subjects.

Enhanced Durability and Maintenance: Durable and simple to maintain equipment.

Rotarod



Effortless transition between different rod types in mere minutes with the rotarod system, enhancing the efficiency of your experiments, allowing for swift adjustments based on specific research requirements.

The rotarod system offers unparalleled flexibility, accommodating a diverse range of designs, from asymmetric missing step wheels to a simple plain rod.

Researchers are empowered by this adaptability to customize the apparatus according to their experimental needs.

In addition, this ensures optimal functionality across a range of motor impairment studies.

Additionally, the system offers the option to construct and set up your own rods using a 3D printer. The system is supplied with 5 notched rods, each with a diameter of 3 cm.

If you prefer different rods, kindly specify this in a note attached to your order.

Finally, create your sequences with our user-friendly interface, displayed below. Once programmed, the rotarod system seamlessly operates without the need for a computer, offering convenience and independence in your experimental workflow.

Behavioral Decision Wheel

SKU #MDL-38351 SKU #MDL-38352

The Behavioral Decision Wheel offers precise and reproducible assessment of decision-making in mice and small animals.

Inspired by the Institute of Brain Lab (IBL) and IBLRIG, it provides a standardized way to measure behavioral choices. Moreover, built with cutting-edge research, it delivers reliable data and adapts easily to various experimental setups.

Researchers can systematically evaluate decision-making patterns, gaining insights into cognitive functions and behavioral responses.

Additionally, the wheel is USB-powered, with output voltages that change based on rotation speed (left or right).

It sends serial commands when detecting direction changes, ensuring smooth system integration. Users can set a threshold (in degrees) to adjust sensitivity. It offers calibrated accuracy and works with PsychoPy via a plugin.

Designed for convenience, the behavioral decision wheel is easy to clean and comes with an optional head fixation system or as a standalone unit.

Furthermore, it follows standardized measurement methods from the eLife publication, making it a vital tool for neuroscience and behavioral science research. It is also fully compatible with our Behavioral Task Device rig.

Behavioral
Decision Wheel

Moreover, the Behavioral Decision Wheel is fully adjustable in two directions.

Users can modify its height to accommodate different setups and adjust its position along the animal's body, ensuring alignment with the vertical axis.

This flexibility allows for precise positioning tailored to each experiment, enhancing comfort for the animal and improving the accuracy of data collection.

Finally, the wheel features two distinct modes: speed output and decision output.

In speed output mode, the device provides an analog output corresponding to the rotation speed.

In decision output mode, based on a user-defined threshold, it delivers a semi-analog output with voltage levels of 0V, 1.65V, or 3.3V.

This dual-mode functionality offers flexibility, allowing researchers to capture either continuous speed data or discrete decision signals, depending on the experimental requirements.

Behavioral
Task Device

SKU #MDL-3812x
(Custom configuration - contact us for a quote)

Behavioral testing is critical in biomedical science as it provides insights into the cognitive, emotional, and motor functions of animals, enabling researchers to study neurological disorders, drug efficacy, and brain function.

These tests help model human conditions, leading to a deeper understanding of disease mechanisms and the development of effective treatments.

The Behavioral Task Device is fully customizable, allowing users to independently add or modify components like sensors and actuators.

This modular design ensures flexibility, letting researchers tailor the device to fit various experimental needs.

BUILD YOUR SETUP

- Included in all configurations: USB device with 8 digital inputs-outputs to monitor other sensors, act as slave, trigger other systems, or control sensorial feedback.
- Included in all configurations: One audio set to present stereo stimuli.
- 24" control monitor and 15.6" stimulation monitor
- One computer with keyboard and mouse

Behavioral Task Device

BUILD YOUR SETUP CON'T

- Add-on positioners to precisely position water sprouts and air puff outputs.
- Water dispenser
- Air puff whisker & olfactory stimulator
- Decision wheel
- Rodent driven treadmill, or acrylic tube to maintain the animal, with head fixation system.

The device's compact footprint makes it ideal for high-throughput experiments and seamless serialization.

Operating autonomously, it supports unlimited serialization, with data stored locally or integrated into cloud services for flexible management.

Compatible with various add-ons, it supports USB webcams for movement or pupil tracking, the Air Puff Whisker Stimulator for aversive stimuli, and the Behavioral Lever for fine motor tasks.

Experiment setup is simplified through PsychoPy.org with pre-programmed drag-and-drop components, requiring no coding. Workflows can be easily adjusted, and custom experiments can be developed on request.

Magnetic Behavioral Maze

Explore endless experimental possibilities with the Magnetic Behavioral Maze, designed for versatility and ease.

With this system, you can effortlessly configure T-Maze, Y-Maze, Plus Maze, and Open Field layouts on a 120 x 120 cm ferro-magnetic surface.

Specifically, each wall can be placed independently, providing precise control over your maze design.

SKU #MDL-38502

Moreover, the walls are foldable and can be conveniently stored on the base or along a wall, which optimizes lab space and simplifies organization.

Additionally, the robust aluminum structure supports a tracking camera on top, ensuring reliable data capture for your experiments.

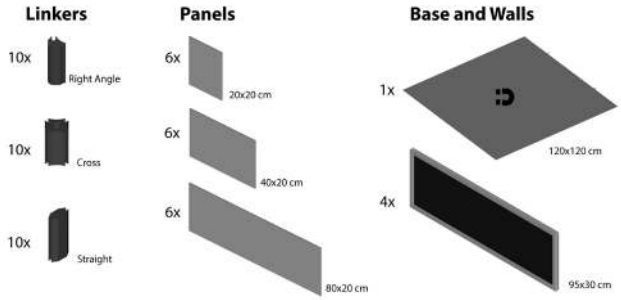
Furthermore, you can incorporate your own inner wall panels or LEGO blocks to create customized wall configurations.

What sets our product apart is its larger size and modular design.

Specifically, you can seamlessly place the magnetic base alongside another to expand the footprint, which accommodates more complex and spacious experimental setups.

This adaptability, therefore, offers a greater range of design options and enhances the overall functionality of your maze system.

Magnetic
Behavioral Maze



For researchers needing different dimensions or specialized setups, we can accommodate custom requests.

Please contact us to discuss your specific requirements and receive tailored solutions.

In addition, the Behavioral Maze System is easy to clean, rust-resistant, and autoclavable, which ensures durability and hygiene in demanding lab environments.

BEHAVIORAL MAZE SETUP

Behavioral experiments are an important part of research.

Although behavioral setup is relatively simple, they are also very time consuming to install and optimize to provide reliable, and reproductive results.

MediLumine offers plug and play solutions that will save precious resources and time to any lab. All systems are modular and compatible with each other.

PHYSIOLOGY

INFO

Our physiology research solutions enable precise monitoring and manipulation of biological functions in animal models, helping scientists investigate neural activity, cardiovascular responses, metabolism, and systemic health in real time.

SpO2 & Heart Rate Monitoring

SKU #MDL-25001

Monitoring SpO2 in small animals during surgery is crucial for ensuring the animal's safety and maintaining optimal physiological conditions. During anesthesia and surgical procedures, small animals like mice are particularly vulnerable to rapid changes in oxygen levels due to their high metabolic rates and smaller body mass. A drop in oxygen saturation can lead to hypoxia, causing organ damage or even death if not detected early.

Continuous SpO2 monitoring allows researchers and veterinarians to track the animal's respiratory function in real-time. This ensures that anesthesia levels are properly adjusted and that ventilation is adequate.

This proactive approach reduces the risk of complications, improves surgical outcomes, and enhances the overall welfare of the animal.

Moreover, maintaining consistent oxygenation levels is vital for the reliability of experimental data, as hypoxia can introduce variables that may skew results, particularly in studies related to cardiovascular or respiratory function.

SPECIFICATIONS

- Bluetooth
  - Get 15 to 25 meters typical range between the communication module and the display unit
- SpO2 And Heart Rate
  - 50 to 100% saturation
  - 250 Hz, 24-bit acquisition
  - Red & infrared channels display
  - Pulse oximetry and oxygen saturation with a paw/tail sensor
- Data Analysis
  - .csv conversion tool
  - Matlab & Excel import and display scripts
  - Compatible with third-party analysis software (LabChart)
- Touch screen tablet/ touch display
- Modern display interface: Pinch to zoom on waveforms (works with surgical gloves).
- 1 to 5 seconds waveforms
  - Select Red or Infrared signal to display
- 1 to 30 minutes trends
  - Heart rate and SpO2 trends and numerical values.
- Easy data saving
  - Add notes, save and export data for an easy analysis.

ECG & Respiration Gating System

SKU #MDL-38141

The ECG & respiration gating system (GS4010) is intended to eliminate motion variability in rapid imaging system like ultrasound or optical imaging. This device can be used on small animals, such as mice, rats, guinea pigs and marmosets.

Accurate quantification in ultrasound often depends not only on having a great B-mode image but also on limiting movement within the field of view. ECG and respiration gating can pause the image at one specific time within the cardiac cycle and/or only acquire data when the animal is not actively breathing.

The system includes a 3.2 inch touch screen with signal display in a compact handheld format. The intuitive user interface is easy to use and modification of parameters is straightforward. 2 different visual feedback are available to the user: LED and signal display.

Moreover, eliminating motion artifacts is vital for the reliability of experimental data, as cardiac and respiratory cycles can introduce spatial variables that blur fine anatomical structures and skew quantitative measurements in high-speed imaging studies.

SPECIFICATIONS

- General
  - One 3.2 inch touch screen
  - Compact handheld dimensions (3"x 6"x 1")
  - 3 external electrode connections
  - 3 BNC output
  - Amplified and filtered ECG signal
  - Amplified respiration signal
  - Gating 0-3.3V signal
  - 3 LEDs visual feedback
- Acquisition
  - Fully integrated single-lead ECG
  - Common-mode rejection ratio: 80 dB
  - Integrated right leg drive
  - 10 kHz ECG
  - 500 Hz respiration
  - Heart and breath rate
  - 200 to 800 beats/min
  - 25 to 330 breaths/min
  - Calculated every second
- Gating
  - Pulse width: 0.1 ms to 100 ms*
  - Delay between QRS and gating pulse: 0 ms to 100 ms*
  - 100 µs resolution

TOOLS FOR
NEUROSCIENCE
+ BEHAVIORAL
STUDIES

ediLumine

Vision without Sacrifice™