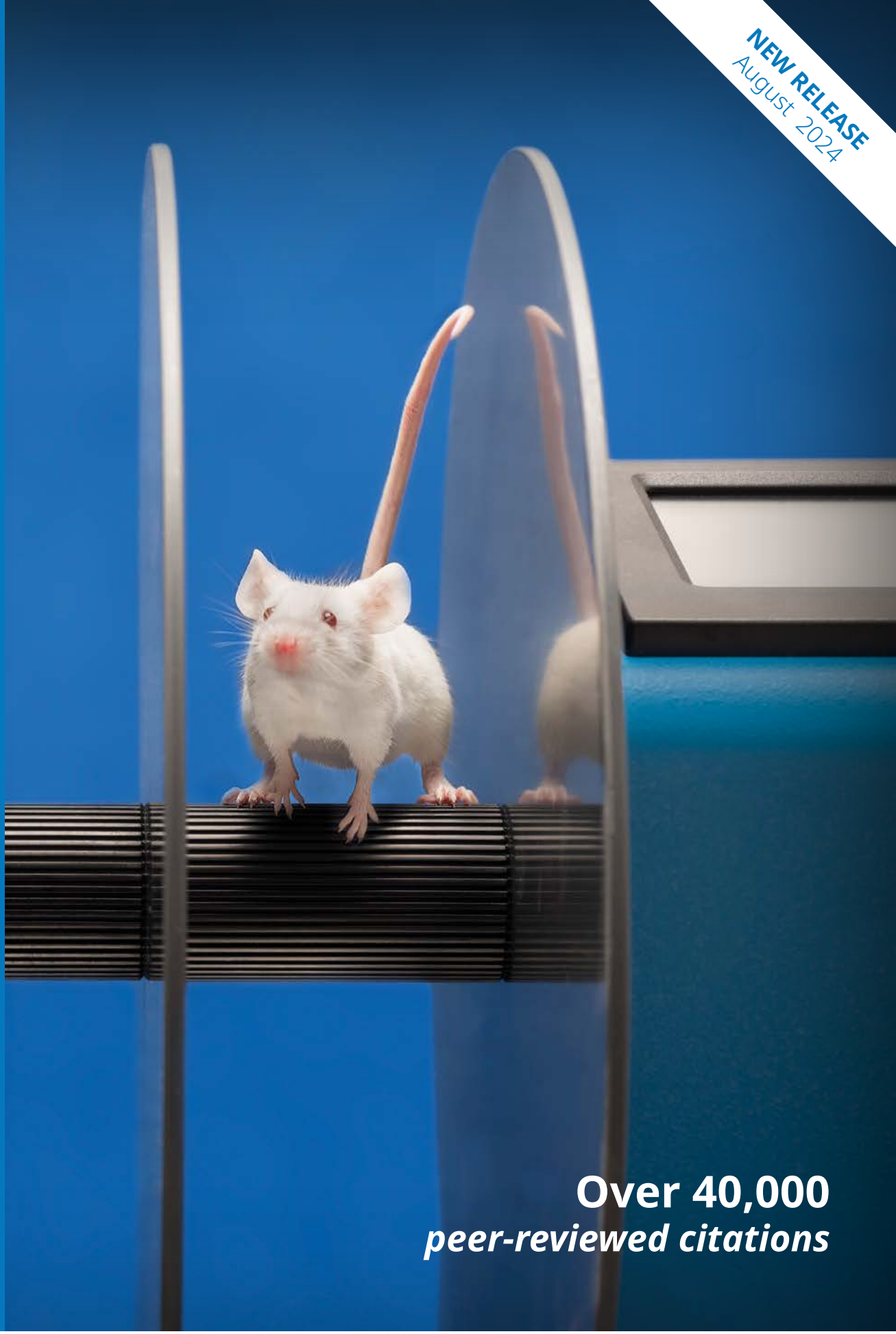
UGO BASILE CATALOGUE

NEW RELEASE
August 2024



Over 40,000
peer-reviewed citations

TRANSFORMING IDEAS INTO INSTRUMENTS

ugo basile®
YOUR COMPANION IN DISCOVERY SINCE **1963**

CATEGORIES

PAIN AND INFLAMMATION

From 1963 Ugo Basile's devices have had a prominent role in research in pain & inflammation, precious tools for researchers to achieve their experimental goals.

BEHAVIOR, CONDITIONING, REWARD

Whether your research involves the study of memory, learning, anxiety, depression, fear, stress, social interaction, addiction, or more complex behavioral protocols, we have the answer.

MAZES AND TRACKING

High quality mazes (traditional or IR) that provide optimal results with video-tracking software thanks to their optimal contrast. Designed for easy set-up and cleaning.

MOTOR FUNCTION & COORDINATION

Measurement of motor coordination through the RotaRod, Strength through the Grip Strength Meter, Endurance through Treadmill are normally applied to assess the effect of drugs, to characterize transgenic or knock- out phenotypes or other experimental conditions in rodents. The new climbing test informs on vertical activity and motor function.

METABOLISM AND FEEDING

Chronic diseases such as obesity, diabetes and hypertension, together known as the metabolic syndrome, are causing increasing morbidity and mortality. Ugo Basile systems provide sturdy cages to separation of urine/feces and food/water consumption.

TISSUE BATHS, TRANSDUCERS AND RECORDERS

Isolated tissue bath assays are a classical pharmacological tool for evaluating tissue contraction with isometric or isotonic transducers and evaluate dose-response relationships in a very broad range of experiments, from teaching to research.

VENTILATORS AND ANESTHESIA

Experimental procedures on animals often require anesthesia and/or assisted ventilation. The Ugo Basile ventilators are the classic volume-controlled ventilators, precise and sturdy from mice to rabbits.

BLOOD PRESSURE

Blood pressure is one of the vital parameters used to assess the cardiovascular functions of a mammal. BP is commonly recorded using invasive or noninvasive methods.

MISCELLANEOUS ECT/LMD

ECT Unit (Electroconvulsive-Therapy) for epilepsy, LMD - Lesion Making Device for focused brain lesions, Stereotaxic Instruments, Electronic Monitor for Vaginal Estrous-Cycle in Rodents and much more...

WARRANTY & UB-CARE

Ugo Basile main concern is not only efficiency and accuracy but also providing highly reliable instruments that last for years.

For this reason we feel confident in giving to all our products a standard 12 months warranty plus 12 months for FREE by registering it on our website at: *register.ugobasile.com.*

A paid service called "UB-CARE" is available for most of our products to extend the 2 years warranty for additional 12 or 24 months to achieve a total of 36 or 48 warranty months period.

IN-HOUSE MANUFACTURING

All Ugo Basile products are proudly produced in-house by an experienced team from design to operations. The great advantage of this approach is the possibility for the R&D department to develop and build custom request products in a very short time and to shorten innovation times, achieving a continuous development pipeline. in addition to a strict quality control.

CONTACTS

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SUMMARY

Climbing Test

"Measures Vertical Activity in Rodents"

Ugo Basile Climbing Test is the first available device that measures vertical activity in mice in a completely automated manner.
The device, developed by the Virginia Commonwealth University in collaboration with Ugo Basile provides a measurement of the vertical movement of rodents, a parameter which has not been widely investigated so far, in spite of the fact that rodents are animals that live in a 3D space and hence the analysis of XY position is a limitation in most current studies.
A load cell underneath the aluminum base (diameter 12 cm) provides the automated start of the test once the animal leaves the base and starts climbing over the cylinder (height 25.5 cm) and its ceiling, thanks to the 5x5mm internal grid.
The system is composed of a electronic unit onto which the climbing cylinder is positioned the. Capacitive and force sensors are used to measure climbing in a cylinder with an internal grid and output all necessary parameters automatically:

- Time spent climbing (in the cylinder walls or the ceiling over the total time)
- Activity amount
- Number of climbing episodes
- Latency to first climbing episodes

ORDERING INFORMATION

SKU	Description
36103	Mouse climbing test system for vertical movement assessment

Specification	
Start/Stop	By Start/Stop button on the climbing cage
Tare	By Tare button on the climbing cage
Experiment duration	Max 3600 seconds
Height sensors	7 rings + 1 on the roof (capacitive sensors)
Height accuracy	6mm
Weight accuracy	0.1g
Data Portability	By USB flash drive (included) or LAN connection
Data Output	Results table in .csv

Load cell floor

Application

Because of the nature of rodents, which show abundant vertical activity, climbing has been a parameter of interest but much less investigated than activity in the horizontal plane, for lack of technology and standardized devices to do it.
In fact, we have ample literature on climbing behaviors measured manually. This is well described in the review by Neto et al. (2016), showing typical protocols and use cases. In more specific papers we have seen the most diverse experiments using climbing as a main endpoint, e.g.:

- Stress-related studies (Cabib et al. 1984)
- ain-depressed behaviors and analgesic effects (Santos et al. 2023)
- Effect in home cage climbing for muscle strength (Ueno et al. 2022)
- Male-female differences to better understand climbing role (Borbelyova et al. 2019)
- Environment exploration in a 3D environment (Wexler et al. 2018)

Much more is to be explored about this partially neglected behavior now that the right technology is available in the field of pain, motor function, anxiety, depressions, etc.

Features and Benefits	
Conductive sensors to track Z movements	Automated measurement of time climbing, activity, time on ceiling, climbing episodes
Load cell floor	Automated start of the test
Electronic unit	Controlled by touch screen and with internal memory
USB and LAN data saving	Easy export into excel and data security

Ceiling of the cylinder

References

Edna J. Santos et. al., 2023, "*Climbing behavior by mice as an endpoint for preclinical assessment of drug effects in the absence and presence of pain*", Journal of Ethnopharmacology
Shinichiro Takada et. al., 2019, "*Attenuation of Post-Traumatic Osteoarthritis After Anterior Cruciate Ligament Injury Via Inhibition of Hedgehog Signaling*", Journal of Orthopaedic Research
Simona Cabib et. al., 1984, *"Chronic stress enhances apomorphine-induced stereotyped behavior in mice: involvement of endogenous opioids"*, Brain Research
Walter Krause Neto t. al., 2016, *"Vertical Climbing for Rodent Resistance Training: a Discussion about Training Parameters"*, International Journal of Sports Science

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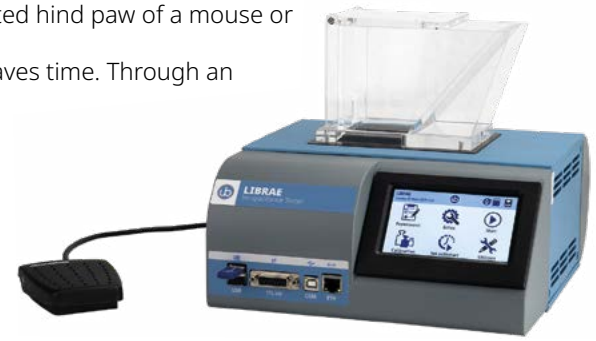
Librae - Incapacitance Tester (Weight Bearing)

"Unique auto-start feature!"

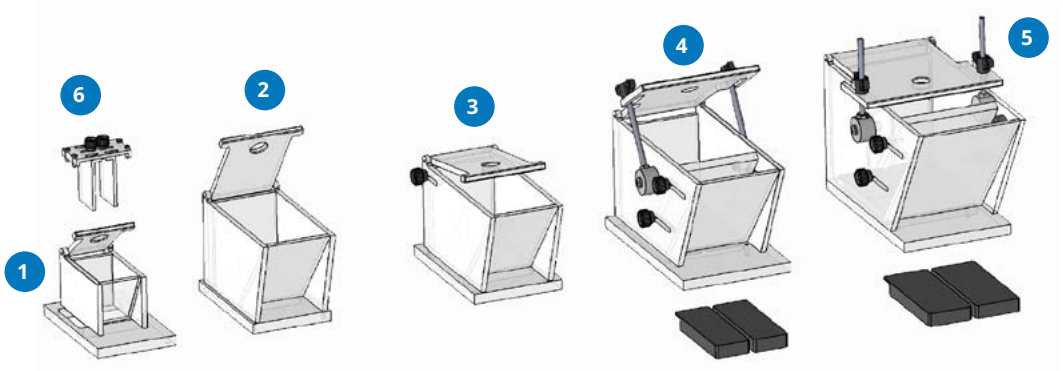
The system is unique as it starts automatically once weight is stable.
Measures the weight distribution difference between injured and unaffected hind paw of a mouse or rat.
Automatic operation reduces operator bias, optimizes repeatability and saves time. Through an intuitive tactile interface the operator can reach all the functionalities.
The included USB key is used to collect all data for optimal portability (average paw weight, Standard Deviation, Left/Right ratio, etc.). The Left/Right weight histograms and line charts display the experiment output real time for an immediate visual control, graphically effective and easy to follow during the test. Reliable and easy to collect results. Highly accurate force gauges with 0.1g resolution.
Fast and easy cleaning procedures thanks to magnetic foot pads.

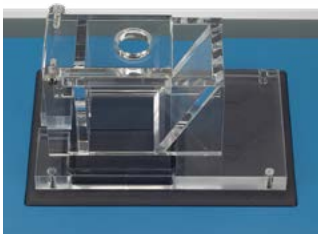


ORDERING INFORMATION

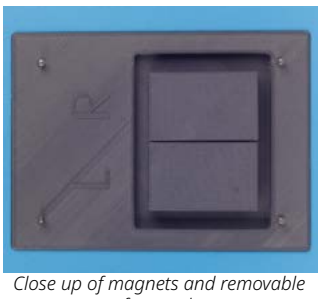
SKU	Description
47882	Librae for Rats
47883	Librae for Mice
47885	Librae for Rats and Mice
47880-002 (2)	Librae Incapacitance tester restrainer for rat up to 200 gr
47880-003 (1)	Librae Incapacitance tester restrainer for mice
47880-004 (3)	Librae Incapacitance tester adjustable restrainer for rats up to 200 gr
47880-007 (4)	Librae Incapacitance tester adjustable restrainer for rats up to 350 gr
47880-008 (5)	Librae Incapacitance tester adjustable restrainer for rats up to 500 gr
47880-323 (6)	Reducer for small animal to be used only with Librae Incapacitance tester restrainer 47880-003

Specification	
Animal weight (per paw)	From 20g to 2200g
Precision	From 0.05% to 0.1%
Measurement time	From 1s to 360s
Measurement starting mode	Manual and Automatic
Calibration	Automatic
Start	Start button, Pedal Switch, or Autostart
Stop	Stop button, Pedal Switch, or Elapsed Timeout)
Data Export	.csv format, from USB key (provided)
TTL I/O	Start, Stop, Mode





Restrainer for mice (SKU 47880-003)



Close up of magnets and removable foot pad.

Physical Specification Reastrainers					
SKU	Length Internal Base	Length Top/Roof	Height	Width	Animal Range
47880-003 (1)	34 mm	64 mm	55 mm	40 mm	mouse
47880-002 (2)	53 mm	124 mm	89 mm	64 mm	rat up to 200 gr
47880-004 (3)	54-78 mm	123-147 mm	89 mm	64 mm	rat up to 250 gr
47880-007 (4)	107 mm	189 mm	103 mm	80 mm	rat up to 350 gr
47880-008 (5)	117 mm	217 mm	123 mm	100 mm	rat up to 500 gr

Application

Weight distribution is especially important in conditions where musculoskeletal and neurological systems are affected. The most typical is Osteoarthritis, a degenerative joint disease where joint cartilage breaks down. It is broadly used also in rheumatoid arthritis, where the autoimmune mechanism ends up with joint inflammation and relative pain.
Also, stroke can lead to altered weight distribution as a result of the associated motor impairments and adaptations to their motor deficits, resulting in abnormal weight distribution. Recovery of weight distribution is tracked during injury rehabilitation studies.

Features and Benefits	
Autostart is a unique feature	Automate the measurements by identifying immobility windows
Magnetic Pads	Easy to be cleaned
Touch screen and USB data storage	Through a few, intuitive buttons, one can reach all the functionalities. The included USB key stores all data for optimal portability
High precision force sensors	0.1g precision

References

Bongjun et al., 2023, *"Phytoceramide Alleviates the Carrageenan/Kaoln-Induced Arthritic Symptoms by Modulation of Inflammation"*, Biomolecules & Therapeutics
Batchelor et al., 2022, *"Refining methods to measure spontaneous pain behaviour in surgically induced murine osteoarthritis"*, Osteoarthritis and Cartilage
Hyuk-Kwon et al., *"A cell-penetrating peptide blocks Toll-like receptor-mediated downstream signaling and ameliorates autoimmune and inflammatory diseases in mice"*, Experimental & Molecular medicine

Tail Flick - Thermal stimulation

Highly reproducible thermal stimulation test

The Tail Flick Unit consists of an IR source, whose radiant energy of adjustable intensity is focused by an embodied parabolic mirror on the animal tail. Adjustable I.R. intensity, bright touch-screen display with intuitive controls. Comfortable surface for the animal. Latency and thermal intensity data are automatically saved.
The animal is held by the operator on the instrument unobstructed upper panel in such a way that its tail, placed over a flush mounted window, receives the IR energy. The operator starts the stimulus and the related reaction-time counter by the pedal switch or by the touch- screen start button. When the animal feels pain and flicks its tail, a sensor detects it, stops the reaction time counter and switches off the bulb. The reaction time of the animal is thus automatically determined to the nearest 0.1 second.
Mice holders available.

ORDERING INFORMATION

SKU	Description
37560	Tail Flick Unit
37360-325	Adjustable Mouse Holder 25mm (I.D.)
37360-330	Adjustable Mouse Holder 30mm (I.D.)
37300	Heat-Flux IR Radiometer

Specifications	
IR Intensity	Adjustable
Latency	Displayed in 0.1s steps
Cut-off	Adjustable from 5 to 30 seconds
Calibration	Via IR Heat-Flux Radiometer (Optional)

Application

Accurately measures the nociceptive threshold to infrared heat stimulus on the rat or mouse tail. Used for rapid screening of analgesic drugs by measuring tail reaction time to heat, even in anesthetized animals. Especially useful for repeated tests, thanks to the reflexive nature of the tail flick response and lack of learning effects, such as SIA (Sterss-Induces Analgesia.

References

Maria Dumitrascuta et. al., 2020, "*N-Phenethyl Substitution in 14-Methoxy-N-methylmorphinan-6-ones Turns Selective μ Opioid Receptor Ligands into Dual μ/δ Opioid Receptor Agonists*", Scientific reports
Heba M. Galal et. al. 2024, "*Impact of L-Arginine on diabetes-induced neuropathy and myopathy: Roles of PAI-1, Irisin, oxidative stress, NF-κβ, autophagy and microRNA-29a*", Tissue and Cell

Analgesy-Meter

Randall-Selitto paw pressure method

The Ugo Basile Analgesy-Meter has been designed to perform rapid and precise screening of analgesic drugs on the normal and treated rat/mouse paw. The instrument is basically a device which exerts an increasing force at a constant rate. This force is continuously monitored by a pointer moving along a linear scale or recorded on the digital interface. The force is applied to the animal's paw, which is placed on a small plinth under a cone-shaped pusher with a rounded tip.
The plinth is made of Teflon, which is biologically inert and has a very low friction coefficient. Thus, if the animal suddenly withdraws its paw, it slips out easily without being injured.
The operator depresses a pedal-switch to start the mechanism. When the animal reacts, it is free to move the paw without any researcher action. Digital model with force sensors and electronic unit is also available.

ORDERING INFORMATION

SKU	Description
37215	Analgesy-Meter for Rats
37216	Analgesy-Meter for Mice
37215-BUNDLE	Analgesy-Meter and Upgrade Kit for rat
37216-BUNDLE	Analgesy-Meter and Upgrade Kit for mouse
37215-100	Analgesy-Meter DAQ Upgrade Kit (Digital)

Application

Measures the force on a rat or mouse paw according to the Randall-Selitto paw-pressure test. It enables rapid and precise screening of analgesic and anti-inflammatory drugs for nociception and phenotype screening. It is used inin reflexive pain settings, being a low learning test where repeated tests are possible.

Features and Benefits	
No calibration needed	Simple and reliable
One instrument, three different force ranges	0g to 250g, 500g, 750g for Rats and 0g to 125g, 250g, 375g for Mice

References

Oluwakemi O. Ariyo, et al., 2022, "*Morus mesozygia leaf extract ameliorates behavioral deficits, oxidative stress and inflammation in Complete Freund's adjuvant-induced arthritis in rats*", Journal of Ethnopharmacology
Atousa Janzadeh al., 2020, "*The effect of chondroitinase ABC and photobiomodulation therapy on neuropathic pain after spinal cord injury in adult male rats*", Physiology & Behavior

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Von Frey Filaments (Randall-Selitto)

Manual touch sensitivity kit (20 filaments)

This set of 20 monofilaments with bending forces ranging from 0.008 to 300gr. The principle of operation is based on the fact that when the tip of a fiber of given length and diameter is pressed against the skin at right angle, the force of application increases, until the fiber bends. After the fiber bends, continued advance creates more bend, but not more force of application.

ORDERING INFORMATION

SKU	Description
37450-275	Set of 20 monofilaments based on the Semmes Weinstein monofilament set, with carrying case
OPTIONAL	
37450-278	Base assembly for plantar stimulation, including support with columns, perforated metal sheet and multiple-configuration animal-enclosure, from 3 to 12 spaces
37000-007	Modular Animal Enclosure, from 3 to 12 spaces
37450-045	Large Perforated Metal Sheet, with 4 legs, 40cm height (animal enclosure 37000-007 is not included and should be ordered separately)
37450-085	Large Perforated Metal Sheet, with 4 legs, 80cm height (animal enclosure 37000-007 is not included and should be ordered separately)

Application

Especially suggested for sub-gram forces (i.e., severe allodynia) although time consuming and operator dependent. Whenever possible, the use of the Electronic Von Frey or the Dynamic Plantar Aesthesiometer is suggested for higher throughput and better accuracy.

Features and Benefits	
Starts from very low forceas (0.800 gr)	Detects even the most severe allodynia
Retractable filament	Easy to carry and protected from damage
Effective use in clinical setting	Used to diagnose pathologies of hyper- or hypo-aesthesia
Optional perforated platform available	For convenient stimulation of up to six rats and twelve mice

e-VF Electronic Von Frey

Hand-held device for the stimulation of any body part

Measures mechanical sensitivity thresholds. For the assessment of hypersensitivity and allodynia for analgesic, nociceptive, neuropathic and postsurgical studies. Original design with clear prism for fast localization of stimulation site and reduced animal stress. Digital data display and software for force control. Battery powered.

ORDERING INFORMATION

SKU	Description
38450	e-VF Electronic Von Frey (including softwrae and 2 tips)
OPTIONAL	
37450-278	Base assembly for plantar stimulation, with perforated metal sheet and animal-enclosure for up to 6 rats or 12 mice, 20.5 cm height
37450-045	Large perforated Metal Sheet, with 4 legs, 40 cm height
37450-085	Large perforated Metal Sheet, with 4 legs, 80 cm height

Application

Compared to the classic Von Frey hairs, the electronic Von Frey device (e-VF) has the advantage of ensuring a continuous force application along the whole force range of the sensor (i.e. 1-1000 gf), by using a rigid metal or soft plastic tip and the capability to record automatically the force when the paw withdraws thanks to a peak force algorithm. An included software aids to keep stability in force rate application.

Features and Benefits	
Resolution: 0.1g	High Accuracy
Max Applicable Force: 1000g	Wide range of animals

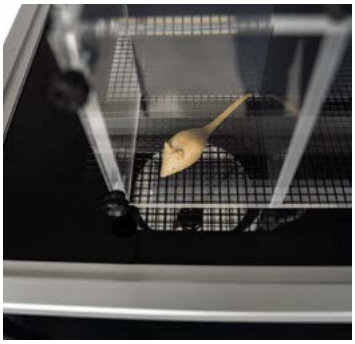
Eppendorf tip *Nitinol tip*

References

Yocasta Alvarez-Bagnarol, et al., 2023, "*Inhibition of dorsal raphe GABAergic neurons blocks hyperalgesia during heroin withdrawal*", Neuropsychopharmacology
Chengyong Guet al., 2023, "*MAGL regulates synovial macrophage polarization vis inhibition of mitophagy in osteoarthritic pain*", Molecular Medicine Reports
Nathan. M. Sharfman et al., 2022, "*Melanocortin-4 receptor signaling in the central amygdala mediates chronic inflammatory pain effects on nociception*", Neuropharmacology

Dynamic Plantar Aesthesiometer

"Automated device for the detection of mechanical stimulation"



The Dynamic Plantar Aesthesiometer is a unique system, which fully automates the amount of force applied by an electromagnetic, silent motor, exerting from 0 to 100 grams at a rate adjustable from 0 to 50 seconds.
When the animal responds, by withdrawing its paw, the device automatically scores the time and the force at which the response occurred and the data can be stored or exported in CSV format.
The main advantages of the Dynamic Plantar Aesthesiometer are:

- Addition of the time component, being the force rate adjustable
- Easy to use at low forces (not possible with hand-held devices)
- Consistency in the vector of the force application (perpendicular)
- Removal of experimenter bias in paw withdrawal scoring

Altogether this brings about a high reproducibility, sensitivity and accuracy which no other mechanical stimulator can provide, as the force application does not rely on hand movement.

ORDERING INFORMATION

SKU	Description
37550	Dynamic Plantar Aesthesiometer
37450-278	Additional Stimulation Base, complete with perforated metal sheet and animal enclosure, 20.5 cm height
37550-330	Optional Dynamic Plantar filament assembly diameter 0,3 mm
37550-340	Optional Dynamic Plantar filament assembly diameter 0,4 mm
37100	Optional Set of 2 Durham Holders for Orofacial Stimulation

Specification	
Force range	0.1 to 100 grams, in 0.1g steps
Force Increasing Rate (ramp)	Adjustable in the interval 0 to 50 seconds, in 1 s steps
Latency Time	Display in 0.1s steps

Application

Impaired cutaneous sensation is usually first manifested in a loss of light touch detection.
So, "mechanical" stimulation has a long history of effective clinical use to diagnose pathologies of hyper- or hypo-aesthesia, brought by drugs, neural pathology, experimental lesions, etc.
The Dynamic Plantar Aesthesiometer was developed to apply a reproducible light touch to the rodent plantar surface and quantify the force which causes the animal to react by withdrawing the paw. Both the scoring, the application of the force and its rate are fully automated.
The Dynamic Plantar Aesthesiometer has been used in a variety of applications in nerve injury, from partial sciatic nerve ligation (PNL), to chronic constrinction injury (CCI) and spinal nerve ligation (SNL), to screen phenotypes and drugs to treat allodynia and hyperalgesia.

Features and Benefits	
The force is automatically applied	Consistency in force application, rate and direction
Force automated or manual	The force threshold can be scored manually or automatically
Touch-screen Control	Intuitive user interface, very fast to set and use
Maximum force is 100g	Works on a broader range of animal models

References

Claudia Cristiano et al., 2022, "*The Beneficial Effects of Ultramicronized Palmitoylethanolamide in the Management of Neuropathic Pain and Associated Mood Disorders Induced by Paclitaxel in Mice*", Biomolecules
Hisakatsu Itoet al. 2022, "*Suvorexant and mirtazapine improve chronic pain-related changes in parameters of sleep and voluntary physical performance in mice with sciatic nerve ligation*", Plos One
Khatrine. S. Adcock, 2022, "*Vagus nerve stimulation does not improve recovery of forelimb motor or somatosensory function in a model of neuropathic pain*", Nature

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Plantar Test - Hargreaves Apparatus

"Automatic detection of paw withdrawal, for hyperalgesia screening"

In the late '80s Dr. Hargreaves invented a method to assess thermal pain sensation in unrestrained rodents by stimulating the single hind paw and thus allowing for unilateral/contralateral experiments. Ugo Basile made a science-grade instrument to perform this stimulation and automatically measure responses. it became a gold-standard with more than 2,000 publications.
Plantar test measures paw withdrawal latency in freely moving mice or rats in response to an infrared heat stimulus, for studying hyperalgesia and thermal pain response to drugs or genetic manipulations.
The Ugo Basile Plantar Test is the only available system which detects paw withdrawal latency automatically), thanks to a light detector embedded in the control unit. Manual scoring is also possible.

ORDERING INFORMATION

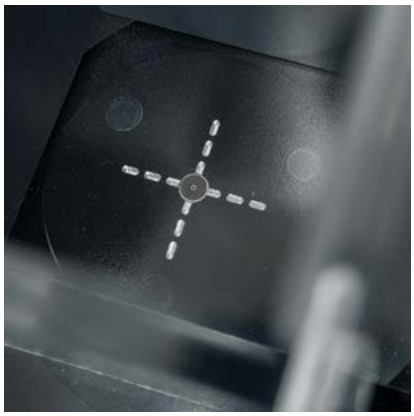
SKU	Description
37570	Plantar Test
37300	Heat-Flux I.R. Radiometer
37100	Set of 2 Durham Holders
37370-278	Additional Stimulation Base, complete with glass pane and animal enclosure

Emitter/Detector unit

Specifications	
IR Intensity	Adjustable in the interval 01-99 (in one digit steps)
Latency	Displayed in 0.1s steps
Cut-off	Adjustable from 5 to 30 seconds
Measurement mode	Manual or Automatic
Data export	.csv format, from USB key
Calibration	Via IR Heat-Flux Radiometer (Optional)

Application

Determination of acute nociceptive thermal threshold in laboratory animals, has primarily relied upon the tail flick and hot plate methods. Although both methods are used frequently in pharmacological studies, they are not without limitation.
The Plantar Test represents a remarkable advance in methodology, as it combines the best feature of all other methods of measuring thermal pain sensitivity.
Unique to the Plantar Test, the animal is unrestrained and unhandled during experiments.
In addition, unilateral/contralateral experimental designs are possible by the single stimulation of individual paw (injured or not). Thermal hyperalgesia is the typical application.



Cross line engraved on the top of the emitter to ease the paw targeting

Features and Benefits	
Modular Animal Enclosure	From 3 up to 12 spaces, it can to restrain up to 12 mice or 6 rats
Adjustable Energy Intensity	1-99 Scale, for ensuring a broad range from light to intense stimulation
0.1s Sensitivity for paw withdrawal latency	Avoid operator variability and bias through a fully automated system
Calibration	Via I.R. Heat-Flux Radiometer (Optional)

References

Shiwu Guo, et. al., 2022, "*Akt/Aquaporin-4 Signaling Aggravates Neuropathic Pain by Activating Astrocytes after Spinal Nerve Ligation in Rats*", Neuroscience
Tomaya Tanaka, et. al., 2020, "*Teriparatide relieves ovariectomy-induced hyperalgesia in rats, suggesting the involvement of functional regulation in primary sensory neurons by PTH-mediated signaling*", Scientific Reports
Hideaki Nakajima,et. al. 2020, "*Distribution and polarization of microglia and macrophages at injured sites and the lumbar enlargement after spinal cord injury*", Neuroscience Letter

I.R. Heat-Flux Radiometer

Calibration tool for Plantar Test and Tail Flick

Knowing the I.R. energy (1mW for the duration of 1s corresponds to 1mJ) in absolute terms, is a useful infprmation to compare with any equal or different method/instrument described in the literature. The Radiometer enables the experimenter to check and adjust, if necessary, the I.R. emission. Ensures delivery of the same power flux (expressed in mW per square cm) and therefore a nociceptive stimulus of the same intensity.

ORDERING INFORMATION

SKU	Description
37300	I.R. Heat-Flux Radiometer, standard package

Features and Benefits	
Calibrate IR emission of Tail Flick and Plantar Test	Ensures that IR emission of different instruments are equal
Provides a measure of stimulus intensity in mW/cm2	Transforms the arbitrary IR intensity in absolute energy values

References

Katsuro Ura et. al., 2021, "*Ultra-purified alginate gel implantation decreases inflammatory cytokine levels, prevents intervertebral disc degeneration, and reduces acute pain after discectomy*", Scientific Reports
Hisataka Suzuki et. al. 2023, "*Injection of Ultra-Purified Stem Cells with Sodium Alginate Reduces Discogenic Pain in a Rat Model* ",Cells
Yu Ji Kim et. al., 2022, "*Influence of Glucose Fluctuation on Peripheral Nerve Damage in Streptozotocin-Induced Diabetic Rats",* Diabetes & Metabolism Journal
Yidan Zhang et. al., 2022, "*Role of spinal RIP3 in inflammatory pain and electroacupuncture-mediated analgesic effect in mice",* Diabetes & Metabolism Journal

Durham Holders

In red colour to be non transparent to rodents

The Durham Holders are rat holders that transform the plantar test in a tool for trigeminal stimulation and studies, It can also be used for touch stimulation and it's hence a valuable accessory for use with both the Plantar Test and the Dynamic Plantar Aesthesiometer.

ORDERING INFORMATION

SKU	Description
37100	Set of Rat Holders (Medium and Large Size)

Application

The Durham Holders have distinct advantages which make them ideal as accessories to the classical Hargreaves and Dynamic Plantar test, by allowing the heat stimulation of the orofacial area and its withdrawal. Quantification of localized hypersensitivity in the trigeminal area is common in the clinic, but not in animal experiments and the Durham holders represent a step forward to these type of measurements.

Features and Benefits	
Correlation threshold in submandibular (trigeminal) region and hind paw plantar surface	A step forward toward multifactorial measurement of pain related sensitivity in animal research
Test orofacial nociception using a standard Plantar thermal or mechanical stimulator	The new holders complete the scope of the thermal or mechanical stimulators used for assessing trigeminal stimuli reaction

References

Sara E. Woodman et al., 2022, "*Inhibition of Nociception in a Preclinical Episodic Migraine Model by Dietary Supplementation of Grape Seed Extract Involves Activation of Endocannabinoid Receptors*", Sec. Pharmacological Treatment of Pain

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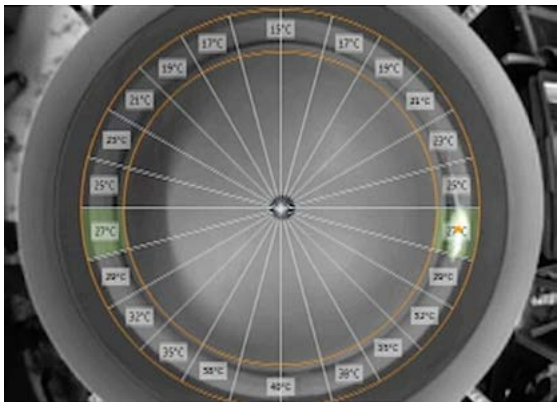
Thermal Conditioned Cabinet for Thermal Gradient Ring

Thermal Gradient Ring (TGR)

"An innovative device for Thermal Preference & Nociception in Mice"

The TGR records and analyses thermal preference and avoidance in mice. For neuropathic pain studies, temperature sensitivity and insensitivity assessments, always with the animal freely moving and with no user's intervention.
Novel circular design avoids biases due to corners' presence, addressing the limitations associated with classic rectangular devices. Cost effective, reproducible data and high throughput.

- Circular design for bias-free, reproducible data. The mouse is free to move around the track. Overcomes classic challenges of border effects and spatial cues.
- Circular thermal gradient track provides a more complex, more informative physiological environment
- Multi thermal gradient between the two extremes of a cold and a hot zone from 5 to 65°. The insulated aluminium runway has an ID of 45 cm. The corridor walls are 15 cm high.
- Each half of the ring is divided into 12 zones, in which the temperature is proportionally divided and presented in duplicates for additional accuracy (see picture on the right).
- Embedded temperature sensors measure and control the exact temperature gradient in real time.
- Data output includes (automatically calculated):
  - Preferred temperature zone
  - First zone entered
  - Time spent in each zone
  - Many more measures provided by the automatic analysis of the video tracking data
- Visual thermal preference behavior is recorded by video-tracking software using the USB camera and 4 dual lights (visible and I.R.) supplied with the system.
- System is ready to use out-of-the-box.
- Thermal conditioned cabinet is available to ensure perfect enviroment temperature which is essential for correct thermal balance. Cabinet can hold up to two TGR devices.



ORDERING INFORMATION

SKU	Description
35530	TGR - Thermal Gradient Ring
35580-US	Thermal conditioned cabinet ready to hold 2 TGR devices (for USA 220/240 Volt US plug)
35580-EU	Thermal conditioned cabinet ready to hold 2 TGR devices (for Europe 220/240 Volt EU plug)
60000-TG	ANY-maze software TGR specific version, limited TGR Test only

Specifications	
Heating Unit Temperature Range	20°C to 65°C
Heating/Cooling Unit Temperature Range	4°C to 65°C
Precision	±0.5°C
Internal Diameter	45 cm
Outer Diameter	57,5 cm
Corridor Width	6 cm
Corridor Wall Height Standard	15 cm
Corridor Wall Height Optional	25 cm

References

Tomoyo Ujisawa et al., 2024, "*Thermal gradient ring for analysis of temperature-dependent behaviors involving TRP channels in mice*", The Journal of Physiological Sciences
Jing Lei et al., 2023, "*Involvement of skin TRPV3 in temperature detection regulated by TMEM79 in mice*", Nature Communications
Sachiko Sasajima, 2022, "*Thermal gradient ring reveals thermosensory changes in diabetic peripheral neuropathy in mice*", Scientific reports
Lucie Valek et al., 2022 "*Cold avoidance and heat pain hypersensitivity in neuronal nucleoredoxin knockout mice*", Free Radical Biology and Medicine
Yaping Xue et al., 2022, "*The Human SCN9A^{R185H} Point Mutation Induces Pain Hypersensitivity and Spontaneous Pain in Mice*", Frontiers in Molecular Neuroscience
Zoltan Winteret al., 2017, "*Cold Temperature Encoding by Cutaneous TRPA1 and TRPM8-Carrying Fibers in the Mouse*", Frontiers in Molecular Neuroscience
Filip Touska et al., 2016, "*Comprehensive thermal preference phenotyping in mice using a novel automated circular gradient assay*" Journal Temperature

Hot/Cold Plate

"Measures hot and cold hyperalgesia and allodynia"

The classic tool for thermal sensitivity, hyperalgesia and cold allodynia in drug screening or phenotyping experiments.
Multiple peltier elements allow reaching -5°C/+65°C in an unbeatable short time and the included keypad allows for scoring stereotyped behaviors to be used as preferred endpoints.

Animal behavior scoring keypad

The Ugo Basile Hot/Cold Plate system comes complete with:

- A NEW keypad to score endpoints or any other stereotyped behavior (bluetooth optional)
- An electronic unit with touch screen to set all parameters and save data
- Perspex animal restrainer
- USB port to save data and export them in CSV files
- Temperature ranges from -5° to 65°C
- Room ambient temperature sensor
- Very silent operation, even when the Peltier elements work at full speed to cool down the device quickly
- New software on the touch screen with several new features, e.g. temperature in °C and °F, an online integrated help section, a stop or go option for the end of the ramp mode, a graph showing the plate temperature in real time and a new result screen which is clearer and more comprehensive
- The new software includes all the animal behaviors that can be scored with the 10 keys available
- A PC software to build custom temperature ramps and populate your animal vivarium

ORDERING INFORMATION

SKU	Description
35300	Hot/Cold Plate
35150-002	Optional Additional Hot Plate

Specifications	
Temperature Range	From -5°C to +65°C
Temperature Precision	+/- 0.1°C
Temperature Modes	Constant, Standard ramp, Fast ramp, Custom ramp

Screenshot of Keypad events settings

Application

The hot and cold plate test the pain response in animals, used in basic pain research and in testing the effectiveness of analgesics by observing the reaction to pain caused by hot or cold temperatures.It is used in neuropathic pain studies, phenotyping, injuries for hyperalgesia, temperature threshold and allodynia.

Features and Benefits	
Keypad and pedal for scoring pain animal responses and stereotyped behaviors	Possibility to use the preset 10 keys or modify them (licking, scratching, jumping, grooming, vocalization, rearing, immobility, climbing, shivering, twitching) and save the results in the electronic unit
Fixed, ramping and complex ramp temperature modes	Flexibility for performing many types of pain experiments from allodynia to hyperalgesia
Broad range of temperatures (-5° to -65°)	Allows to perform any sort of thermal sensitivity experiment, including severe cold allodynia
Ambient temperature sensor is placed outside of the device	Improved system and thermal accuracy
Silent mode of operation or the air dissipation system	Less disturbance to the animal
Control unit and USB key saving	No need to connect a PC
Automatic conversion of data into CSV files for the USB stick	Possibility to open files in Excel
PC software	Possibility to populate your vivarium of animals and to build complex temperature ramps

References

Chengyong Gu et al., 2023, "*MAGL regulates synovial macrophage polarization vis inhibition of mitophagy in osteoarthritic pain*", Molecular Medicine Reports
Eva Mercado et al., "*SGK1.1 isoform is involved in nociceptive modulation, offering a protective effect against noxious cold stimulus in a sexually dimorphic manner*", Pharmacology Biochemistry and Behavior
oritz Moller et al., 2022, "*The Role of AlphaSynuclein in Mouse Models of Acute, Inflammatory and Neuropathic Pain*", Cells
Josephine N. Massingham et al., 2021, "Evaluating Baseline and Sensitised Heat Nociception in Adult Drosophila", Bio Protocol
Damien C. Boorman and Kevin A. Keay, 2021, "*Morphine-Conditioned Placebo Analgesia in Female and Male Rats with Chronic Neuropathic Pain: c-Fos Expression in the Rostral Ventromedial Medulla*", Neuroscience

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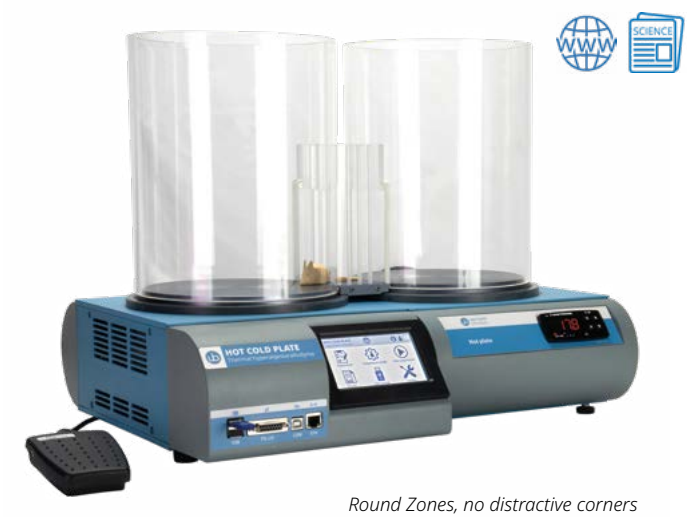
Thermal Place Preference (TPP)

The classic two-temperature choice test

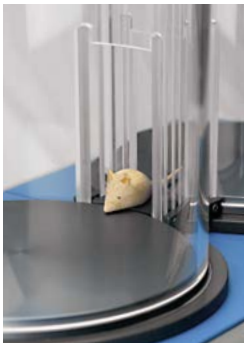
The Thermal Place Preference Test delivers unambiguous information on temperature preference and pain thresholds in mice and rats allowing for automatization of behavior and unambiguous scoring (optimized for optional animal video-tracking).
Compared to the classic Hot/Cold Plate, the scoring is 100% objective and can be automated via video. The animal location time correlates to its temperature preference, in pain or thermosensation related studies. Software included.



Round Zones, no distractive corners

ORDERING INFORMATION

SKU	Description
35360	Thermal Place Preference for Rats
35350	Thermal Place Preference for Mice



Application

Both heat and cold evoke thermosensation, which may elicit feelings of pain. The TPP is a thermal sensitivity assessment tool designed to emphasize integrated learned responses to thermal painful and non-painful stimuli that are applied to the animal paws while freely moving. Escape and thermal preference behaviors in awake, unrestrained animals allow studying innocuous and noxious heating/cooling of the plate floor where the animal is located. Animals learn to minimize pain by escaping to the opposite less-heated (or less cooled) side. Escape latency, time spent on both sides and exploration episodes on both sides can be recorded automatically through video-tracking software.

Features and Benefits	
Two temperature test	Easily monitor thermal place preference and pain threshold
Unrestrained animal	Integrated learned responses to thermal painful and non stimuli

References

Sydney E Lee et. al., 2022, *"Anxiety-like behaviors in mice unmasked: Revealing sex differences in anxiety using a novel light-heat conflict test"*, Research Gate
Liam J. Peck et. al., 2021, *"Studying Independent Kcna6 Knock-out Mice Reveals Toxicity of Exogenous LacZ to Central Nociceptor Terminals and Differential Effects of Kv1.6 on Acute and Neuropathic Pain Sensation"*, J. Neurosci.

Orofacial - Trigeminal Pain

Operating up to 16 cages simultaneously

In this test, mice and rats are exposed to the conflict between a liquid reward and the mechanical or thermal discomfort to access the reward itself.
The number of reward accesses (drink events) and their durations are measured while the animal senses the thermal (hot/cold) or mechanical stimulation on its orofacial are, which is innervated by the trigeminal nerve. Its related pain conditions can be investigated in up to 16 rodents/ cages at the same time.

ORDERING INFORMATION

SKU	Description
31300	Orofacial Stimulation Test
31300-S	Orofacial Stimulation Test , without heating/circulating bath
31320	Orofacial Stimulation Test. Complete system for two animals
31320-S	Orofacial Stimulation Test. Complete system for two animals, without heating/circulating bath
31340	Orofacial Stimulation Test. Complete system for four animals
31340-S	Orofacial Stimulation Test. Complete system for four animals, without heating/circulating bath

Application

Orofacial pain problems are common and involve structures and mechanisms unique to the trigeminal nerve.
Few methods are currently available for orofacial preclinical research and none incorporates parallel measurement of mechanical or thermal stimulation within the same experiment.
Moreover, while most of the current assays measure unlearned behaviors, such as flinching or withdrawal reflexes, the Orofacial Stimulation Test, developed by Dr. Fehrenbacher, Henry and Hargreaves, integrates higher order brain functions into measurements of orofacial nociception.

Specifications	
Water Temperature	Can be adjusted from cold up to 70°C (depends on the H_2O circulator)
Mechanical Stimulation	3 mechanical stimulators with different wire number, 1 blank for habituation, 1 adjustable wire distance module to fit different mouse muzzle morphologies
Oro Software	Collects and records beam-break number and duration from up to 16 cages simultaneously

References

Nicola Benedicter et al. 2023, "*Semi-Automated Recording of Facial Sensitivity in Rat Demonstrates Antinociceptive Effects of the Anti-CGRP Antibody Fremanezumab*", Neurology International

Pressure Application Measurement (PAM)

For joint and paw pain in mice and rats. (and bigger animals)

- The PAM applies a quantifiable force for direct stimulation of the joint and for automatic readout of the response.
- The operator simply wears a special force sensor on his or her thumb and the peak amplifier measures the force which elicits the animal response (normally, limb withdrawal). Each PAM device comes standard with two force sensors, which have been specially designed to apply force to rat and mouse joints.
- The device includes as standard both a control unit with internal memory and the NEW DCA software for signal monitoring force rate control and data transfer. Once saved, data can be browsed on the control unit and/or transferred to a PC in proprietary, Excel or text format.

ORDERING INFORMATION

SKU	Description
38500	PAM - Pressure Application Measurement
38500-006	PAM - Paw Pressure Applicator
38550	PAM - Pressure Applicator Measurement for large animals

Pressure Applicator (Pincher) option for the PAM

Application

The P.A.M. (Pressure Application Measurement) device is the original tool designed for measuring mechanical pain threshold on joints. It was specifically designed and validated for Arthritis research and is therefore especially suited to assess joint hypersensitivity in rodent knees or ankles.

Specifications	
Force Ranges	1-1500 gf
Force Response	Measured in 0.1gf steps
Latency Time	Measured in 0.1s steps

References

Hidenobu Tamai et al., 2023, "Transient receptor potential ankyrin 1 in the knee is involved in osteoarthritis p*ain*", Biochemistry and Biophysics Reports
Lovedeep Singhet al. 2020, "*Protective Effect of Esculetin, Natural Coumarin in Mice Model of Fibromyalgia: Targeting Pro-Inflammatory Cytokines and MAO-A*", Neurochemical Research

Plethysmometer

"Paw swelling in rodent inflamed paws"

Measures small changes in volume & oedema (fluid retention) to gauge the inflammatory response such as in anti-inflammatory screening tests and inflammation studies in general. Hands-free operation and autostart feature. Precision measurements and high sensitivity. Detects and displays 0.01 ml changes in rodent paw volume. Easy data transfer and software included.

ORDERING INFORMATION

SKU	Description
37240	Plethysmometer, complete with Rat cell diam. 1.8cm, Mouse-paw tube diam. 1.3cm, stand, clamp & standard accessories. Electronic unit with touch screen, included USB Key for data export
37240-25	Plethysmometer, complete with Rat cell diam. 2.5cm, stand, clamp & standard accessories. Electronic unit with touch screen, included USB Key for data export
37240-35	Plethysmometer, complete with Rat cell diam. 3.5cm, stand, clamp & standard accessories. Electronic unit with touch screen, included USB Key for data export

Features and Benefits	
In-house sensor manufacturing	Extremely high precision
Foot-Pedal to freeze the reading	Totally hand-free operation by the researcher
More than 3.000 citations since 1960s	Most applications can be found in bibliography for reference
Interchangeable water cells	Use the same instrument for both mice and rats

Application

Thousands of scientists have relied on the Ugo Basile Plethysmometer to conduct their research on inflammation. The instrument is typically used to precisely measure the experimentally induced inflammation of the paw in rodents and its changes due to administration of pharmacological substances potentially active on inflammation.

References

Abayomi M. Ajayi et al., 2023, "*Chemical characterization, anti-nociceptive and anti-inflammatory activities of Plukenetia conophora seed oil in experimental rodent models*", Journal of Ethnopharmacology
Daniela Impellizzeri et al., 2023, "*Blocking prokineticin receptors attenuates synovitis and joint destruction in collagen-induced arthritis*", Journal of Molecular Medicine
Oluwakemi O. Ariyo at al., 2022, *"Morus mesozygia leaf extract ameliorates behavioral deficits, oxidative stress and inflammation in Complete Freund's adjuvant-induced arthritis in rats"*, Journal of Ethnopharmacolog

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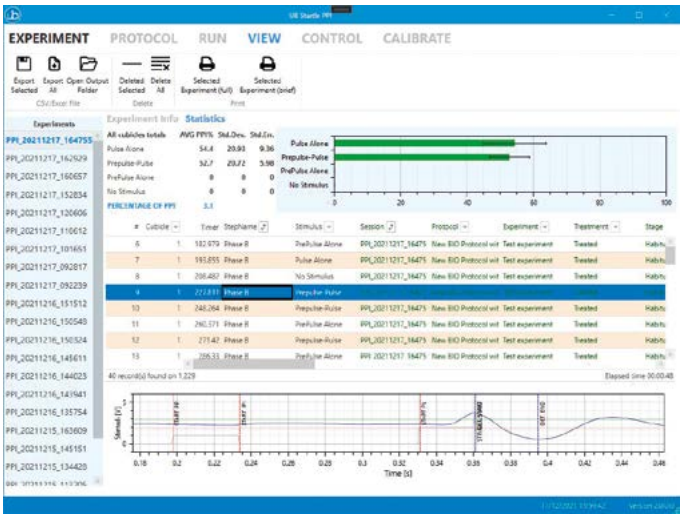


Startle/PPI System

"Fully automated experiment, data acquisition and reporting"

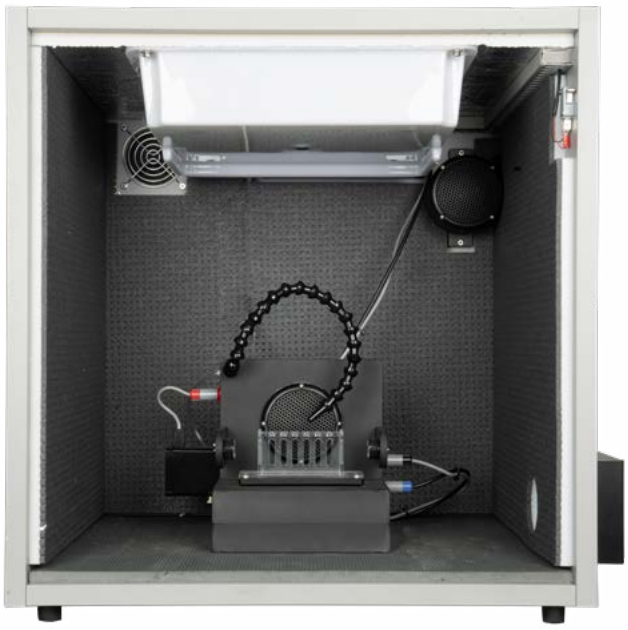
Application

Deficits of prepulse inhibition of the startle reflex, manifest the inability to filter out from brain integration unnecessary information. This has been linked to abnormalities in sensorimotor gating, noted in psychoses, above all Schizophrenia, Alzheimer's disease, drug use, mutations and others.

Why should I use the Ugo Basile Startle/PPI System?

- High throughput and full automation
- Exceptional flexibility and intuitiveness in the software protocol building
- No environmental interference, thanks to the included highest quality sound and sound isolation cubicles
- High impedance loudspeaker and high sensitivity movement sensors to work with different animal weights

Prepulse Inhibition (PPI) is a neurological phenomenon in which a weaker prestimulus (prepulse) inhibits the reaction of an organism to a subsequent strong stimulus (pulse). The stimuli are usually acoustic, but tactile stimuli and light stimuli are also used. The reduction of the amplitude of startle reflects the ability of the nervous system to temporarily adapt to a strong sensory stimulus when a preceding weaker signal is given to warn the organism.
Can be easily upgraded to Fear Conditioning.



ORDERING INFORMATION

SKU	Description
48162	Startle/PPI System for rats, Single Cage System for mouse
48262	Startle/PPI System for rats, 2 Cages System
48462	Startle/PPI System for rats, 4 Cages System
48163	Startle/PPI System for mice, Single Cage System for mouse
48263	Startle/PPI System for mice, 2 Cages System
48463	Startle/PPI System for mice, 4 Cages System
48003-360	Startle PPI XXL cilindrical mouse restrainer (up to 100g)
48003-370	Startle PPI Standard cilindrical rat restrainer (up to 250g)
48003-390	Startle PPI Standard cilindrical rat restrainer (up to 500g)

Specifications	
Light	Visible and IR
Sound Intensity + Whitenoise	From 65 dB to 120 dB
Modulated Sound Frequency	From 0.1 to 18KHz
Air Puff	Air Puff stimulus complete system add-on

References

Giorgia Corliet al. 2023, "*MAM-2201 acute administration impairs motor, sensorimotor, prepulse inhibition, and memory functions in mice: a comparison with its analogue AM-2201*", Psychopharmacology
Matteo Marti at al. 2021 *"New insights into methoxetamine mechanisms of action: Focus on serotonergic 5-HT2 receptors in pharmacological and behavioral effects in the rat"*, Experimental Neurology
David L. Braff, et al., 2001, "*Human studies of prepulse inhibition of startle: normal subjects, patient groups, and pharmacological studies*", Psychopharmacology

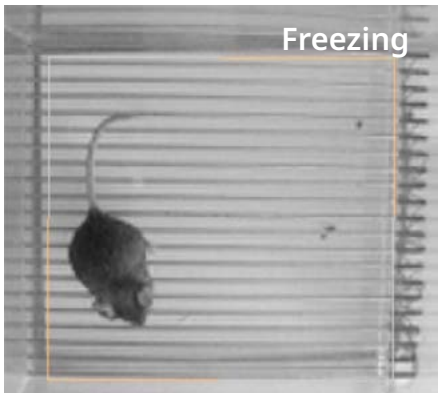
New Illuminator for better lighting and ease of use

Animal cages are available in different dimensions for rats and mice. Each cage is suitable for tethered animals and includes interchangeable contexts.

Fear Conditioning System

"The most popular Fear Conditioning test in the world, ANY-maze driven"

Complete system for Cued and Contextual fear conditioning tests on rodents. For neuro-behavioral, pharmacological and genetic studies.
Automatic detection of freezing response using ANY-maze special Fear Conditioning licence. Fast set-up and assisted design for multiple animals of experiment protocols. Software controlled light, sound and shock. Easy system expansion.
Automatically detects the freezing response, even in total darkness. Reported information include total freezing time, number and duration of freezing episodes, latency times between stimuli and freezing percentage.The new all-in-one new illuminator offers superior IR/visible lighting homogeneity and effortless cage auto-centering.
Can be easily upgraded to Startle/PPI.



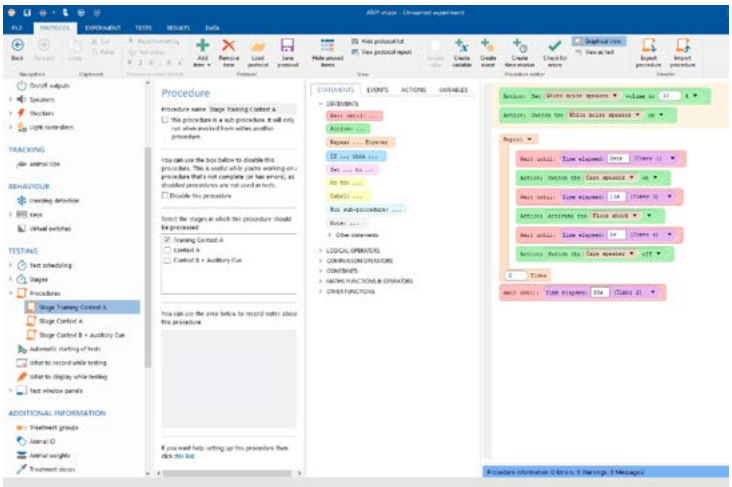
Automated freezing detection

Application

The video-tracking software controls the experimental settings, including light, sound (in the range of 100Hz to 18KHz; 55-100dB or white noise) and shock (constant current pre-settable from 0.1 to 3.0mA). To facilitate easy set up, the software will set up protocol items for you. Simply select the mode in the Protocol and answer the questions about your cage set up.

ORDERING INFORMATION

SKU	Description
46001	Fear Conditioning - 1 Animal System
46001-2	Fear Conditioning - 2 Animal System
46001-3	Fear Conditioning - 3 Animal System
46001-4	Fear Conditioning - 4 Animal System
46004-D03	Mouse Cage XL for Tethered Animals
46002-D03	Rat Cage for Tethered Animals
46003-D03	Mouse Cage for Tethered Animals
46005	Cage for observational Learning
46004-D01	Cage with frontal vertical door
6000-FC	ANY-maze software Fear Conditioning specific version, limited Fear Conditioning Test only



Easy control and fully automated control via ANY-maze

Specifications	
Shock Intensity	From 0.1 to 2.9mA, in 0.1mA steps
Shock Duration	From 0.5 to 60 seconds
Illumination	Dimmable visible and IR
Sound	100Hz-18KHz, 100dB ± 3dB
White Noise	Adjustable 77dB ± 3dB

Features and Benefits	
One USB cable connection	Seamless installation and connection to PC
High throughput	Expandable from 1 to 16 units for high throughput
Miniaturized USB-IR camera with 2 lenses)	Camera mounted on the ceiling and working in any light conditioning and with any cage dimension
IR and visible illumination	Experiments can be run in light or darkness, also as a tool to alter the context
Same software controls devices and analyses freezing	Fast learning curve in building protocols and automatic detection of freezing

References

M. Jiang, S. Vanan, H. Tu, W. Zhang, Z. Zhang, S. Chia, S. E. Jang, X. Zeng, W. Yu, J. Xu , K. Guo, L. Zeng, 2020, "*Amyloid precursor protein intracellular domain-dependent regulation of FOXO3a inhibits adult hippocampal neurogenesis*", Neurobiology of Aging
C.L., Bender, A. Otamendi, G.D. Calfa, V.A. Molina, 2018, "*Prior Stress Promotes The Generalization Of Contextual Fear Memories: Involvement Of The Gabaergic Signaling Within The Basolateral Amygdala Complex*", Progress in Neuro Psychopharmacology and Biological Psychiatry
S. R. Blume, M. Freedberg, J. E. Vantrease,R. Chan, M. Padival, M. J. Record, M. R. DeJoseph, J. H. Urban, J. A. Rosenkranz, 2017, "*Sex-And Estrus-Dependent Differences In Rat Basolateral Amygdala*", The Journal of Neuroscience

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Operant Fear Conditioning

Dual purpose systems to be used for Operant or Fear Conditioning experiments

A standard Fear Conditioning cage has been modified adding an operant wall with 1 pellet dispenser, 2 nose pokes, a house light and 2 cue lights above the nose pokes. The operant wall can be hidden by a removable plastic wall to use the cage as a standard Fear Conditioning.

ORDERING INFORMATION

SKU	Description
49603	Operant Fear Conditioning Cage
49104	Pellet Dispenser

Application

Operant experiments fully programmable with the ANY-Maze software, with protocols ranging from Fixed or Variable Ratio, Fixed or Variable Schedule, Progressive Schedule, Delay Discounting, Extinction, etc.
At the same time, the operant wall can be covered and standard Cued and Contextual Fear Conditioning experiments can be performed with high freezing detection performance, thanks to the ANY-Maze software.
The Operant Wall and the Fear Conditioning set-up can also be used in combination for Avoidance Experiments, for example by partially covering the grid floor with a small plastic platform and measuring the motivation of rodents to leave the platform and get the pellet, in spite of the shock risk (Bravo-Rivera et al., 2014, The Journal of Neuroscience).

Features and Benefits	
The same cage includes pavlovian and operant elements	Both Operant and Fear Conditioning experiments can be run in the same system
The isolation cubicle includes all electronics, shock and lights	One isolation cubicle can be used for multiple types of experiments without any additional module

References

Christian Bravo-Rivera et al. 2014, "*Neural Structures Mediating Expression and Extinction of Platform-Mediated Avoidance*", Journal of Neuroscience

Electric Shock Meter

Measures intensity of the electric shock stimulus in electrified grids

The Electric Shock Meter has been designed to measure the intensity of the electric shock stimulus generated by several Ugo Basile apparatus, to ensure researcher while using multiple devices in parallel that the electric shock intensity is delivered homogeneous on all the devices
The 46000-101 Electric Shock Meter can be used with the following Ugo Basile instruments:

- All the Fear conditioning Ugo Basile systems of any model.
- Active Avoidance set-up for Mice and Rats (Shuttle-Box)
- Passive Avoidance - Step Down for Mice (vibrating platform)
- Vogel Test
- Learned Helplessness

ORDERING INFORMATION

SKU	Description
46000-101	Electric Shock Meter

Application

The 46000-101 Electric Shock Meter is a useful measurement instrument for some of the Ugo Basile instrument having an electric shock stimulus for rodents. Due to electric nature of the electric shock emission through a grid floor, measuring it using a common volt meter is practically impossible; the use of this device will ensure researcher a correct and homogeneous electric stimuli to all the instrument used in parallel.

OPERON

"Intra/Extra-dimensional (ID/ED) attentional Set-Shifting Task for mice"

Composed of two compartments, divided by an automated sliding door (for easy continuous trial repetition), with an operant wall mounted on each side; this includes 3 automated tridimensional stimulators (visual, odor and texture), left and right, with 2 nose pokes and a pellet dispenser in the middle for the reward.
Innovative Revolving System, which provides automated change of floor tactile stimulation and an Odor Delivery System with 10 different odors in 2 independent channels. Automated reward when the correct choice is made.

Application

Our novel ID/ED OPERON instrument is an effective preclinical tool for drug testing and large genetic relevant screenings to study the executive dysfunctions and cognitive symptoms of psychiatric disorders.
Attentional set shifting is a measure of cognitive flexibility and executive functions, referring to the ability to switch between arbitrary internal rules ("cognitive-attentional sets").
The most widely used neuropsychological tasks for the evaluation of this function in humans are the Wisconsin Card Sorting Test (WCST) and the CANTAB Intra-/Extra-Dimensional set-shifting task (ID/ED).
These tasks have been used to identify specific cognitive abnormalities in a wide range of mental disorders including autism, schizophrenia, Parkinson's disease, obsessive-compulsive disorders and attention deficit/hyperactivity disorders.
The clinical relevance and solid methodological approach of the WCST and the ID/ED tests have attracted interest in preclinical research. Importantly, these tasks allow for the selective measurement of discriminative learning, reversal learning and switching of attention within the same dimension (intradimensional shift [IDS]) and between different perceptual dimensions (extradimensional shift [EDS]) within the same subject.

Pellet dispenser (for each chamber)

Operant wall and floor

Tactile texture revolver

Operant wall with house light on

ORDERING INFORMATION

SKU	Description
49503	Operon Dual Chamber Cage
49550-020	Olfactory Delivery System 10 Channels
49550-005	Air Control System (ACS) for Operon

Specifications Dual Chamber	
Texture revolver	6 different tiles (each wall)
Stimulus lights	2 x 3mm 6-color LEDs (each wall)
Nose pokes	2 x 12mm (each wall)
House Light	1 x LED lamp 220 lux (each wall)

Specifications Olfactory
10 channel odor emission (fragrances can be chosen by customer, usually are paraffin solubles)
10 LEDs indicator of status, one red coloured per each channel
10 master switch, one per each channel, allows the customer to manually shut one single channel

References

Francesca Zoratto et al. 2023, "*Automation at the service of the study of executive functions in preclinical models*", Scientific Reports
Francesca Scarsi et al., 2020, *"Automated Two-Chamber Operon ID/ED Task for Mice"*, Current Protocols
Posters
F. Zoratto, E. Pisa, M. Presta, S. Macrì, 2021, *"Validation of an automated task to evaluate cognitive flexibility in mice"*, EBBS Conference (contact us for a copy of the Poster)

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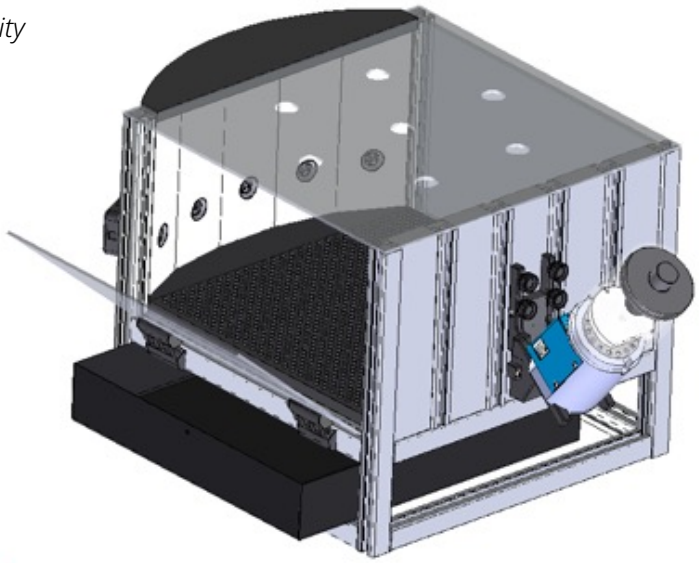
5-Choice Test

5-choice serial reaction time task for attention and impulsivity

The primary goal of the 5-CSRTT is to measure an animal's ability to sustain attention and make rapid, accurate decisions in response to visual cues. The rodent is trained to associate the appearance of a cue in a specific port with a reward, typically a food pellet or a drop of liquid. The animal's task is to quickly and accurately identify the port where the cue appeared and make a nose-poke response in that port to receive the reward. Researchers collect data on various parameters, including response accuracy, response latency, omission errors, and premature responses



ORDERING INFORMATION

SKU	Description
41203-1	1 cage system for 5-choice serial reaction time task (5CSRTT)
41203-2	2 cage system for 5-choice serial reaction time task (5CSRTT)
41203-4	4 cages system for 5-choice serial reaction time task (5CSRTT)

Application

Overall, the 5-choice serial reaction time task is a versatile and widely applied tool in behavioral neuroscience, helping researchers gaining a better understanding of the neural and behavioral mechanisms underlying a range of cognitive processes and their relevance to various health and disease conditions, mainly related to attention and impulsivity, such as ADHD, schizophrenia, addiction, etc.

Specifications	
System fully controlled by software	Both the protocol and the data output are easy to set up and analyze
Multiple cages can be connected to 1 PC	High throughput experiments

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Lickometer

Vogel test

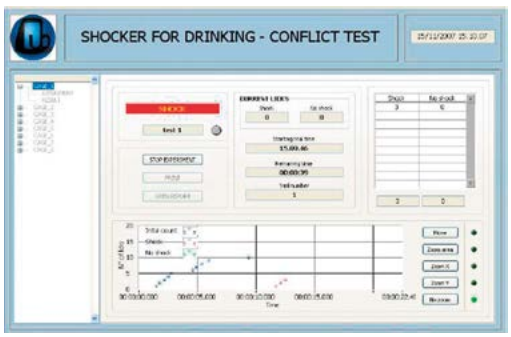
The flexible rodent Lickometer - Vogel Test can operate as both a simple software-based lickometer as well as a system for drinking-conflict experiments (coupled with electric shocks). For assessing anxiety and the anxiolytic effect of drugs.
Rat and mouse models. Easy data collection within the included software for windows. Up to 5 cages can be managed by 1 PC.

ORDERING INFORMATION

SKU	Description
45100	Lickometer, Drinking Conflict test, for Rats
45150	Lickometer, Drinking Conflict test, for Mice

Application

The Vogel Conflict Test is a conflict based experimental method primarily used in pharmacology. It is used to determine anxiolytic properties of drugs. It predicts drugs that can manage generalized anxiety disorders and acute anxiety states.
Suppressing behavior through punishment is commonly used to determine the anxiolytic properties of drugs. During the Vogel Test, animals randomlyreceive electrical shocks when trying to get water. Therefore the number of times the animal goes to get water decreases. When anxiolytic drugs are injected, the number of times animals go up to get water increases, even though the animals are still punished.



Features and Benefits	
Shock	2-Pole Sine-Wave shocker
Test settings	Trial, initial pause, time intervals, number of licks to deliver a shock

Passive Avoidance

Efficient butterfly door

Passive Avoidance Test is used to assess memory function based on the association between a specific environmental context, which the animal learns to avoid (bright light) and an aversive stimulus – represented by a mild foot shock. Efficient and reliable. Automated and silent sliding door divides the dark and light compartments. Systems for mice or rats. Manage up to 4 cages with one controller.

ORDERING INFORMATION

SKU	Description
40552	Passive Avoidance for Rats (to be completed with Control Unit and Software)
40553	Passive Avoidance Set-Up for Mice (to be completed with Control Unit and Software)
47573	Passive Avoidance mouse cage (step-down); to be completed with Control Unit and Software
40500-001	Control Unit with Touch-screen for SKU 40552, 40553 and 47573
40550-010	Software and activation code for SKU 40552 and 40553
40570-010	Software and activation code for SKU 47573
40500-005	Expansion box for connection of additional cages to controller 40500-001

Application

The spontaneous avoidance of bright environments is exploited to measure memory in mice or rats. This classic method was used in virtually any area of neuroscience, from behavior genetics to psychopharmacology and behavioral toxicology. Currently very common in aging studies for Alzheimer-type dementia, including screening of new drugs attenuating behavioral deficits. The Passive Avoidance task is a one trial fear motivated avoidance task, classically used to assess short term or long-term memory in mice and rats.

Specifications	
Door Delay	From 1 to 300s, in steps of 1s
Delay after crossing the door	From 0.2 to 3.0s
Shock/Pulse Duration	From 0.1 to 9.9s, in steps of 0.1s
Shock Intensity	From 0.1 to 3mA, in steps of 0.1mA

References

Maylin Wong-Guerra et. al. 2021, "*JM-20 treatment prevents neuronal damage and memory impairment induced by aluminum chloride in rats*", NeuroToxicology

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Active Avoidance

Silent transition detection sensors

A set up for testing active avoidance (also called automatic reflex conditioner or shuttle box), i.e. learning to predict the occurrence of an aversive event, based on the presentation of a specific stimulus.
Enables performance of a wide range of avoidance experiments using a flexible schedule. Precise detection of avoiding aversive event. Manage up to 4 cages with one controller and animal position is simply detected by tilting floor.

ORDERING INFORMATION

SKU	Description
40532	Active Avoidance Set-Up for Rats
40533	Active Avoidance Set-Up for Mice
40500-001	Control Unit with Touch-screen
40530-010	Software and activation code

Application

Behavioral scientists are well acquainted with avoidance methods that have been used for several decades. These procedures incluese systematic studies of the behavioral changes mainly produced by brain lesions or other treatment to define the functions of different C.N.S. sections. Avoidance tests are applied to behavior genetics, psychopharmacology and behavioral toxicology. More recently, such use has become routine in animal model studies of aging and of Alzheimer-type dementia, including the search for new drugs of potential therapeutic value, consisting in attenuation of behavioral deficits.

Specifications	
Shock	Constant current
Shock Intensity	From 0 to 3mA, in 0.1mA steps
Sound frequency	100-18.000Hz, in steps of 100Hz

References

Jordan Marrocco et. al. 2020, "*Maternal stress programs accelerated aging of the basal ganglia motor system in offspring*", Neurobiology of Stress

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Learned Helplessness

The Ugo Basile Set-Up for Learned Helplessness is based on a sophisticated generator of unpredictable random shocks delivered to the grid floor of a rodent box where no escape is possible. Electric shocks can be randomized in terms of shock length, interval and complex trains can be programmed.

- A sophisticated generator of unpredictable random shocks delivered to the grid floor of a rodent box (dark isolation cube) – rat and mouse models.
- Easy set up using a 12-inch touch screen controller. Randomize shocks based on time duration as well as intervals between shock events. Schedule a complex train of shock events.
- Up to 4 animals can be controlled simultaneously in 4 independent boxes using one touch screen controller.
- Easy data collection. Includes user-friendly reporting software to collect, visualize and export data into spreadsheets such as Excel.
- Optional expansion box available for multiple cages.
- Part of our expandable Beehive Cage-Manager System. Add, manage and monitor other cages in our range using a single touch screen controller.

ORDERING INFORMATION

SKU	Description
47502	Learned Helplessness for Rats
47503	Learned Helplessness for Mice
40500-001	Control Unit with Touch-screen
47500-010	Software and activation code
40500-005	Expansion box for connection of additional cages to controller 40500-001

Features and Benefits	
Great Versatility	The same controller can manage different conditioning tests
Remote Control	Makes remote service and software upgrades extremely simple!

Application

When rodents are exposed to inescapable and unpredictable stress, such as forced swim or inescapable foot shock, they often develop deficits in memory and learning tasks (e.g. Active Avoidance) and/or show analgesic reactions (S.I.A. Stress-Induced Analgesia)

Conditioned Place Preference

Visual and tactile preference

A 2-compartment box that offers visual and tactile differences.
For evaluating the abuse potential of substances and the motivational effects of drugs in mice or rats.
Interchangeable floors, optimized for use with video-tracking software or visual scoring, thanks to the grey, high-contrast color and non-smooth, non-reflective paint.
The box includes the contextual cues required by the experimental paradigm for the 2 customizable compartments.
Designed and optimized for use with any video-tracking software or visual scoring.
Quick and easy to change both the floors and the wall contexts for a visual and tactile difference between the 2 compartments.
Customized sets of walls, with different patterns or textures on request.
Available for cabled animals

ORDERING INFORMATION

SKU	Description
42552	Conditioned Place Preference for Rats
42553	Conditioned Place Preference for Mice

Application

The CPP paradigm provides information on the rewarding or aversive effects of visible and tactile contextual cues associated with drugs.
This technique has acquired great popularity in research studies involving addiction, being much easier, if compared to drug self-administration procedures. First, the animal is conditioned to identify one of the two compartments with the drug experience. Then the time spent in each compartment is measured; preference or aversion to the drug-paired compartment, hence rewarding/aversive properties of drugs, can be easily deducted. The CPP test only requires the animal to carry out a simple operation to approach or avoid the drug-paired compartment; the animal is expected to spend more time in the drug-paired compartment, if the drug experience produced a positive effect.

References

Marco D. Carpenter et al. 2020 *"Nr4a1 suppresses cocaine-induced behavior via epigenetic regulation of homeostatic target genes"*, Nature Communications

Eleveted Zero maze in grey standard color

IR Eleveted Zero maze and LUX IR Illuminator, with infrared view from the video-tracking software

Traditional and IR Transparent Mazes

"The perfect devices for your video-tracked behavioural experiments"

Ugo Basile's Animal mazes offer a complete solution to support scientists, making behavioural experiments easy and accurate. All our mazes are made with high quality materials that provide optimal results with video tracking software thanks to their very high contrast, non reflective surface. Not only easy to set up and easy to clean, but all the maze surface textures are selected for rodent comfort. All Ugo Basile's mazes can be built according to specific requirements.

Application

Mazes are among the most popular tests used by researchers working in the field of behavioural research and mainly in the fields of anxiety and stress, memory and learning, spatial memory, activity and exploration.

Features and Benefits	
High-contrast colors	Colors are optimized to give excellent results with any Video-Tracking and any animal color for accurate experiments
Wide range of colors	Mazes are available in grey (standard), blue, white, black, or in any color scientists need
Non-reflecting surface	Optimal camera view avoiding glare caused by light sources
Non-smooth, "warm" surface texture	Non-slippery material to ensure best rodent comfort and minimize glare
IR version with backlit illumination	Delivers the best contrast for optimal Video-Tracking, despite the color of the animal and ambient light

Two approaches to achieve the best contrast

Grey mat color for dark and light animals: Ugo Basile worked on the best color shade to maximize the performance of your video-tracking experiment, regardless of whether you use light or dark animals.
Infrared back-lit illumination: all applications that requires a super-accurate contour of the animal or need darkness will benefit from IR transparent floors and back lit IR illumination offered by LUX Infrared Illuminator

IR Transparent Mazes

Ugo Basile IR animal mazes are manufactured with a special plastic material transparent to IR illumination but dark for rodents.Thanks to back-lit IR illumination offered by LUX Infrared Illuminator, guarantee a super-accurate contour of the animal while performing video-tracking experiments in any ambient light condition is easy.

IR-mazes are the perfect solution for:

- Scientists that are looking for highest video-tracking performance: IR illumination from below delivers the best contrast for optimal video-tracking.
- Scientists that are careful about the ambient light: Ambient light is often difficult to control and can cause flickering, compromising the performance of video-tracking.
- Scientists that need to run experiments in the darkness
- Running experiments in the darkness contributes to eliminate possible cues or allow to work in alternate light cycles.
- Novel Object Recognition (NOR), where the best possible contrast is needed in order not to confuse head, center and tail and correctly measure object exploration.

Y maze on LUX IR Illuminator

IR Elevated Zero maze

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LUX - Backlight for IR Mazes

The LUX 100 is a near infrared light spurce designed to diffuse an homogeneous IR light from underneath using the special series of Ugo Basile "IR transparent" mazes. The IR backlight gives the researcher the possibility to perform behavioral experiment with no or minimal visible light but also get free from room lights conditions using IR filters. This device can be used in conjunction with all IR transparent mazes. This device can be used for mice, rats and other animals that fits the IR transparent mazes.

ORDERING INFORMATION

SKU	Description
LUX70	LUX70 - IR illuminator for backlight
LUX100	LUX100 - IR illuminator for backlight
LUX8060	LUX8060 - IR illuminator for backlight
LUX 70X4	4 x LUX70 - IR illuminator for backlight

Specifications	LUX70	LUX8060	LUX100
Dimensions	70x70 cm	80x60 cm	100x100 cm
Height	40 cm	40 cm	40 cm

NOR - Novel Object Recognition

The object recognition test is now among the most commonly used behavioral tests for memory studies in rodents. In its simplest design, an animal is presented with two similar objects during the first session and then one of the two objects is replaced by a new object during a second session or is moved to a different location.

Various colors and shapes available

The Novel Object Recognition (NOR) task is used to evaluate cognition, particularly recognition memory, in rodent models of CNS disorders. This test is based on the spontaneous tendency of rodents to spend more time exploring a novel object than a familiar one.

ORDERING INFORMATION

SKU	Description
47002	Set of objects for NOR for rats: squares, pyramids, cylinders and spheres (8cm; 4 black + 4 white)
47003	Set of objects for NOR: for mice: squares, pyramids, cylinders and spheres (4cm; 4 black + 4 white)
47002-W	Set of objects for NOR for rats: piramid, cube, cylinder, sphere (8cm; 4 white)
47002-BK	Set of objects for NOR for rats: piramid, cube, cylinder, sphere (8cm; 4 black)
47003-W	Set of objects for NOR for rats: piramid, cube, cylinder, sphere (4cm; 4 white)
47003-BK	Set of objects for NOR for rats: piramid, cube, cylinder, sphere (4cm; 4 black)

Open Fields

Wide family of Open field enclosures, square, round or IR illuminated

The Open Field is used to assess exploratory behavior, activity, anxiety, pain-induced loss of activity, thygmotaxis. Also suited for the novel object recognition (NOR) test for social and short/long term memory.
Decreased anxiety leads to increased exploratory behavior in the center of the open field. Increased anxiety results in less locomotor motion and preference for the edges of the field.

ORDERING INFORMATION

SKU	Description
47100	Square Open Field Large
47100-IR	IR Square Open Field Large
47140	Circular Open Field for Mice
47140-IR	IR Circular Open Field for Mice
47150	Square Open Field Large + Partitions
47150-IR	IR Square Open Field Large + Partitions
47430	Open Field for Mice
47430-IR	IR Open Field for Mice
47432	Square Open Field for Mice Grey Walls
47432-IR	IR Square Open Field for Mice Grey Walls
47433	Square Open Field for Mice Transparent Walls
47433-IR	Square Open Field for Mice Transparent Walls
Other colors available on request	

Specifications	47432	47433	47100	47150	47140
Dimensions	44x44 cm	44x44 cm	100x100 cm	100x100 cm	Ø 40 cm
Height	40 cm	40 cm	40 cm	40 cm	40 cm
Partitions	No	No	No	Yes	No

Application

The open field test (OFT) is an experiment used to assay general locomotor activity levels and anxiety in rodents in a broad number of experimental settings.
Increased anxiety, pain, motor disfunction and other conditions. Changes in activity measures are also often used to assess the sedative or stimulant effects of pharmacological agents.

Light/Dark Box (black & white test)

Anxiety screening

To perform Light/Dark Test with rats or mice for assessing anxiety. Useful in identifying and/or screening anxiolytic and anxiogenic agents.
The apparatus consists of a dark safe compartmentnd a illuminated aversive compartment The lit compartment can be made
opaque or transparent. The detection of the time spent in bright compartment Vs the dark one gives a measure of anxiety.

ORDERING INFORMATION

SKU	Description
47442	Light/Dark Box for Rats, Transparent Walls
47442-IR	IR Light/Dark Box for Rats, Transparent Walls
47443	Light/Dark Box for Mice, Transparent Walls
47443-IR	IR Light/Dark Box for Mice, Transparent Walls
47444	Light/Dark Box for Rats, Opaque Walls
47445	Light/Dark Box for Mice, Opaque Walls

Application

The test is based on the innate aversion of rodents to brightly illuminated areas and on their spontaneous preference for dark speces. Time spent in the lit compartment Vs the dark one and the related exploratory behavior are reliable parameters for assessing anxiolytic effects that may be useful in identifying and/or screening of anxiolytic and anxiogenic agents.

Specifications	Mouse	Rat
Dimension	44 cm x 44 cm	50 cm x 100 cm
Wall Height	40 cm	40 cm
Start Box (Internal Dimension)	42 cm x 20 cm x 40 cm	48 cm x 48 cm x 40 cm
Test Box (Internal Dimension)	42 cm x 20 cm x 40 cm	48 cm x 48 cm x 40 cm

References

Keizo Takao and Tsuyoshu Miyakawa, 2006, "*Light/dark transition test for mice* ", JoVE

Elevated Plus and Zero Mazes

Optimized for video-tracking software

The elevated plus maze (EPM) is used to evaluate anxiety like behavior in rats and mice. The model is based on the rodent's instinctive tendency to explore novel environments and also to avoid unprotected open and elevated spaces. For neurobiological anxiety research.
The Elevated Zero-Maze is an alternative model to the Elevated Plus Maze. Its circular design provides a smoother transition from closed to open space.

Elevated Zero Maze is available with opaque walls and black IR transparent walls

Elevated Plus Maze is available with opaque walls and black IR transparent walls

ORDERING INFORMATION

SKU	Description
40142	Elevetad Plus Maze for Rats (Requires 2 cameras)
40142-IR	IR Elevated Plus Maze for Rats
40143	Elevated Plus Maze for Mice
40143-IR	IR Elevated Plus Maze for Mice
40162	Elevated Zero Maze for Rats
40162-IR	IR Elevated Zero Maze for Rats
40163	Elevated Zero Maze for Mice
40163-IR	IR Elevated Zero Maze for Mice
Various colors available, with or without edges on open sides	
All models are also available in IR version	

Application

The elevated plus-maze test is used as a rodent model of anxiety and is representative of those tests that are based upon the study of spontaneous behavior patterns. The model is based on the test animal's aversion to open spaces. It is a widely used behavioral assay for rodents and it has been validated to assess the anti-anxiety effects of pharmacological agents to define brain regions and mechanisms underlying anxiety-related behavior.

Elevated Plus Maze	Mouse	Rat
Corridor Length	80 cm	110 cm
Corridor Width	5 cm	10 cm
Closed Arm Height	35 cm	40 cm
Height (from ground)	60 cm	60 cm

Elevated Zero Maze	Mouse	Rat
Diameter	60 cm	120 cm
Corridor Width	5 cm	10 cm
Closed Corridors Walls	16 cm	31 cm
Height (from ground)	62 cm	62 cm

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Multi-Maze System

Complete automated device! Fast and easy to assemble.

Versatile, with automated doors and optional pellet dispenser modular device. It empowers researchers to assemble a custom configuration perfectly suited to spatial learning and spatial memory studies in rats or mice.
The same modular device can be transformed into automated radial, Y, T maze by simply rearranging the arms.
Fully controlled by ANY-maze or any other video-yracking software

8 Arms Radial Maze Configuration with Optional Pellet Dispenser

ORDERING INFORMATION

SKU	Description
41503	3 Arms Configuration
41504	3 Arms Configuration + Start Compartment
41508	8 Arms Radial Maze Configuration
Optional	
49104	Pellet dispenser

3 Arms Radial Maze Configuration

Application

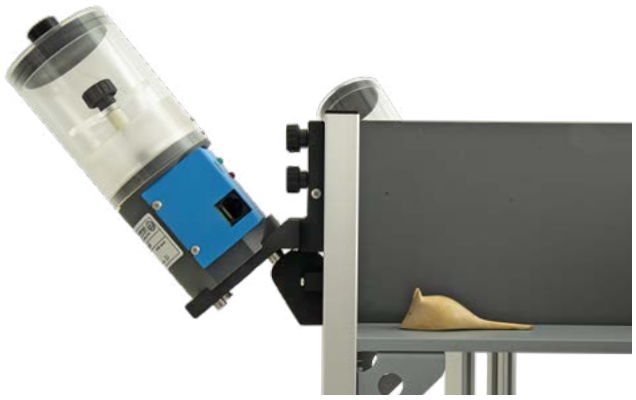
Spatial memory is the ability to create a mental geographical map of the surroundings and to navigate the environment accordingly.
In rodent studies, spatial memory can be tested by placing animals in mazes composed of 3 or more radially arranged walkways (arms) and observing either spontaneous exploratory behavior or reward-based navigation, by creating specific training patterns thanks to the automated doors and optional pellet dispensers, all controlled by the ANY-maze software or other software that can send TTLs.

Specifications	
Computer Compatibility	Direct connection to PC
Door control	8 Doors controlled manually, by TTL Input or via PC Connection

Pellet Dispenser

Adaptable to any type of maze or operant chambers.

The Ugo Basile Pellet Dispenser works with pellets between 10 and 20 mg for mice and 20-45 mg for rats. It has an extremely high delivery accuracy thanks to the redundant photobeam check.
An embedded electronic board manages the DC motor and the photodiodes. An ethernet cable connects the Pellet Dispensers to the 8 channel control unit to independently manage up to 8 pellet dispensers.
The delivery is ensured by TTL signals normally delivered by any Video-Tracking software. A button and an LED on the device ensure manual operation and check. The dispensers can be attached to any maze or operant chambers thanks to special mounts.



Pellet Dispenser mounted on Multi-Maze

ORDERING INFORMATION

SKU	Description
49104	Pellet Dispenser with interchangeable accessories for rat and mouse. With all attachment, for use with maze, OPERON, Operant Cage
49101	Control Unit for Pellet Dispenser, via USB, BNC TTLs and manual

Pellet Dispenser without manger and Pellet Dispenser with manger

Application

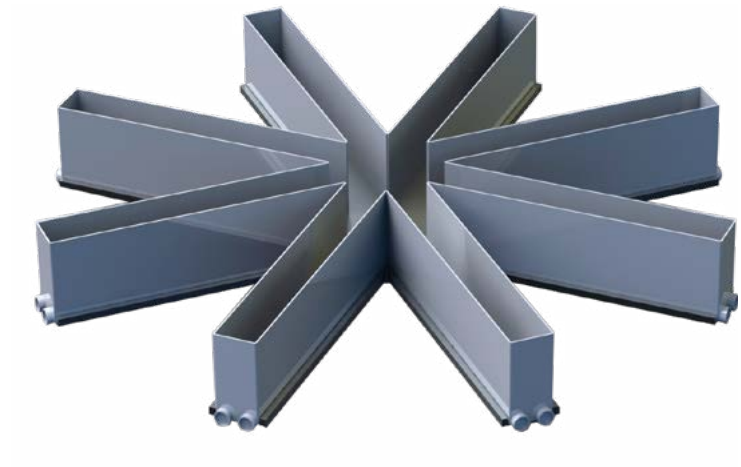
Learning and memory can be studied through punishments or positive reinforcements. The latter require the delivery of rewards in response to specific animal behaviors in applications like reward-enforced T-Maze or Y-maze, Radial Maze, Multi-maze, Delta-maze and Operant chambers like the Operant fear conditioning or traditional Operant cages.

Features and Benefits	
Photobeam-based delivery control	Very high pellet delivery accuracy
Special mounts for each maze	x Adaptable to any type of maze or operant chambers
Compatible with 10-45 mg pellets	Mouse and Rat version with broad range of pellets compatible
8-channel control unit, TTL-driven	Ideal for any maze up to 8-arm radial mazes and compatible with all video-tracking software capable of delivering TTLs

8 Arm Radial Maze

Optimized for video-tracking

The Radial Arm Maze has 8 equally spaced arms radiating from a central circular compartment.
It can be used for several sophisticated protocols to study spatial, working and reference learning and memory.
The animal can rely on egocentric or allocentric strategies. Working versus reference memory can be assessed by adopting intra or inter trial protocols.



ORDERING INFORMATION

SKU	Description
40152	8 Arms Radial Maze for Rats
40152-IR	IR 8 Arms Radial Maze for Rats
40153	8 Arms Radial Maze for Mice
40153-IR	IR 8 Arms Radial Maze for Mice

Application

The animal can rely on egocentric or allocentric (cues outside of the maze) strategies and working versus reference memory can be assessed by adopting intra- or inter-trial protocols. It is an appetitive test and in fact the motivation for the animal (mice or rats) is to find a food reward in one or more arms.

For example, the visit of each arm only once within a trial, indicates a good working memory, while visits to non-baited arms indicate errors in reference memory.

In short, the many variants of the radial arm maze allow the experimenter to assess spatial memory in mice and rats by measuring the avoidance of re-entry in already visited and non-baited arms. Both intra-maze and external cues can be used and optional feeders or doors can be added to the maze to separate the central arena from the arms and deliver the reward only when the task has been completed.

Specifications	Mouse	Rat
Arm Length	36 cm	50 cm
Wall Height	15 cm	20 cm
Arm Width	10 cm	10 cm

T-Maze & Y-Maze

Optimized for video-tracking

The T- and Y-maze are made of sturdy mat plastic (walls) and painted metal floor, so that they are non-reflective and optimized for animal comfort, ease of cleaning and video-tracking contrast.
The design is basically the same for the two mazes, although the Y-maze presents a smoother angle for easier arm alternation. The alternation between the two goal arms is spontaneous, but can also be reinforced through the utilization of rewards in the correct arm. The duration of the trial should be short to assess working memory, assuming that, if working memory is not impaired, on the second trial the animal tends to choose the arm not visited before.

T-Maze with mat plastic walls and opaque metal floor

Y-maze with IR transparent walls and floor on LUX IR Illuminator

ORDERING INFORMATION

SKU	Description
40132	T-Maze for Rats
40132-IR	IR T-Maze for Rats
40133	T-Maze for Mice
40133-IR	IR T-Maze for Mice
40172	Y-Maze for Rats
40172-IR	IR Y-Maze for Rats
40173	Y-Maze for Mice
40173-IR	IR Y-Maze for Mice
Other colors available on request	

T-Maze	Mouse	Rat
Short arm length	35 cm	50 cm
Long arm Lenght	65 cm	90 cm
Wall height	15 cm	20 cm

Y-Maze	Mouse	Rat
Arm Length	35 cm	50 cm
Wall Height	25 cm	20 cm

Application

The T and Y-maze are used in protocols to assess cognitive abilities of rodents. When they start from the base of the T, they then tend to explore first one arm and then the other one, producing the alternation of the choice of the goal arm across repeated trials. It follows that the alternation of arm choices depends on the memory of the animal for the arm visited before. For this reason, this is a test that can be used for spatial memory and it is quite simple to set-up, not needing rewards or training. Specifically, the T- and Y-maze serve the purpose of studying spatial working memory, i.e. the short term memory "buffer", as opposite to the longer term reference memory.

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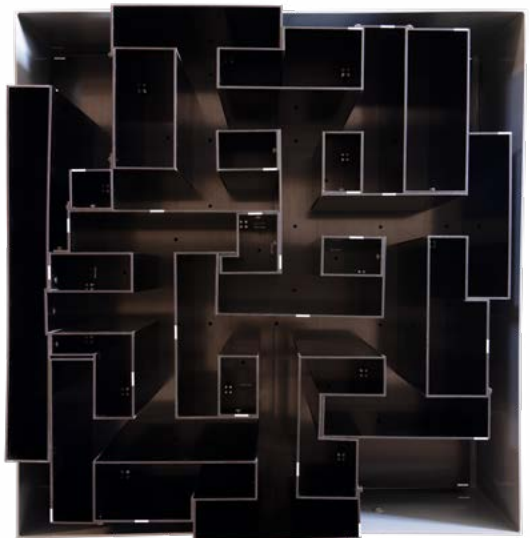
Cincinnati Maze

Optimized for video-tracking



The Cincinnati Maze consists of 9 T-mazes interconnected.
It is filled with water to avoid scent issues and is used on rats to study egocentric navigation (memory). In order to avoid any possibility of external cue use, the maze is constructed in IR-transparent Perspex to run the experiment in full darkness and ensure that movements are due to egocentric and not allocentric mechanisms.
The Ugo Basile Cincinnati Maze for rats is a 2x2 mt arena with a training corridor and 9T-mazes interconnected. It is filled with water, has drain and overflow included, together with wheels for easy movement. The materials used are transparent with IR illumination, to ensure experiments in the darkness. IR-transparents lenses, IR-sensitive cameras and ceiling IR illumination systems can also be provided with Video-Tracking software.

ORDERING INFORMATION

SKU	Description
42500	Cincinnati water maze Rat - IR transparent walls (9 T-maze)

Application

The ability to learn and remembering different locations is encoded in the brain by two systems: one which uses external cues (allocentric) and one using internal cues (egocentric. The structures of the brain involved in the two types of memory are different and hence the ability to run tasks that can dissect them is important. Through the asymmetrical T-mazes which constitute the Cincinnati maze, the number of errors to reach the goal, the time and distance spent are measured to get an index of such memory and ability after an initial training period. Applications are many, from Alzheimer to epilepsy and all those neural phenomena which involve spatial memory, especially when the areas of the brain governing egocentric navigation are to be investigated. An advantage versus the more commonly used Water Maze is that it focuses essential on external cues and it is not possible to count the number of errors as endpoint.

Specification	
Dimensions	2x2 mt, height 51 cm (maze walls), height 86,5 cm (maze walls + maze base with wheels)
Total Weight	486 kg

Delta Maze

Unique Ugo Basile Product

It is a fully automated T-maze with return arms, automated doors and optional pellet dispensers. The special design with automated doors sliding underneath the floor make is compatible with cabled animals for electrophysiology and optogenetics applications. Once the animal has made its arm choice, it can then come back to the starting box without any external interference. Requires two cameras for optimal tracking.

ORDERING INFORMATION

SKU	Description
41505	Delta Maze Complete System

Application

The idea behind the design of the Delta-Maze was to find a way to avoid handling implanted animals during a standard T-Maze test, with the returning arms and software controlled sliding automated doors allowing for special training and task procedures. Our multi-maze set-up was used as its proprietary system of doors sliding underneath the floor eliminates any hindrance to animals moving around, even when connected to an optogenetics or other wired set-up and facilitates video-tracking.

Features and Benefits	
New proprietary modular system	Easy to design custom units on request
Doors slide underneath the floor	Unobstructed view for optimal videotracking even in optogenetics studies
Each arm provided with its own motor	Smooth and silent operation

Atlantis Platforms

Hydraulic system to move the platforms

Atlantis System allows platforms in a Morris Water Maze to rise gently to the surface or go down automatically, using the manual controller or TTL signals. From one to four platform systems available. Enables extinction protocols on rats or mice. No need to stop the test to manually remove or reposition platforms.

ORDERING INFORMATION

SKU	Description
40100	Atlantis with 1 Platform, Complete System
40400	Atlantis with 4 Platform, Complete System
40101	Additional platform and motor assembly

Application

As described in the paper "*The Atlantis Platform: A New Design and Further Developments of Buresova's On-demand Platform for the Water Maze*" (1994) by R.I.W. Spooner et alia, in the widely used spatial learning task of the water maze a (Morris 1981, 1984) rat (or mouse) will rapidly learn to take relatively direct paths to the platform, indicating they may have learned its spatial location.
Transfer tests, sometimes called probe tests, in which the platform is removed from the pool, offer further evidence of true spatial learning, as trained animals display a search pattern focusing on the platform location in the training quadrant.

Specifications	
Number of Channels	4 Indipendent Channels
Platform Vertical Range	From 25 to 35 cm
Vertical Speed	10 mm/second
Platform Diameter	10 cm
Platform Movement	Hydraulic, no electricity in the pool

References

D. Ryan et. al., 2013, "*Spatial learning impairments in PLB1$_{Triple}$ knock-in Alzheimer mice are task-specific and age-dependent*", Cellular and Molecular Life Sciences

Tail Suspension Test

The classic test for depression assessment in mice

Antidepressant drugs and depression animal model genetic screening are commonly conducted by using the Tail Suspension Test (TST). This test is based on the aversive effect of hanging a mouse of rat by the tail, which elicits its struggling moving upwards in an attempt to escape (which is obviously not possible). A video-tracking system and a camera allow the measurement of immobility in one or more animals at the time. The measurement of immobility gives an indication of the depression state of the animal.

ORDERING INFORMATION

SKU	Description
40183	Tail Suspension for Mice
40182	Tail Suspension for Rats
60000-FST	ANY-maze for Forced Swim and Tail Suspension

Application

The translational power of the test has been questioned because the human depression condition is a long-lasting condition, while the TST test is a short experiment. For this reason, some prefer to use it as a tool to measure antidepressant effects of drugs, rather than a proxy for depression states.
In any case the TST, together with the Porsolt Forced Swim test are still the most used test to assess depression in rodents, as shown by the amount of citations exceeding 50,000.

Features and Benefits	
Multiple animal immobility can be tracked at once	High throughput
Combination package with Forced Swim Test (Porsolt))	A battery of test can be run by just purchasing the other component of the combo (lid with a hook or water cylinder

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Porsolt - Forced Swim Test

The classic test for depression measurement in mice and rats

The Porsolt Forced Swim Test (FST), or Porsolt Swim Test (PST), also known as the Behavioral Despair Test, is centered on the way rodents respond to their threat of drowning. This has been correlated to their mood, or, more precisely, to their level of depression, with non-depressed animals that swim longer than depressed animals, who, instead, give up and float immobile. Immobility is measured by a video-tracking software and a camera, which can score several animals at the time, by simply imaging several cylinders at the time separated by dividers.

ORDERING INFORMATION

SKU	Description
40122	Porsolt for large Rats
40123	Porsolt for Mice and Rats
60000-FST	ANY-maze for Forced Swim and Tail Suspension

Specifications	Mouse	Rat
Diameter	20 cm	30 cm
Height	42 cm	62,5 cm
Water Capacity	11 l	39,5 l

Application

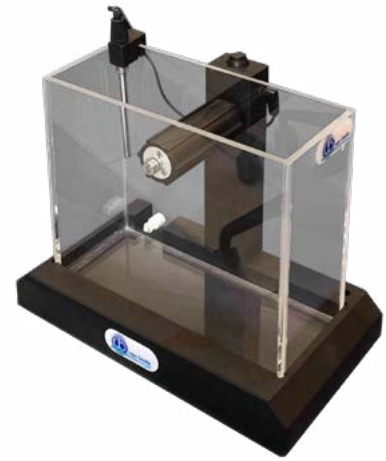
It is primarily used to assess depressive-like behavior and to screen potential antidepressant drugs, as immobility is interpreted as a sign of despair and swimming as indicators of resilience. While the primary focus is on depression-related behaviors, the FST can also provide insights into anxiety-like behaviors in rodents. Some drugs that reduce immobility in the test may have anxiolytic effects.
It's important to note that the FST has been a subject of ethical concerns related to animal welfare, and alternative behavioral tests with potentially less distress to animals are being explored.

Features and Benefits	
Plastic cylinder with drain and dividers	Easy to empty and multiple animals can be assessed at the time
Combination version with Tail Suspension	Just add the plastic cylinders and use the tail suspension as dividers for high throughput and convenience

Nomura Forced Swim Test

Quantititative assessment of depressive behaviour

This test is not based on immobility tracking but rather on the wheel rotations of a wheel that the animal must grasp while in the water, as an escape behaviour. Can deliver high throughput with up to 40 units at the time. The automated scoring of wheel rotations eliminates the partial subjectivity of immobility measurement, as stated by Nomura et al. (1982) "... this water wheel test is more appropriate as a screening test for antidepressants than Porsolt's test with regard to both objectivity and specificity."



ORDERING INFORMATION

SKU	Description
40803	Nomura Forced Swim Test, complete
60000-FST	ANY-maze for Forced Swim and Tail Suspension

Application

The Nomura test was designed to screen potential antidepressant drugs, with higher objectivity and specificity than the Porsolt test and the Tail suspension. Turning the wheel reveals animal struggle instead of despair when it gives up or turns them left. It is also applicable to phenotyping and welfare screening.

Specifications	
Connection to PC	USB
Scoring	via rotation encoder (CW & CCW rotations)
Data collection & analysis	via ANYmaze FST module
Operating Temperature	10° to 40°C
Sound Level	Negligible
Dimensions	24(w)x12(d)x21(h)cm

Application

Carol Barnes developed a maze test for spatial learning and memory in 1979 where animals escaped from a brightly lit, exposed circular open platform surface to a small dark recessed chamber located under one of the holes around the perimeter of the platform. Although it was initially invented for rats, the Barnes maze has become more popular to assess spatial memory in mice, taking advantage of their superior abilities to find and escape through small holes.

Specifications	Mouse	Rat
Diameter	100 cm	130 cm
Number of Holes	20	20
Hole Diameter	5 cm	10 cm
Height (from floor)	60 cm	60 cm
Shelter	Included	Included

Barnes Maze

Spatial learning and memory

The Barnes Maze is a valid alternative to the Water Maze to study spatial learning and memory. The motivational drive is the rodent's instinctive aversion for open spaces and natural preference for dark, "sheltered" spaces.Magnetic shelter included.
Reliable and durable. Optimized for use with video-tracking software. Available for mice or rats. Easy to set up, easy to clean.

ORDERING INFORMATION

SKU	Description
40192	Barnes Maze for Rats
40193	Barnes Maze for Mice
40196	Barnes Maze random holes for Mice
40192/3-320	Optional Black Cups for Barnes Maze (fake shelters)
Other colors available on request	

Shelter with steps to facilitate the entrance

Morris Water Maze

Designed to operate with Atlantis platforms

The classic test for spatial learning and long-term memory in rodents. For research into neurocognitive disorders and treatments, aging, drug-abuse, neural systems, neurotransmitters and brain development.
High quality, strong and low weight. Embedded wheels for easy movement. Easy to drain and clean. Add optional Atlantis System to extend test capabilities. Different colors available.

ORDERING INFORMATION

SKU	Description
40105	Water Maze Ø 100cm - Height 60 cm
40125	Water Maze Ø 120cm - Height 60 cm
40155	Water Maze Ø 150cm - Height 60 cm
40185	Water Maze Ø 180cm - Height 60 cm
40125-010	Basic Platform
40111	Optional heater for Water Maze
Other colors available on request	

Application

The "Water maze" test was developed by Richard Morris as a test for spatial learning in rodents. It relies on intra-maze or extra-maze cues to navigate from start locations around the perimeter of an open swimming arena to locate a submerged escape platform.
Use video-tracking software for measurements such as total distance swum, thigmotaxis duration, speed, latency to platform, time spent in quadrants. Made with high quality alimentary-grade fiberglass selected for its high strength, durability, low weight and easy cleanability. Easy to move and store pool with embedded wheels.
Easy to fill, easy to empty, water drain is positioned below the tank. Optional heater available

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Sociability

3-Chambers Test

A valuable tool to study social behavior in rodents. It is especially useful for research on autism disease, parental behavior, sociability, dominance and social memory (social novelty).
High quality mouse and rat grids are easy to use and to clean. The specific grey base provides unsurpassed contrast for the best video-tracking outcome. Non-smooth surface texture for best rodent comfort and natural environment.

ORDERING INFORMATION

SKU	Description
46553	Sociability Test for Mice - Grey opaque walls and transparent internal partitions
46503	Sociability Test for Mice - Transparent Cage
46513	Sociability Test for Mice - Transparent walls, partitions and lids
46553	Sociability Test for Mice - Opaque Cage
46502	Sociability Test for Rats - Transparent Cage
46552	Sociability Test for Rats - Opaque Cage
46512	Sociability Test for Rats XL - Transparent Cage
46562	Sociability Test for Rats XL - Opaque Cage

Specifications	Mouse	Rat	Rat XL
Dimension	60 x 40 x 25 cm	120 x 58,5 x 40 cm	120 x 78,5 x 40 cm
Cage Internal Diameter	7 cm	15 cm	15 cm
Cage Height	15 cm	25 cm	25 cm

Application

Research has shown that, although human social behavior is generally more complex, humans and animals share some aspects of social behavior. The 3-chambered test is a valuable tool to assess general sociability and interest in social novelty in rodent models with CNS disorders.
Rodents normally prefer to spend time with another rodent (sociability) and will investigate a novel intruder more than a familiar one (social novelty). Based on these inclinations, the Three Chamber Test can help identify rodents with deficits in sociability and/or social novelty/memory.

Agora Maze

Complex sociability interactions

Based on where a mouse with free movement spends its time in a central arena area with stimulus animals (familiar/unfamiliar/dominant/different gender) positioned in chambers on the outer edge.
For research into impairments in social skills that are central to mental disease and developing tools for their assessment in mouse models as well as smell related behavior (anosmia).
Ideal surface for video-tracking software.

ORDERING INFORMATION

SKU	Description
46573	Agora Maze for Mice

Application

"*A fundamental prerequisite for living in social communities is a highly complex set of social skills that governs interactions between individual members of a group. In consequence, impairments in these social skills, prominently prevalent in human psychiatric disorders such as autism and schizophrenia, have devastating consequences for individuals and society*" (Krueger-Burg, 2016).
The experimental design of the new Agora Maze allows evaluation of preference for social novelty or the propensity to spend time with a previously un-encountered mouse rather than with a familiar mouse.

Specifications	
Dimensions	61x58 cm
Height	25 cm
Chambers	5
Chambers Dimension	11,5 x 8.5 cm
Internal Arena	Ø 34 cm
Color	Grey (Best for video-tracking)

References

Meghan Cum et. al. 2024, "*A systematic review and meta-analysis of how social memory is studied*", Scientific Reports

Dominance Tube Test

Assess social hierarchy and dominance in rodents

It is commonly employed in laboratory settings to study social behaviour and interactions in a controlled environment. It can be used with or without food rewards to incentivize the animals to move through the tube. In the simple version, without rewards, two animals are placed at the extremities of a plastic tube and the animals will interact at the center of the tube with one of the two showing aggressive behaviour and force its opponent out of the tube.

ORDERING INFORMATION

SKU	Description
4010	Dominance Tube Test
4010 -010	2 Starting Boxes
4010-16	4 x 16 cm tube
4010-30	1 x 30 cm tube
4010-60	1 x 60 cm tube

Specifications	
Starting box	15 x 15 x15 cm
Tubes	1 tube 60 cm, 1 tube 30 cm, 4 tubes 16 cm

Application

The test is frequently used to test effect of drugs on aggressiveness or in comparative studies to examine differences in social dominance and aggression between rodent strains. Also longitudinal studies can be performed to to track changes in dominance across time. In a battery of social interaction tests, the tube dominance test would normally be included within the phenotyping process.

Features and Benefits	
2 Doors located at the center	Full control of the experiment
Slotted top part of the tube	Works for tethered animals

Visual Cliff

A simple way for preliminary visual assessment

Before engaging into complex visual assessment tests, the Visual Cliff is a classic device to evaluate the presence of severe visual impairments. It uses a glass or plexiglass surface that creates the illusion of a sudden drop-off, thanks to the fact that the surface is divided into two sections. One section is at a higher level than the other, creating a visual cliff. The animal can see the difference in depth between the two sections due to the clear surface.

ORDERING INFORMATION

SKU	Description
48071	Visual Cliff

Specifications	
Dimension	60 x 40 x 40 cm

Application

The key question the visual cliff test seeks to answer is whether animals show a natural aversion to the perceived drop-off, indicating an innate depth perception ability. Typically, if depth perception has developed, animals will hesitate or avoid walking over the visual cliff, while those who lack this ability will not show the same level of caution and may proceed without hesitation. The test can be used to assess the effect of drugs, the development of depth perception with age, genetic research, etc.

Features and Benefits	
Simple instrument	Gives a rough indication of visual acuity and is not expensivet
Customizable	Being a purely mechanical device it can be customized according to scientist preferences

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USB Camera & Optics

Day and night Camera

High quality camera for rodent video-tracking. Provides precise results for tracking softwares in normal and IR conditions. Easy to install and very fast data transmission.
B/W USB Camera, including 2.8-12mm Day & Night Varifocal lens, 5m USB cable and Ceiling Support. Tripods for frontal or lateral view available on request.

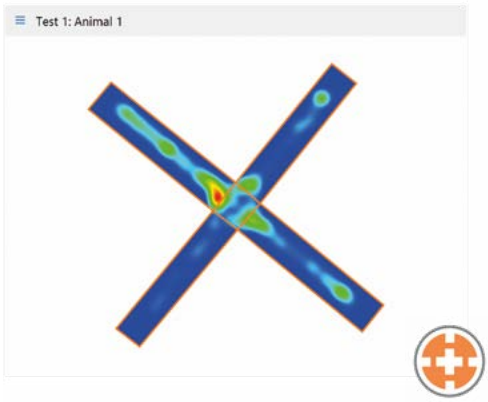
ORDERING INFORMATION

SKU	Description
47400-035	Video-tracking IR Camera with fixed lens (2.1mm and 4.3mm)
47400-040	Video-tracking IR Camera with varifocal lens (2.8 to 12.0mm) with ceiling support

Application

The monochrome camera has a USB 2.0 interface and is the perfect solution for experiments in visible and IR light. The camera includes a C to CS mount adapter, making it compatible to C and CS mount lenses. Different set of lenses ara available for the different applications. High frame rates (500 fps) can be achieved with special cables and included software.

Specifications	
Resolution	744 x 480 px (0,4 MP)
FPS	76
Sensitivity	4.8 V/Lux-Sec
Dynamic Range	8 bit
Color Format	Y800
Shutter	Global
Format	1/3"
Pixel Size	H: 6 µm, V: 6 µm
Lens Mount	C/CS
Dimension	36 x 36 x 25 mm
Mass	70 g



Video-tracking software Any-Maze

Flexible and advanced

This software enables researchers to study behavior in a more reliable and consistent way and over longer time periods than if they were using direct observation or manual recording.
Highly advanced, comprehensive video-tracking system. The software couples an unrivalled depth of features with a simple, familiar design, to provide automated testing in virtually any behavioral test.

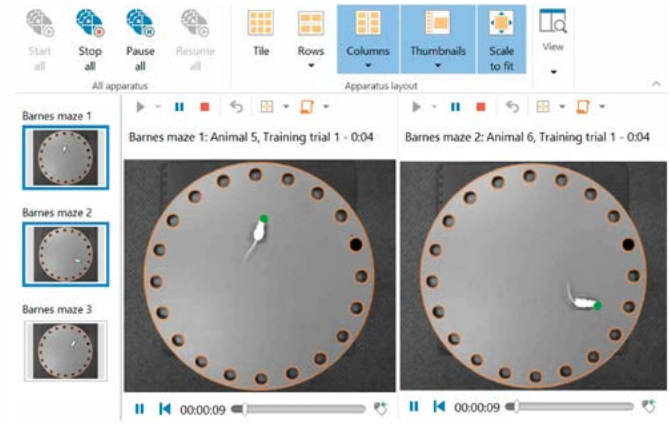
ORDERING INFORMATION

SKU	Description
60000	ANY-Maze flexible video tracking system

Application

Video tracking is the process of locating a moving object (or multiple objects) over time using a camera.
It has a variety of uses and it has been found of great advantage to match the need for automating behavioral observations.

Easy to use, fully featured without the need of expensive modules or add-ons. Provides excellent results when used with the Ugo Basile's range of high contrast, non reflective mazes.



Rota-Rod Family

"More than 6,000 citations"

The "Rota-Rod" technique originated by a 1957 paper of N.W. Dunham and T.S. Miya and has proved to be of great value in research involving phenotyping and screening of drugs which are potentially active on motor coordination and function.
When the animal falls off its cylinder section onto the trip-box below, the switch is activated and time and round per minute are recorded.

ORDERING INFORMATION

SKU	Description
47650	Rota-Rod for Mice
47750	Rota-Rod for Rats
47750-D01	Rota-Rod for Rats XL
47850	Combo Package Rats + Mice Rota-Rod

The golden standard for motor coordination studies

Our models keep on being cited in thousands of scientific articles and even the Rota-Rod name, that Ugo Basile coined for the device, is nowadays one of the most popular and widely used in behavioral neuroscience worldwide.
The experiment can be set up and the results can be monitored, via the 4.3" touch-screen. The operation is surprisingly quiet and the learning curve to learn navigating through the menus and options is very short.
A provided software permits the experiment planning and the creation of custom ramps. Result data can be exported by the provided USB storage key.

Rota-Rod for Mice

Assesses motor coordination using the natural fear of falling response as motivation. Especially for Parkinson's, ALS and other motor diseases.
Simple touch-screen for experiment control and data display.
Customizable, uploadable protocols (speeds, acceleration, multi-step ramps) for efficiency and repeatability. Records up to 5 mice simultaneously. Removable, stainless-steel easy to clean boxes for confining falling mice.
Height to fall is 16cm

Rota-Rod for Rats

The Rota-Rod for Rats, is an evolution of the original model and the result of many years of research in cooperation with the latest development in behavioral and pharmacological research.
The instrument combines the same functionality of the previous version, now considered the standard, with additional new features: surprisingly silent operation, much easier experimental organization and data management.
Height to fall is 30 cm.

Rota-Rod for Large Rats

The Ugo Basile Rota-Rod for obese rats consists of a 6 cm diameter rod, suitably machined to provide adequate (but not excessive) grip. Five flanges divide the four 8.7 cm lanes, enabling 4 rats to be simultaneously on test.
When a rat falls off its rod section into the trip-box below, its endurance in time and RPMs is recorded.
Height to fall is 40 cm.

References

Stella Victorelli et. al., 2023, *"Apoptotic stress causes mtDNA release during senescence and drives the SASP"*, Nature
Haiwang Ji et. al., 2022, "*A Mouse Model of Cancer Induced Bone Pain: From Pain to Movement*", Front Behav Neurosci
Seok-Ting J. Ang, et. al. 2022, *"Muscle 4EBP1 activation modifies the structure and function of the neuromuscular junction in mice",* Nature Communications
Moritz Möller, et. al. 2022 "*The Role of AlphaSynuclein in Mouse Models of Acute, Inflammatory and Neuropathic Pain*", Cells
Stefania Forner, 2021, "*Systematic phenotyping and characterization of the 5xFAD mouse model of Alzheimer's disease*", Nature

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Complex Wheel for Mouse and Rat RotaRod

Increased sensitivity for testing motor coordination in rodents

The Complex Wheel add-on, available for mice and rats introduces an additional complexity element for the animal to be tested, thanks to the asymmetrical and adjustable rungs, which increase the test sensitivity and add a higher involvement of motor cortex and hippocampus, as compared to the classic RotaRod test (Nagai et al. 2017).
The Complex Wheel is designed in a way that the animal does not have a uniform surface to walk on but rather a number of horizontal bars (rungs) that can be changed in number and positioned in a symmetrical or uneven position to vary the test complexity.
This provides a different task to the animals, which now don't have to walk on a small rod, but rather on an accelerating wheel with irregular rung pattern.

ORDERING INFORMATION

SKU	Description
47650-327	Complex Wheel for Mouse RotaRod (30 bars) (suitable for Mouse RotaRod SKU 47650)
47750-327	Complex Wheel for Rat RotaRod (22 bars) (suitable for Rat RotaRod SKU 47750; not suitable for Large Rat RotaRod SKU 47750-D01)

Specifications	47650-327	47750-327
External diameter	95 mm	144 mm
Internal diameter	30 mm	60 mm
Width	56,3 mm	83 mm
No of bars	30	22
Distance between bars	9 mm	20 mm
Weight	492 gr	675gr

Application

What Nagai et al. showed in their 2017 paper is that mice undergoing complex wheel experiments consolidate during sleep a motor skill that engages motor cortex and hippocampus much more than in the traditional rotarod test.Thois required a higher sensitivity device.
This is potentially due to the increased complexity of movements that happen thanks to the irregular rung patterns in the complex wheel task.
The Complex Wheel was developed in conjunction with Prof. Michele Bellesi and Prof. Luisa de Vivo from the University of Camerino (Italy).

Mouse Complex Wheel

Rat Complex Wheel

Enlarger for Mouse and Rat RotaRod

New testing parameter for motor coordination experiment

RotaRod enlargers enable to have an additional parameter to change the complexity of the experiment, by increasing and changing the surface of rods.
Having the possibility to change the diameter and the texture of the rod adds another dimension to the variables that can be tweaked in the rotarod test, by changing the complexity of the test itself.
Enlargers, both for mice and rats RotaRod, can be easily attached on the rotating rods thanks to magnetc fixing.

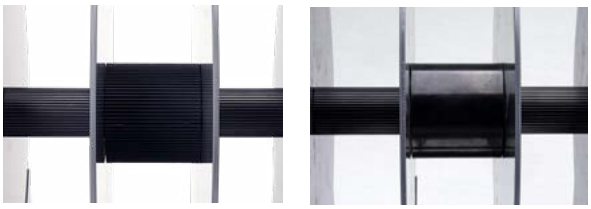
ORDERING INFORMATION

SKU	Description
47650-325	Mouse RotaRod enlarger with grooves (5 pieces set, magnetic fixing) (suitable for Mouse RotaRod SKU 47650)
47650-326	Mouse RotaRod enlarger with rubber (smooth) (5 pieces set, magnetic fixing) (suitable for Mouse RotaRod SKU 47650)
47750-325	Rat RotaRod black enlarger with grooves, (4 pieces set, magnetic fixing) (suitable for Rat RotaRod SKU 47750; not suitable for Large Rat RotaRod SKU 47750-D01)
47750-326	Rat RotaRod enlarger with rubber (smooth), (4 pieces set, magnetic fixing) (suitable for Rat RotaRod SKU 47750; not suitable for Large Rat RotaRod SKU 47750-D01)

Specifications	47650-325	47650-326	47750-325	47750-326
External diameter	60 mm	60 mm	120 mm	120 mm
Internal diameter	30 mm	30 mm	60 mm	60 mm
Width	56,3 mm	56,3 mm	86,5 mm	86,5 mm

Application

Enlargers for Mouse and Rat RotaRod are available to add multiple parameters to change the complexity of the experiment. Enlargers add-on for RotaRod come with grooves to increase the diameter of the rod or in smooth rubber to increase the diameter of the rod and change the surface from a grooved one to a smooth one.



From the right: 47650-325 Mouse RotaRod enlarger with grooves, 47650-326 Mouse RotaRod enlarger with rubber

Tiltable metal grid

Grip Strength Meter

"Automatic peak strength detection & full accessories included"

Automatically measures grip strength of forelimb, hind limb, or all four limbs, in rats and mice as they instinctively resist backwards pull. The integrated force sensor and amplifier for precision measurements and consistency show data into the stand alone (battery powered) unit, or connect to PC software supplied. Includes T-shaped trapezes, grasping tools and plastic or metal grids. Easy-to-use control unit with display, internal memory and quick data transfer (.csv).

When pulled by the tail, rodents instinctively grab anything they can, to try to stop this involuntary backward movement, until the pulling force overcomes their grip strength. When positioned in front of the GSM bar, or trapeze, or grid, the animal grasps at it.

After the animal loses its grip on the grasping bar, the peak amplifier automatically records and stores the peak pull-force achieved by the limbs and shows it on the display.

- Automatically stores and displays the peak pull-force (peak tension) achieved by the limbs before the animal loses its grip.
- Reliable and automated detection of the animal response using peak detector.
- Consistency control to apply the desired force is applied at a consistent rate using the Slope features in the included PC software.
- Quality control software tool shows the applied pulling force, the desired target force rate, and the peak detection in real time.
- Integrated force sensor and peak amplifier for precision measurements. Maximum applicable force of 1500g, with a resolution 0.1g.
- Control unit with internal memory for saving and viewing data. Quick data transfer in Excel (.csv) or text (.txt) format for further analysis.
- No calibration required for normal use. (Proprietary memory chip stores calibration parameters.) the device prompts to auto-zero before making new measurements.
- The meter is provided complete with a set of 3 grasping tools and 3 grids, inlcuding a tiltablemetal one.
- Includes DCA software for signal monitoring, slope control and data export.

ORDERING INFORMATION

SKU	Description
47200	Grip Strength Meter for Mice and Rats

Features and Benefits	
Automatic peak detector	Peak pull-force automatically stored
6 tools included: bar, trapeze, plastic and metal grid	Complete system, no other accessories needed
Auto-Zeroing routine at every measurement	No calibration required

Application

For assessing the effects of substances (drugs, toxins, muscle relaxants), phenotypes and other conditions (motor diseases, ageing, neural damage) on muscle strength.

Specifications	
Force Ranges	0-100gf, 0-500gf, 0-1500gf
Force Increase Rate	Monitored via GSM Electronic Unit or via the DCA3 Software on the PC
Start	AUTOMATIC when force applies to the instrument
Stop	AUTOMATIC or by pedal
Connection to PC	Via USB cable (A to mini-B) and GSM Software (DCA3)

References

Giada Amodeo et. al. 2023, "*Characterization of prokineticin system in Crohn's disease pathophysiology and pain, and its modulation by alcohol abuse: A preclinical study*", Molecular Basis of Disease

Khalid A.El-Saiy, et. al., 2022, "*Modulation of histone deacetylase, the ubiquitin proteasome system, and autophagy underlies the neuroprotective effects of venlafaxine in a rotenone-induced Parkinson's disease model in rats*", Chemico-Biological Interactions

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Multi-lane Treadmill

"Interchangeable Lane Assembly for Mice and Rats"

Speed can be selected from 3 to 100m/min, in steps of 1m/min, in constant, accelerating or custom ramp modes.
Manually tiltable running-lane assembly from -25° to +25°, in steps of 5°.
Adaptable for use with rats or mice with simple replacement of the lane assembly. Combination Rat/Mouse package available or easy upgrade to dual use at a later stage.
Incorporates a shock grid at the back of the treadmill to deliver an adjustable mild electric shock, when an aversive stimulus is required. Shock can be pre-set from 0 to 2mA (in 0.1mA steps). Airpuff stimulus is also available on request.
Test settings and monitoring are managed on the 4.3" touch-screen in the control unit.
Endurance, distance (absolute and relative) and speed are automatically measured and recorded.
A special lane-assembly for tethered mice is also available as an alternative to the standard model
A PC software to set up complex ramps and experiment data is also included.

Application

Treadmills are rolling belts (tapis-roulants) with pre-settable speed and adjustable uphill and downhill inclination (slope), enabling forced exercise training and accurate testing of fatigue in lab animals.
As evidence continues to accumulate the impressive range of health benefits that exercise confers, biomedical researchers have increasingly become interested in conducting systematic studies of exercise to further define those benefits.
On the other hand, fatigue is a common and frequently poorly-understood symptom in many diseases and disorders and, above all in aging studies. New preclinical assays of fatigue may help to improve current understanding of fatigue-like behavior in rodents and many other exercise paradigms and address future treatment of fatigue.

ORDERING INFORMATION

SKU	Description
47302	Treadmill for Rats
47303	Treadmill for Mice
47300	Combo Package Treadmill for Mice and Rats
47352	Treadmill for Rats with Airpuff
47353	Treadmill for Mice with Airpuff
47350	Combo Package Treadmill for Mice and Rats with Airpuff

Specifications	
Speed	From 3 to 100m/min (in 1m/min steps)
Modes	Constant, Accelerating, Custom ramps
Slope	Uphill or Downhill from -25° to +25°
Shock	0 - 3mA
Detection	Treadmill automatically detects speed & absolute and relative distances

References

Belle. Yu-Hsuan. Wang et. al., 2023, "*Mesenchymal stem cells alleviate dexamethasone-induced muscle atrophy in mice and the involvement of ERK1/2 signalling pathway*", Stem Cell Research & Therapy
Lyang-Yu Su, et. al., 2023, "*Effects of Resveratrol on Muscle Inflammation, Energy Utilisation, and Exercise Performance in an Eccentric Contraction Exercise Mouse Model*", Nutrients.
Natalia Leciejewska, et. al., 2022, "*Spexin Promotes the Proliferation and Differentiation of C2C12 Cells In Vitro—The Effect of Exercise on SPX and SPX Receptor Expression in Skeletal Muscle In Vivo*", Genes.

Running Wheels

The ideal tool for circadian rhythms

Running wheels provide a convenient method for measuring rodent spontaneous motor activity over long periods of time. Used for research on circadian rhythms, motor function, aging, energy balance, recovering and pain related exercise. Robust mouse and rat models measure rodent activity across time. Models available with an LCD counter and can also be connected to a Windows PC. Data can be collected from up to 12 wheels simultaneously and analysed by the I/O version of Any-maze.

ORDERING INFORMATION

SKU	Description
1800	Running Wheel for Rats with counter
1850	Running Wheel for Mice with counter
1800-S	Running Wheel for Rats without counter
1850-S	Running Wheel for Mice without counter
52610-BUNDLE	Multifunction Interface for up to 12 running wheels

Features

Revolutions of the activity wheel are automatically counted by the LCD counter (which operates with an extended-life battery) or collected in the PC through the multifunction interface.
Stainless steel wheel with Teflon bushing selected for low friction and smooth operation. The wheel is housed in a standard clear polycarbonate cage for easy viewing and tracking. A stainless steel wire lid with specially designed locks is fastened securely to the cage body.

Specifications	Mouse	Rat
Wheel Diameter	25 cm	35 cm
Bars Distance	7 mm	8.8 mm
Bars Diameter	2 mm	2 mm
Cage Dimension	37 x 26 x 35 cm	48 x 32 x 47 cm
Activity Counter	LCD Display	LCD Display

References

Teresa De Cicco et. al. 2024, "*Cortactin interacts with αDystrobrevin-1 and regulates murine neuromuscular junction morphology*", European Journal of Cell Biology

Activity Cage

Spontaneous Activity for Rats and Mice, including rearing

Enables recording of spontaneous locomotor activity in rats and mice (individual or groups) using infrared (I.R.) beams. General activity can be an indicator of drug action, toxic substances, neurological damage, or daily rhythms in activity.
Tracks horizontal and vertical activity (rearing). Easily integrated with video-tracking system to measure XY position. Easy touch-buttons, graphic display. High throughput with up to 6 cages monitored by the same electronic unit and printer.

ORDERING INFORMATION

SKU	Description
47420	Multiple Activity Cage
47420-NC	Multiple Activity Cage without animal cage (will be used with home cage)

Application

Activity Cages are useful to record spontaneous coordinate activity in rats and mice (individual or groups) and variations of this activity in time, e.g., in the following types of investigations:

- General toxicology, in ascertaining the action of a drug on the animal's activity, especially if it is subjected to chronic treatment
- Psychopharmacology, in screening drugs which are potentially active on the central nervous system
- Behavioral Sciences, in evaluating the variations of spontaneous activity after changes in environmental conditions
- Very preliminary pain and nociception screening as animals in pain show lowered activity levels

Features and Benefits	
IR photocells arrays of adjustable height	Same instrument for rats and mice
2 pairs of IR photocells arrays	Measure locomotion and rearing
Embedded printer, memory and software	Stand-alone or PC-connected

References

Leontina-Elena Filipiuc et. al. 2024, "*JWH-182: a safe and effective synthetic cannabinoid for chemotherapy-induced neuropathic pain in preclinical models*", Scientific Reports

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Hole Board

Classic Exploratory behavior test according to the Boissier-Simon method

The hole board test exploits the 16 holes, each with a pair of photo-beams to measure the exploratory and investigation behavior in mice. The willingness to explore novel environments is a typical instinct and differs from the motor activity behaviour, by counting the head dipping number during a determined period, e.g. 5-10 minutes.
A version without photobeams, but working with videotracking instead is also available

ORDERING INFORMATION

SKU	Description
6650	Hole Board
46653	Hole Board for Video-tracking (requires 60000 ANy-maze software and camera

Specifications	6650/46653
Dimension	40 x 40 cm
Hole diameter	3 cm
Distance between holes (from hole center)	10 cm

Application

Changes in the animal exploratory behavior may indicate alterations in animal motivation to explore or anxiety. For this reason the hole board is frequently used in phenotyping and drug screening, as well as to study the effect of environmental enrichment on animals, as it is supposed to enhance exploratory and cognitive function in rodents.

Features and Benefits	
Photobeam-based (6650)	Simple to use and provides an easy to interpret output
Designed for exploratory behaviour	Allows for running a battery of test to discriminate exploratory instinct from locomotor activity

References

Clara Berdasco et. al. 2023 "*Cognitive Deficits Found in a Pro-inflammatory State are Independent of ERK1/2 Signaling in the Murine Brain Hippocampus Treated with Shiga Toxin 2 from Enterohemorrhagic Escherichia coli*", Cellular and Molecular Neurobiology
Xiaoxuan Sun et. al. 2021 "*Dysfunction of Trio GEF1 involves in excitatory/inhibitory imbalance and autism-like behaviors through regulation of interneuron migration*", Molecular Psychiatry

Metabolic Cages

Simple and cost-effective urine and feces separation

These cages allow for single or multiple housing of mice and rats and their unique funnel and cone design effectively separates rodent feces and urine into tubes outside the cage. Collection tubes are easy to remove and the process will not disturb the animals. They include water bottles and food hopper and are available for multiple mice, single mice and rats of different weights (from below 150 grams to over 300 grams). Made of polycarbonate and steel they are resistant and easy to clean.

Metabolic Cage Single Mouse

ORDERING INFORMATION

SKU	Description
41700-002	Metabolic Cage for rats up to 150g
41700-003	Metabolic Cage for mice (groups)
41700-004	Metabolic Cage for rats 150 to 300g
41700-005	Metabolic Cage for rats over 300g
41700-033	Metabolic Cage for single mouse
Accessories	
3M01D100	Single cage stand (included in all cages except 41700-033)
3M12D100	Vertical rack for 12 metabolic cages, suitable for models 41700-002/005. Dimensions 124x48x190 cm
ECHILLER	Electronic chilling device for keeping urine and feces at a constant low temperature
ECHILLRACK 01	Support for ingle metabolic cage
ECHILLRACK 10	Vertical rack for 12 metabolic cages with E-chiller

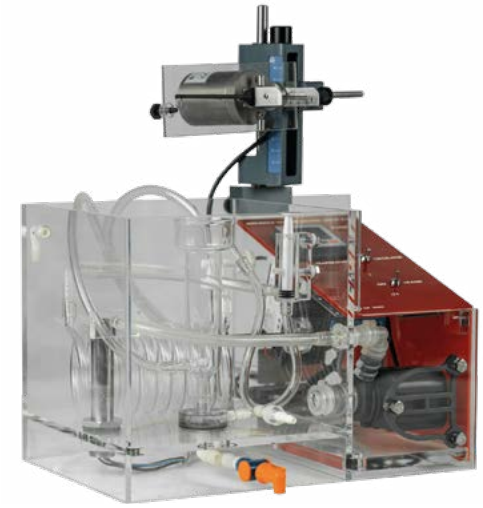
Metabolic Cage for Mice

Application

Metabolic cages that separate urine and feces are designed for subsequent urine and fecal analysis. Most commonly the analysis of these excretions include parameters such as urine volume, concentration composition (e.g., pH, creatinine, electrolytes, protein, glucose), and fecal output to study weight and frequency of fecal pellets, water and fiber content, microbiota, inflammatory markers, etc..

Metabolic Cage for Rats

Features and Benefits	
Different models available	Can be used for single or multiple animals and for rats of different sizes
Urine and feces tubes are outside the cage	The animal is not disturbed when the samples are taken
Polycarbonate and steel materials	Resistant and easy to clean



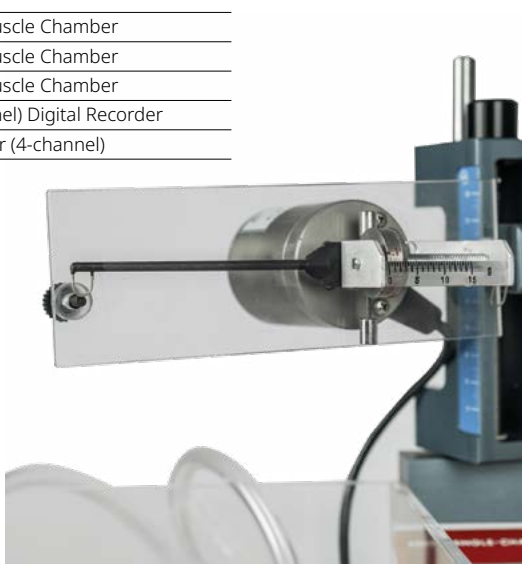
Isolated Organ Baths

Ideal for teaching purposes or for research

Provides accurate recording of isometric or isotonic tissue contraction/release. For studying effects of drugs or electrical stimuli on isolated smooth muscles (including uterus, trachea, gastrointestinal tract, vessel strips, auricle etc) under optimum conditions.
Classic pharmacology tool for research and teaching. Maintains the integrity of muscle tissue for several hours in a controlled environment and provides accurate recording of isometric or isotonic tissue contraction/release.

ORDERING INFORMATION

SKU	Description
4000	Isolated Organ Bath, 1 Muscle Chamber
4050	Isolated Organ Bath, 2 Muscle Chamber
4400	Isolated Organ Bath, 4 Muscle Chamber
17308	DataCapsule-Evo (8-channel) Digital Recorder
3165	Multiplexing Pluse Booster (4-channel)



Features

Compact, cost effective, easy to use, turnkey solution with heating, circulation and transducer mount in each bath. Available in 1, 2, or 4 chambers configurations with control box that enables pre-set temperature from 25 to 45°C in 0.1°C steps. A precise solid state thermostat maintains the temperature within the limits of +/- 0.1° C on all models.
Tissue washing without exposure to air: wash or test solution enters chamber after passing through the temperature equilibrating coils and the syringe valve. The tissue in the chamber is washed by flushing the chamber through an overflow drain tube, to avoid exposing the tissue to the air.
Water stirring is accomplished by a water jet delivered through a noiseless vibration-free centrifugal pump. A stainless steel heating element is mounted on the Perspex tank floor. An additional constant current stimulator (SKU 3165) can be added to the Isolated Organ Bath for electric stimulation.

References

Fernanda Y.G.M. Couceiro et. al. 2023, "*Involvement of phospholipase A_2 in the neuromuscular blockade caused by coralsnake (Micrurus spp.) venoms in mouse phrenic nerve-diaphragm preparations in vitro*", Toxicon

Isometric and Isotonic Force Transducers

Robust, Accurate and easy to calibrate

The isometric transducers measure the force of an isolated tissue when its length is constant, while the isotonic transducer measures tissue displacement in mm and is especially suited for fast contractions.
The isometric transducers are available in four models, covering range from 0 to 50 g. Highest sensitivity model covers the range 0-800 mg. Sturdy construction. Connects to the most popular data acquisition systems.

ORDERING INFORMATION

SKU	Description
7003	Isometric Force Transducer, DY1
7004	Isometric Force Transducer, DY2
7005	Isometric Force Transducer, DY3
7006	Isotonic Transducer
7010	High Sensitivity Transducer, DY0
17308	DataCapsule-Evo (8 channel) Digital Recorder

Specifications	7003 DY1	7004 DY2	7005 DY3	7010 DY0
Excitation Voltage (max)	6V	6V	6V	6V
Excitation Voltage (typical)	3V	3V	3V	3V
Sensitivity (µV per g per V)	70	25	10	110
Force Range	From 0mg to 800mg	From 0g to 2g	From 0g to 10g	From 0g to 50g
Overload Rating	20g	50g	200g	5g
Moment of Inertia	7 gcm^2	7 gcm^2	7 gcm^2	7 gcm^2
Lever Arm Displacement	0.5 mm/g	0.3 mm/g	0.1 mm/g	0.6 mm/g

Specifications	7006
Voltage Output	300µV per mm
Linearity	± 2% to ± 15° rotation
Excitation Voltage	6 ÷ 15 V
Excitation Current	20 mA
Operating Range	± 15°
Level arm Lenght	10 cm
Level arm travel	6 cm

References

S Bilel et. al. 2020, "*In vitro and in vivo pharmacological characterization of the synthetic opioid MT-45*", Neuropharmacology
Cristina Pozzoli et. al. 2020, "*Relaxing effects of clenbuterol, ritodrine, salbutamol and fenoterol on the contractions of horse isolated bronchi induced by different stimuli*", Research in Veterinary Science

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Data Capsule-Evo (Data Collection and Stimulation)

8-channel data acquisition system with the LabScribe software

The analogue-to-digital converter has 8 channels, 4 of which already equipped with bridge amplifiers to connect to a vast range of transducers, such as isometric, isotonic (for organ bath, tissue contraction experiments) and blood pressure (invasive). The additional 4 BNC connectors are not amplified and can direct to the PC via USB already amplified signals (e.g. Blood Pressure Recorder, non invasive). On the output side it offers low voltage and high voltage stimulators. All features are managed by the LabScribe software. It works with both PC and Apple computers and has a maximum sampling speed of 100 KHz, which makes it suitable for a very broad range of applications.

ORDERING INFORMATION

SKU	Description
17308	DataCapsule-Evo (8 channel) Digital Recorder

Features and Benefits	
USB Connection to PC and MAC	Versatility
LabScribe4 Software included	Full hardware/software package
DIN inputs and BNC outputs	Connectors for most transducers
Input trigger to start recording	Synchronization with other systems

Specifications Input	
BNC INPUTS (A1-A4)	
N° of Inputs	4
Input Range	±10 VDC
Resolution	16 bit
Connectors	BNC Cable
DIN8 TRANSDUCRE INPUT (A5-A8)	
N° of Inputs	4
Inputs Range	±10 VDC
Resolution	16 bit
Isolation	NO
Excitation	±5 VDC, 100 mA
Connectors	BNC Cable
Gain	Programmable with input resistor
DIGITAL INPUT	
Input	8 indipendent lines, TTL input, 1 megaOhm input impedance, 5V maximum

Specifications Output	
HIGH VOLTAGE STIMULATOR OUTPUT	
Connectors	HV Safety
Output Range	0-1 mA
Compliance	100V
Max ON time	10ms
LOW VOLTAGE STIMULATOR OUPUTS (S1 and S2)	
Resolution	16 bit
Connectors	BNC
Isolation	NO
Ouput Range	±15 VDC at 35 mA
Modes	Pulse, Train, Constant, Step, Ramp, Triangle, Custom
DIGITAL OUTPUT	
Output	8 indipendent lines, TTL output level, 24mA maximum load per line

Ventilators

Volume controlled respirator - The most durable in the market

A positive pressure pump (according to Starling's Ventilator method) for small animals. Assists with breathing during anesthesia and surgery or when an animal has an injury or illness that requires respiratory support.
Highly accurate, rate displayed digitally, choice of cylinder/piston assemblies (from 0.05-0.5 ml to 20-100 ml), quiet, high quality, robust with a long lifetime. Options include Start/Stop model for advanced electrophysiological-pharmacological investigations.

ORDERING INFORMATION

SKU	Description
7025	Rodent Ventilator
28025	Mouse Ventilator
6025	Cat and Rabbit Ventilator

Specifications	7025	28025	6025
Rate (strokes/minute)	10 to 180	60 to 300	10 to 100
Read Out	Digital Display	Digital Display	Digital Display
Stroke Volume	0.5 to 5; 1 to 10 or 3 to 30 ml	0.1 to 1; 0.05 to 0.5 ml	10 to 50 ml; 20 to 100 ml
Stroke Volume Scale	1-10 ml & 3-30 ml	0.05 ml divisions	10-50 ml & 20-100 ml
Stroke Volume Reproducibility	±2%	±2%	± 2%
Dimension	27x26x19cm	20x13x18.5cm	27x26x19cm

References

Leonard I. Kleinman and Edward P. Radford. 1964, "*Ventilation standards for small mammals*", Journal of Applied Physiology

Compact Gas Anesthesia System

High quality and compatible with Ugo Basile Ventilators

Provides an easy to use means of immobilizing an animal for surgery or procedures such as imaging or many others. Gas Anesthesia (compared to intravenous) is a very quick way to induce total unconsciousness and also assists fast recovery.
High quality compact, modular and virtually unbreakable system. Reliable and precise delivery of the anesthetic gas to animals.
Expandable system for multiple animals providing excellent value with all the necessary accessories available, including different masks for different animal sizes.

ORDERING INFORMATION

SKU	Description
21100	Single-Output Anesthesia System
21200	Double-Output Anesthesia System
7900	Induction Box for small rodents (mice and rats), 25x13x13 (h) cm
7910	Induction Box, large size, 40x22x21 (h) cm
21100-790	Induction Box for small rodents (mice and rats) 25x13x13(h) cm
PS-0833	Active Scavenger
PS-0950	Fill device

Induction box

Features

- Anesthetize up to 4 animals simultaneously (depending on model).
- High-precision analog flow-meter with 2 different flow versions (0-4 LPM and 0-10 LPM) for different sized or multiple animal delivery.
- Reliable and precise delivery of the anesthetic gas with new, TEC3 or TEC4 vaporizers for Isoflurane, Sevoflurane and others on request.
- Compact and portable for easy transportation and storage.
- Rodent masks have latex diaphragm for correct positioning and continuous flow of oxygen and anesthetic. The membrane has a positive seal to reduce the investigator's exposure to anesthetic gases.
- Modular and expandable for a cost effective system that suits your needs now and in the future. Select a basic system (flowmeter and vaporizer) or start with a full system (add induction boxes, switch valves, delivery systems for multiple animals, active and passive scavengers, etc.)

References

Maria Loreta Libero et. al. 2024, "*Anti-inflammatory and anti-hyperalgesic effects induced by an aqueous aged black garlic extract in rodent models of ulcerative colitis and colitis-associated visceral pain*", Phytotherapy Reasearch

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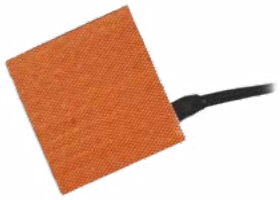
Rodent Warmer

Keep animal temperature during surgery



A warmer to provide external heat to animals undergoing surgery, as they can lose temperature during anesthesia. It helps to maintain near-normal body temperature for improved surgical outcomes (such as fewer adverse cardiac events and reduced blood loss). It can work at fixed temperature or with feedback given by a temperature rectal probe to maintain a determined animal temperature. It can be selected as one or two channels and with heating pads of different dimensions or heating cage.

ORDERING INFORMATION

SKU	Description
21100-800M	Rodent Warmer with Mouse Heating Pad
21100-800R	Rodent Warmer with Rat Heating Pad
21100-800C	Rodent Warmer with cage Heating Pad
21100-850MM	Rodent Warmer with 2 Mouse Heating Pads
21100-850RR	Rodent Warmer with 2 Rat Heating Pads
21100-850CC	Rodent Warmer with 2 Cage Heating Pads
Accessories	
21100-812	Rat Heating Pad, 15.25x15.25cm
21100-813	Mouse Heating Pad, 7x7cm
21100-814	Cage Heating Pad, 16x38cm
21100-304	Rectal Thermal Probe

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Bronchospasm Transducer

The most sensitive and seamless way of measuring bronchial constriction

It evaluates the spasm-inducing effect of drugs. Typically assesses the effect of bronchodilation agents but can also be used for screening substances inducing opposite effects (bronchoconstriction). It is a simple, reliable and fast method to assess airflow resistance, by connecting it to a constant volume ventilator and measuring the exhaled amount of air. In short, it provides a high precision recording of volume (0.1 ml sensitivity). It is available as a complete set up with a rodent ventilator and data acquisition system (DataCapsule).

ORDERING INFORMATION

SKU	Description
17020	Bronchospasm Transducer
OPTIONAL	
17308	New DataCapsule-Evo, 4-Channel
7025	Rodent Ventilator

Application

Measurements in terms of volume the constriction of bronchial tubes to test drugs treating bronchospasms due to allergic reactions, infections, stress or anxiety, asthma or other respiratory conditions. Other applications include monitoring and basic respiratory physiology

Features and Benefits	
The sensor measures with 0.1 ml sensitivity	High sensitive device
It can be purchased with ventilator and data acquisition system	Ready to use system with all accessories included

References

Janiana Raíza Jentsch Matias de Oliveira et. al. 2024, "*Repeated doses of captopril induce airway hyperresponsiveness by modulating the TRPV1 receptor in rats*", Pulmonary Pharmacology & Therapeutics

Mayara Alves Amorim et. al. 2021, "*Role of nitric oxide, bradykinin B_2 receptor, and TRPV1 in the airway alterations caused by simvastatin in rats*", European Journal of Pharmacology

Romina Nassin et. al. 2010, "*Acetaminophen, via its reactive metabolite N-acetyl-p-benzo-quinoneimine and transient receptor potential ankyrin-1 stimulation, causes neurogenic inflammation in the airways and other tissues in rodents*", FASEB Journal

Blood Pressure Recorder

Non-invasive blood pressure recorder

All-in-one system including, pressure generation-pressure monitoring system and pulse amplifier. It can also be connected to any data acquisition systems without amplification needed. A rat restrainer is supplied. While the cuff inflates and deflates, a piezo sensor detects changes in blood flow through the tail artery and an algorithm automatically calculates the systolic (max) and diastolic (min) pressure and shows the data on the display. For more elaborated data manipulation and visualization, the Data Capsule, data acquisition system is suggested, sending data to the PC.

ORDERING INFORMATION

SKU	Description
58800	BP RECORDER, with accessories for RAT: 8mm pulse pick-up, 13mm cuff, 50mm holder
17308	Optional DataCapsule EVO (8-channel) Digital Recorder

Application

Non-invasive measurements of Blood Pressure are performed in pharmacological research to assess the effects of drugs on blood pressure regulation, especially for testing new treatments for hypertension. They are also used in basic cardiovascular research from cardiac function to hemodynamics and mechanisms of heart failure. Blood pressure assessment is part of phenotyping and longitudinal studies too.

Features and Benefits	
Embedded graphic printer, internal memory and PC output	Turn-key and stand-alone
Analogue output (BNC)	Can be conencted to external data acquisition
Wide range of tail transducer sizes (4-18 mm)	Adapts to different animal weights

References

Windingoudi R. C. Ouedraogo et. al. 2023, "*Evaluation of acute, subacute toxicity and in vivo impact of aqueous decoction of Flemingia faginea Guill. & Perr. (Barker) leafy stems on NMRI mice and normotensive Wistar rats* ", Journal of Drug Delivery and Therapeutics

Lazare Belemnaba et. al. 2021, "*Preclinical Evaluation of the Antihypertensive Effect of an Aqueous Extract of Anogeissus leiocarpa (DC) Guill et Perr. Bark of Trunk in L-NAME-Induced Hypertensive Rat* ", Journal of Experimental Pharmacology

Ahmed M. Nasr et. al. 2020, "*Renal protective effect of nebivolol in rat models of acute renal injury: role of sodium glucose co-transporter 2* ", Pharmacological Reports

Blood Pressure Transducer

Invasive transducer to be used during animal surgery

It connects to data acquisition systems such as our DataCapsule-Evo. High quality, robust, reusable and cost effective. Easy cleaning and hygienic qualities. The dome is disposable with "Snap-on" coupling offering flexibility, practicality and cleanliness. Easy to fill with high accuracy and very high frequency response together with high overload protection (10,000 mm/Hg)

ORDERING INFORMATION

SKU	Description
17844	Pressure Transducer "Sensonor", type SP-844, complete with one dome 17844-001 lodged in its plastic case
Optional	
17844-150	Calibrator for invasive blood pressure transducer

Application

It is used in virtually all surgical blood pressure assessment, including urodynamic measurement, intrauterine Pressure Measurement, intracranial Pressure Measurement, catheterization and intensive Care Unit.

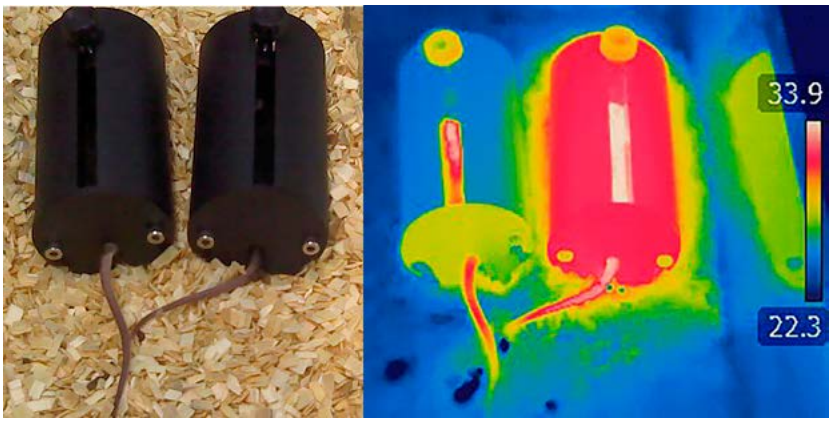
Features and Benefits	
Embedded graphic printer, internal memory and PC output	Turn-key and stand-alone
Analogue output (BNC)	Can be conencted to external data acquisition
Wide range of tail transducer sizes (4-18 mm)	Adapts to different animal weights

Miscellaneus, ECT, LMD

Romanovsky-Holder (for Blood samples and Injections)

The innovative way to restrain your mice
Designed to restrain mice, make injections and blood sampling easier, thanks to the aluminum material they are made of. This allows for maintaining the temperature for long time and transferring it to the restrained animal. This carries several advantages, including ease of restrain as animals are prone to enter a warm (e.g. 30°C) environment, easier blood sampling and injections thanks to the dilation of the tail vessel.

Romanovsky-Holder seen from different point of view



Visible and thermographic vision of experiment with heated and non-heated Romanovsky Holder

ORDERING INFORMATION

SKU	Description
35590	Romanosky-holder

Specifications	
Outer diameter	55 mm
Inner diameter	30 mm
Length	100 mm
Weight	0.45 Kg

Features and Benefits	
Made of black thick aluminum	The animal feels sheltered and attracted by the warm temperature (e.g. 30°C), so it is easily restrained
Keeps the warm temperature	Once in the restrainer, the animal warms up and the tail vessel dilates, making injections or blood sampling easier
Adjustable and easy to close	The conical muzzle holder is easy to adjust and the door can be closed with one hand

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Electroconvulsive-Therapy (ECT)

Epilepsy studies and threshold detection

Designed for inducing convulsions in research mice and rats for epilepsy studies and many more e.g., neurochemical and neuropharmacological research such as evaluating the depressant or stimulating action of drugs on the CNS.
Reproducible results. Parameters have been selected to the most suitable range for mice or rats.

ORDERING INFORMATION

SKU	Description
57800	Electroconvulsive-Therapy (ECT)
57800-002	Set of Auricular Electrodes
57800-003	Set of Corneal Electrodes

Application

It is particularly useful for epilepsy research, more specifically:
- General screening of potentially neurotropic substances
- Evaluating the depressant or stimulating action of drugs on the CNS
- Endocrinological investigations on the relationship between the nervous system and the hypophysis.

A constant current output is used which ensures reproducible results and accurate determination of the ECT threshold while also pin-pointing any variation in the threshold brought about by drugs having specific action on the cortex and subcortical regions. The shock parameters have been selected after consulting the most recent literature, in order to determinate the range of requirements likely to be needed when operating with mice and rats.
The 6-Hz corneal stimulation model, which was introduced in early fifties, has been recently rediscovered to test alternative approaches for drug-resistant seizures. Accordingly the ketogenic diet, which is known to be a valid treatment for refractory seizures, was found to be effective in counteracting seizures induced by the 6 Hz corneal stimulation. When compared with other models based on electrical stimulation, the 6 Hz paradigm is characterized by the induction of minimally convulsive or non-convulsive seizures with automatized behaviors, defined as “psychomotor seizures”. Ugo Basile ECT Unit performs the 6 Hz model conveniently.

References

Nozomu H. Nakamura et. al. 2013, “*Proximodistal Segregation of Nonspatial Information in CA3: Preferential Recruitment of a Proximal CA3-Distal CA1 Network in Non-spatial Recognition Memory*”, Journal of Neuroscience
Karine Leclercq et. al. 2014, “*Genetic background of mice strongly influences treatment resistance in the 6 Hz seizure model* ”,Epilepsia
Mustafa Aslan et. al. 2011, “*Effect of Gentiana olivieri on experimental epilepsy models* ”, Pharmacognosy Magazine

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Lesion Making Device (LMD)

Safe, localized, versatile

Compact, direct current (DC) Lesion Maker for localized electrolytic lesions in specific brain areas.
Isolated, regulated DC output for electrical safety. Two operating modes: continuous and timed.

ORDERING INFORMATION

SKU	Description
53500	Lesion Making Device
53500-325	Set of 2 Microelectrodes complete with black and red banana plugs

Application

The surgically or electrically induced lesion has served as an important tool in the experimental search of function in the CNS. Its value has derived in part from the simplicity with which it can be used to study neural mechanisms of behavior at a basic level. The advent of the stereotaxic technique, moreover, allowed researchers to produce discretely placed lesions with consistency, especially in subcortical structures of the brain.
The strength of the lesion technique resides also in the variety of ways with which to apply it. Manipulating the type of lesion (DC, RF, knife cut, etc.), its size, the type of electrode, the angle of entry and so on, should continue to expose critically important aspects of neural functions because of the different effects that are produced.
It is no coincidence that the history of the development of these techniques is closely tied to the recent history of theories regarding localization of function in the brain.
The traditional view, whose basic tenets are that the functions are represented in discrete brain structures and that the lesions disrupt function by removal of functional tissue in circumscribed sites, have been recently challenged by growing evidence of the importance of secondary changes. These are induced by a lesion, both directly (necrosis, anterograde and retrograde degeneration) and indirectly (trans-neuronal degeneration, regeneration and sprouting, alteration of neurochemical pools, vascular disruption) and may compromise the more significant neurological changes which can account for alteration of behavior in a lesion experiment.

References

Nozomu H. Nakamura et. al. 2020, “*Descending Modulation of Laryngeal Vagal Sensory Processing in the Brainstem Orchestrated by the Submedius Thalamic Nucleus*”, Journal of Neuroscience
Hu Qiao et. al. 2019, “*The central nucleus of the amygdala lesion attenuates orthodontic pain during experimental tooth movement in rats* ”,Brain and Behavior

KDS Syringe Pumps

Syringe pumps for any application

KDS provides a very broad range of syringe pumps to cover virtually all injection and injection/withdrawal applications, including those that require very high precision even at low flow rates in a pulse-free manner. The latest generation models include a touch screen display to define complex injection and withdrawals protocols and to show in real time the pump operation. The pump memory stores syringe types so that only desired volume and flow rates need to be entered. Synchronization with other devices is ensured by TTL and RS232 interfaces.

ORDERING INFORMATION

SKU	Description
KDS Legato 100	Legato® 100 Single Infuse Only Touch Screen Syringe Pump (Accommodates 0.5ul - 60ml syringes)
KDS Legato 110	Legato® 110 Single Infuse/Withdraw/Programmable Touch Screen Syringe Pump (Accommodates 0.5ul - 60ml syringes)
KDS Legato 200	Legato® 200 Dual Infuse Only Touch Screen Syringe Pump (Accommodates 0.5ul - 140ml syringes)
KDS Legato 210	Legato® 210 Dual Infuse/Withdraw Touch Screen Syringe Pump (Accommodates 0.5ul - 140ml syringes)
KDS 100 Legacy	KDS 100 Legacy Single Syringe Infusion Pump 110VAC (Accommodates 10ul - 60ml syringes)
KDS 200 Legacy	KDS 200 Legacy Dual Infusion Syringe Pump 110VAC (Accommodates 10ul - 140ml syringes)

Application

Syringe pump application include all those experiments that require silent operation, pulse-free injection and high precision even at low flows. They include drug administration at accurate small dosing, constant infusion, intravenous infusions, microdialysis, continuous sampling, toxicology, gene delivery, etc.

MK-12 Electronic Monitor for Estrous-Cycle

Mice and rats vaginal estrous-cycle detector

It provides precise information on the optimum day for mating during estrous cycle in rats or mice. It represents a powerful tool for improving mating efficiency. A reliable time and labor-saving device. Operation is very simple, even for a novice. In comparison, the conventional vaginal smear method is traumatic to the animal and a troublesome procedure requiring skill, time and labor. The electrical impedance of the epithelial cell layer of vaginal mucosa is measured at the frequency of 1 kHz by insertion of the probe into vagina. In the proestrus stage significantly high impedance is produced compared to that in the other stages of the estrous cycle. 3 kohm of impedance can be considered a standard indicating proestrus stage. Measuring range is 0 – 19.9kohm.

ORDERING INFORMATION

SKU	Description
MK-12	Main Unit for Rats
MP-35A	Probe for Mice

Stereotaxic Instruments

For stereotaxic surgery using rats or other small animals. Can be used to locate targets for implantation of devices, stimulation or injections. Smooth, consistent movements with rapid positioning. Time-proven 'U'-Frame design provides stability and adaptability. Integrated warming base can be activated for better surgical outcomes. Gas anesthesia compatible. East to clean and disinfect, durable surface.
Includes a 100 micron accuracy 3-axes, left-hand manipulator arm, rat adaptor, traditional (18˚) ear bars, and corner clamp probe holder for accurate placement of electrodes, micropipettes, and other devices.
Available in dual, ultra-precise, digital or motorized models.

ORDERING INFORMATION

SKU	Description
51600	Stereotaxic Instruments
Other models and accessories on request	

Application

The most common applications include brain lesions and injections, electrophysiology both single unit and local field recordings, brain cannulation, microdialysis, deep brain stimulation (DBS). In essence stereotaxic frames provide the necessary precision and reproducibility to access and investigate rodent brain.

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MORE THAN 40,000 CITATIONS!

TRADITION AND INNOVATION

Ugo Basile's device are cited in more than 40,000 peer-reviewed papers. Our devices are "the classic"in most cases and "the brand new" ones in many others. We work with scientists to transform their ideas into successful instruments that also other scientists will benefit from.

THE UGO BASILE PHILOSOPHY

Ugo Basile products are the result of the company's manufacturing expertise, since 1963. We can customize and create ad hoc products that match your needs.

YOUR SCIENCE, OUR DEVICES

Ugo Basile legacy and current efforts all drive to the same direction of tradition and innovation, coupling classic instrumentation to continuous release of new devices, which often become standard tools for neuroscientists across the globe.

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Connect with us

Ugo Basile is the world leading company for in-house manufacturing of Behavioral Research devices. We have a large network of experienced partners worldwide.

Partner informations