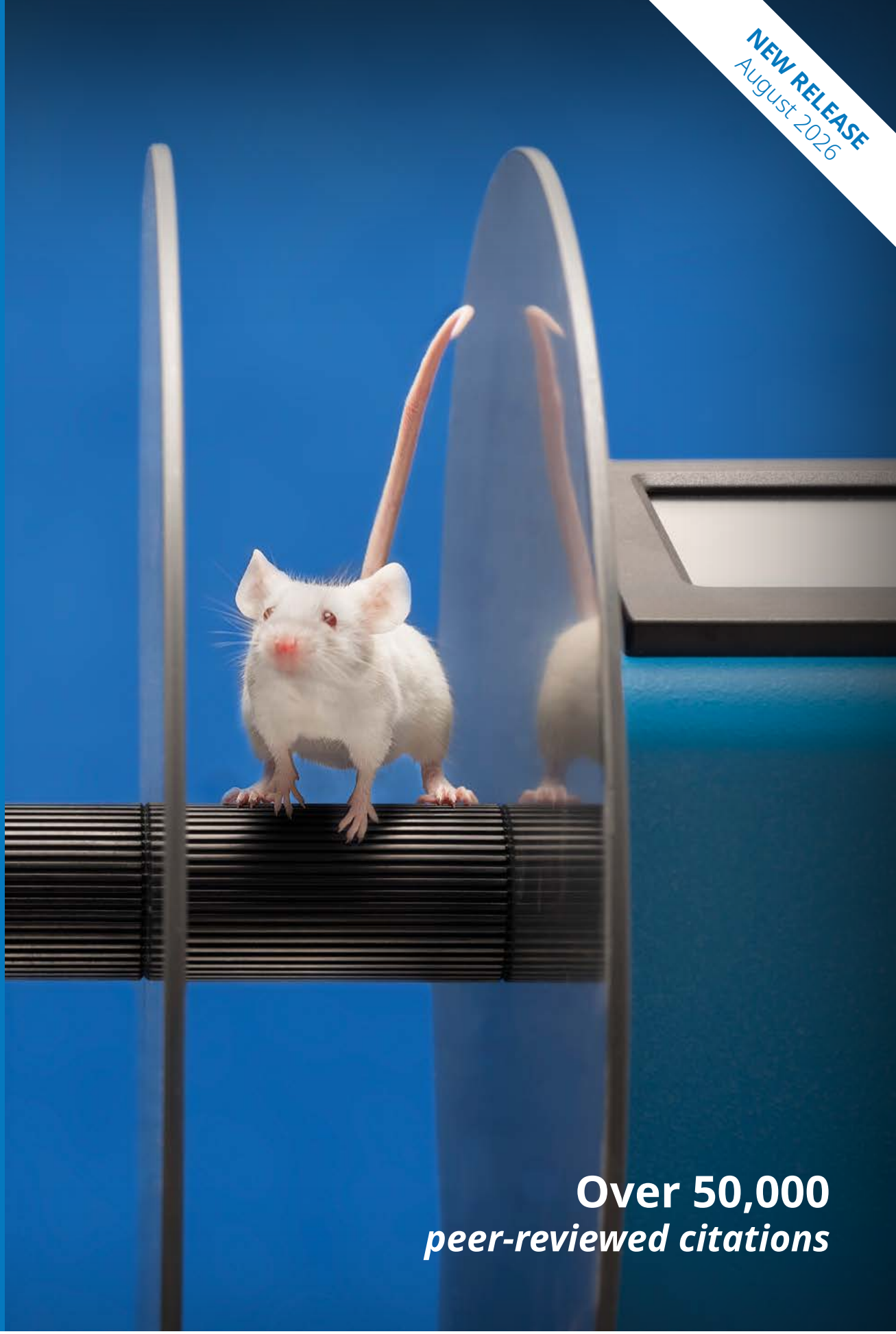
UGO BASILE CATALOGUE

NEW RELEASE
August 2026



Over 50,000
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TRANSFORMING IDEAS INTO INSTRUMENTS

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YOUR COMPANION IN DISCOVERY SINCE **1963**



Complete GA.I.T. setup including the GA.I.T. hardware with corridor, 45° mirror, frontal high-speed camera and lateral cages, plus a preconfigured PC with monitor, keyboard and mouse.

GA.I.T - AI matches Gait Analysis

AI-powered non-invasive assessment of pain-related gait changes in mice. Compact tabletop system. AI accuracy. No manual corrections.

GA.I.T by Ugo Basile, is a next-generation AI-powered Gait Analysis system for mice, designed to simplify data acquisition, analysis and data export in preclinical locomotion studies on rodents.

Unlike contrast-based systems, GA.I.T uses deep learning algorithms to automatically detect paws and body landmarks with virtually 100% accuracy, eliminating the need for manual corrections.

The system combines a compact tabletop device, integrated high-frame-rate camera, dual-view acquisition, preconfigured AI software and a dedicated PC in one ready-to-use package. No GPU configuration or complex setup is required: the system is fully operational out of the box.

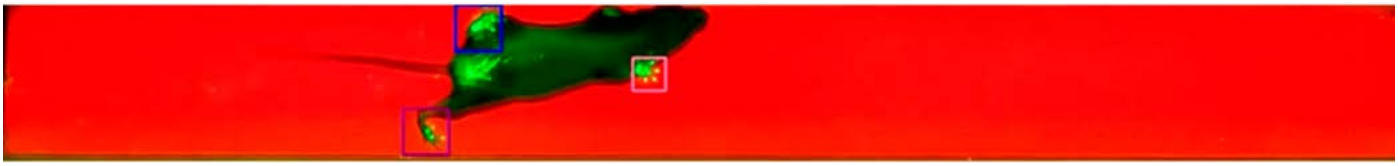
Mice walk spontaneously through the mouse-specific corridor, ensuring naturalistic locomotion without forced movement. The GA.I.T software automatically extracts a comprehensive set of spatial, temporal, postural, interlimb coordination, and tail parameters, covering motor, pain & inflammation and aging research applications.

ORDERING INFORMATION

SKU	Description
48203	GA.I.T Analysis system for mice. Based on AI, include PC and GoPro camera



Specification	
Footprint	69(w) x 56,5(d) cm (does not include PC and 24" monitor)
Total Dimensions	94(w) x 56,5(d) x 45(h) cm
Ventral View - Corridor	66,5(l) x 5,5(w) cm
Lateral View - Glass Dimensions	66,5(l) x 12,5(h) cm
Lateral Cages Internal Dimensions	12(w) x 8(d) x 8(h) cm
Weight	12 kg



Analyzed frame of a mouse with severe gait impairment: the AI-trained system identifies the paws while automatically excluding ventral body contact from the analysis

Features and Benefits	
Precise paw and body part identification via AI-trained software	Virtually 100% accuracy. Greater accuracy and higher inference speed compared to methods based on contrast. Time saving procedures thanks to tailored AI training. No manual revision needed.
Ready-to-use package	Pre-installed PC, camera and software; operational out of the box
Compact tabletop design	Space-saving footprint; purpose-built for mouse-specific corridor
Very high spatial resolution	Allows discrimination of single fingers and related parameters
Affordable price	Accessible even to laboratories with limited budgets.
Comprehensive parameter set	Spatial, temporal, postural, interlimb coordination and tail parameters
Spontaneous locomotion	No forced movement; naturalistic gait acquisition

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Application

Gait Analysis is a sensitive and integrated readout of nervous system function, reflecting changes in neurophysiology, peripheral nerve integrity, spinal circuitry, and central motor planning.
Gait Analysis is suited for a broad range of preclinical research models:

- Motor function and coordination (Parkinson's disease, spinal cord injury, ALS)
- Pain and inflammation models (neuropathic pain, arthritis, post-surgical pain)
- Aging and neurodegeneration research
- Drug efficacy and safety pharmacology studies

In the field of pain-related research, GA.I.T. by ugo Basile provides an objective and repeatable method to quantify functional gait alterations associated with inflammatory, neuropathic, post-surgical and injury-related pain models.

Pain does not only affect sensory thresholds: it can also modify the way animals move, producing measurable changes in paw contact, weight distribution, swing and stance phases, duty cycle and interlimb coordination. By combining spontaneous locomotion recording with AI-powered paw and body-part detection, GA.I.T. helps researchers assess pain-related gait changes and monitor the effects of analgesic treatments, complementing traditional nociceptive tests with functional, quantitative readouts.

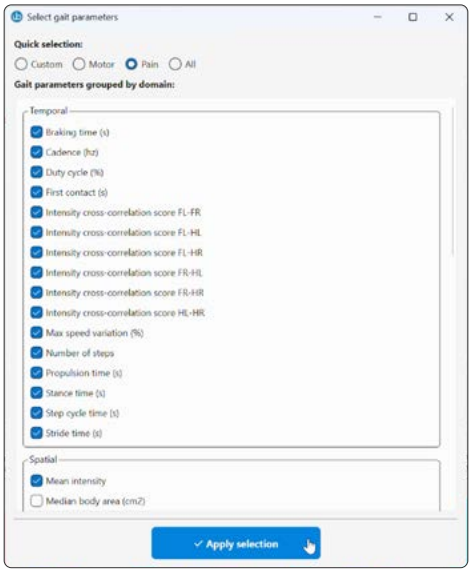
Main Parameters

GA.I.T offers a flexible parameter selection designed to adapt the analysis to different research objectives. Users can choose from application-specific preset parameter sets, select only the measurements relevant to their experimental protocol, or include the complete range of available parameters for a comprehensive assessment. This customizable approach streamlines data analysis while allowing researchers to focus on the most meaningful temporal, spatial, postural and coordination-related outcomes for each study.

GA.I.T includes a dedicated set of parameters for the assessment of pain-related gait alterations.

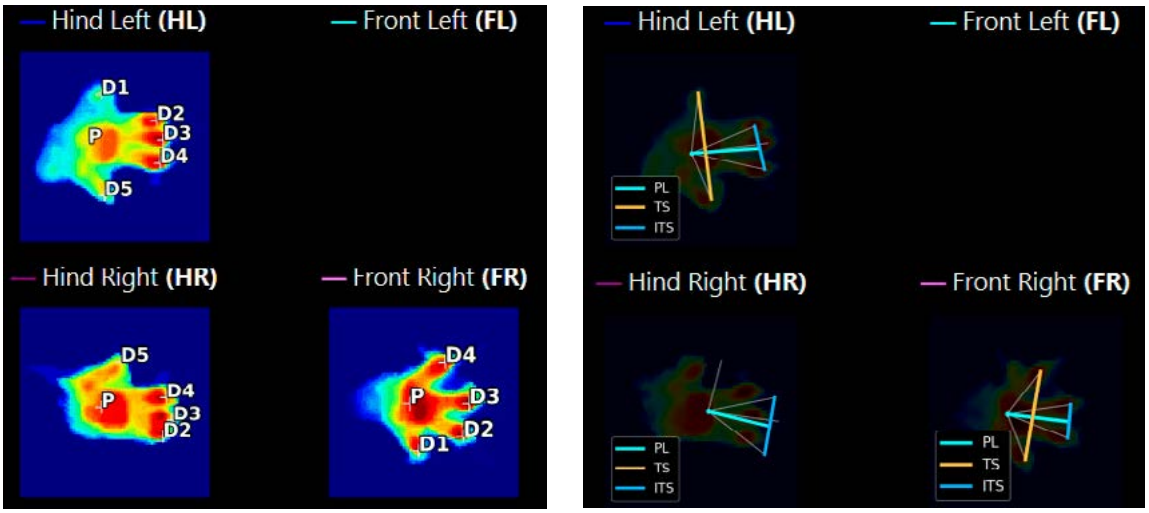
Paw-print intensity, left-to-right intensity ratios, print area, maximum print width and height provide quantitative information on paw contact, limb loading and weight distribution. These measurements can help identify reduced loading of the affected limb, incomplete paw placement and compensatory weight shifting toward the contralateral side.

Temporal parameters such as stance time, duty cycle, braking time and propulsion time further describe protective changes in ground contact, while stride, cadence, velocity and interlimb coordination parameters provide a broader assessment of the resulting adaptations in locomotion.



"Choose Parameters" screen in the Export menu

A unique approach to paw geometry analysis



Pictures showing digit recognition and toe spreading analysis.

Thanks to a tailored AI model specifically developed for mouse footprints, GA.I.T. automatically detects and anatomically labels the position of individual digits, from D1 to D5, for each step. This digit-by-digit recognition enables the automated calculation of four advanced parameters: Palm Length, Toe Spread, Intermediate Toe Spread and the Sciatic Functional Index. Without requiring researchers to manually identify or mark the toes, GA.I.T. provides detailed and objective measurements of paw geometry, expanding automated gait analysis with valuable quantitative information on peripheral nerve function and recovery.

References

Clarke, K.A. et al., (1999), "Gait Analysis in the Mouse", Physiology and Behavior, https://doi.org/10.1016/S0031-9384(98)00343-6
Wertman, V. et al. (2020), "Low-Cost Gait Analysis for Behavioral Phenotyping of Mouse Models of Neuromuscular Disease", JoVE, https://www.jove.com/t/59878/low-cost-gait-analysis-for-behavioral-phenotyping-mouse-models
Clarke, K.A. et al., (2001) "Development and consistency of gait in the mouse", https://doi.org/10.1016/S0031-9384(01)00444-9
Amende, I. et al., (2005), "Gait dynamics in mouse models of Parkinson's disease and Huntington's disease", Journal of NeuroEngineering and Rehabilitation https://link.springer.com/article/10.1186/1743-0003-2-20

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
Animal weight	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.:

- Pain-depressed behaviors and analgesic effects (Santos et al. 2023)
- Stress-related studies (Cabib et al. 1984)
- 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.



Ceiling of the cylinder

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

References

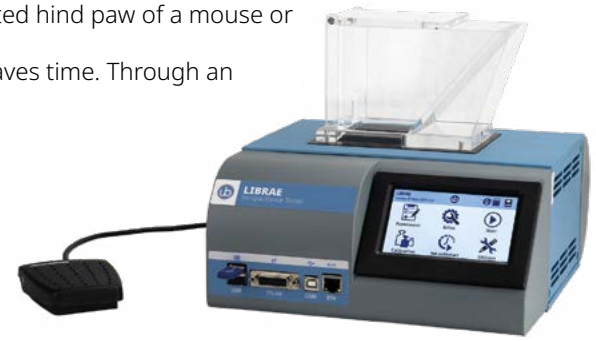
Edna J. Santos et. al., 2023, "Climbing behavior by mice as an endpoint for preclinical assessment of drug effects in the absence and presence of pain", Journal of Ethnopharmacology
Shinichiro Takada et. al., 2019, "Attenuation of Post-Traumatic Osteoarthritis After Anterior Cruciate Ligament Injury 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!"

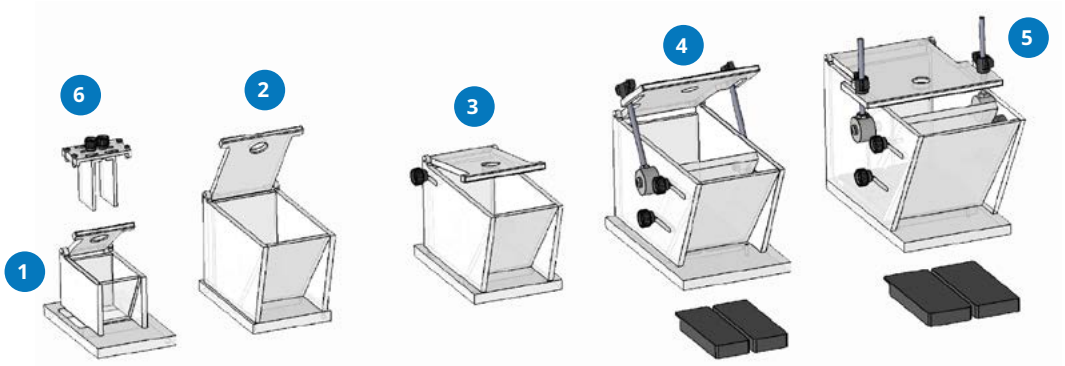
The system is unique as it starts automatically once weight is stable.
Measures the weight distribution difference between injured and unaffected hind paw of a mouse or rat.
Automatic operation reduces operator bias, optimizes repeatability and saves time. Through an intuitive tactile interface the operator 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.

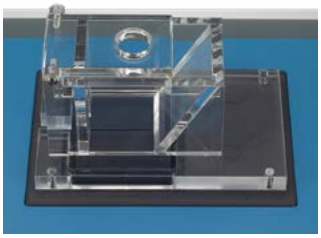


ORDERING INFORMATION

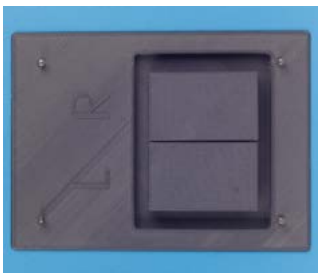
SKU	Description
47882	Librae for Rats
47883	Librae for Mice
47885	Librae for Rats and Mice
47880-002 (2)	Librae Incapacitance tester restrainer for rat up to 200 gr
47880-003 (1)	Librae Incapacitance tester restrainer for mice
47880-004 (3)	Librae Incapacitance tester adjustable restrainer for rats up to 250 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	+/- 0.05%
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 (0.008 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	Electronic Von Frey, including controller 38450-001 with software, Von Frey Applicator 38450-004 and pointing prism
38450-S	Electronic Von Frey, including controller 38450-001 with software, and Von Frey Applicator (without pointing prism.)
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. Suggested for forces ≥5 gr, otherwise use the Dynamic Plantar.

Features and Benefits	
Resolution: 0.1g	High Accuracy
High Accuracy	Wide range of animals



Eppendorf tip *Nitinol tip*

Diameters of tip

References

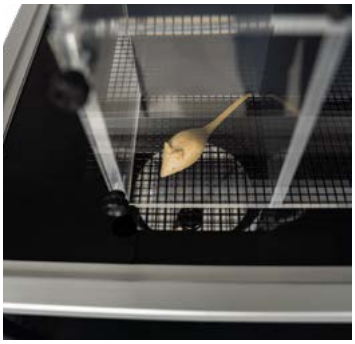
Yocasta Alvarez-Bagnarol, et al., 2023, "Inhibition of dorsal raphe GABAergic neurons blocks hyperalgesia during heroin withdrawal", Neuropsychopharmacology
Chengyong Guet al., 2023, "MAGL regulates synovial macrophage polarization vis inhibition of mitophagy in osteoarthritic pain", Molecular Medicine 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 0.5 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	0.5 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 for orofacial pain
37370-278	Additional Stimulation Base, complete with glass pane and animal enclosure

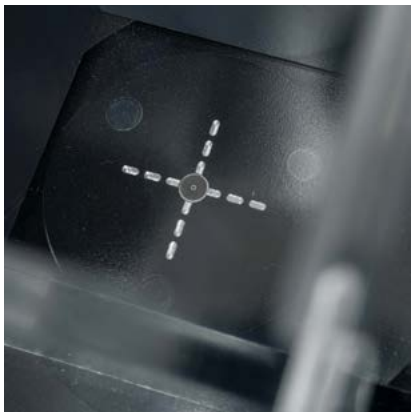


Emitter/Detector unit

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

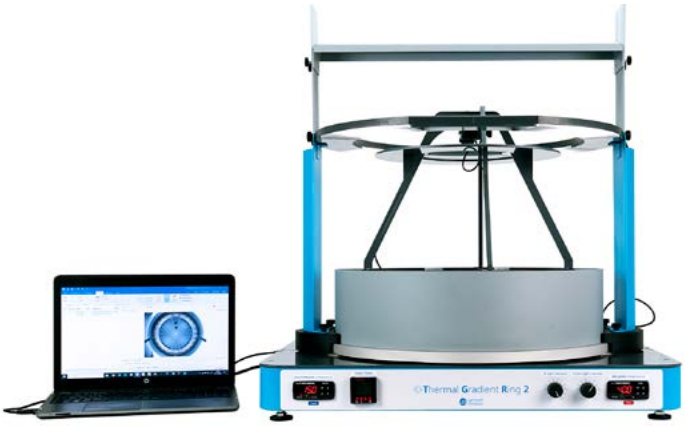
The Durham Holders have distinct advantages which make them ideal as accessories to the classical Hargreaves and Dynamic Plantar test, by allowing the heat stimulation of the orofacial area and its withdrawal. Quantification of localized hypersensitivity in the trigeminal area is common in the clinic, 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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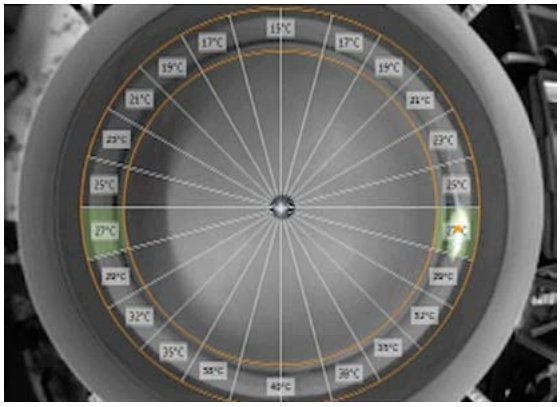
Thermal Conditioned Cabinet for Thermal Gradient Ring

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
35680-US	Thermal conditioned cabinet ready to hold 2 TGR devices (for USA 220/240 Volt US plug)
35680-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
Hakim, S. et al. (2025), "Macrophages protect against sensory axon loss in peripheral neuropathy", Nature
Tinajero, A. et al. (2025), "Spontaneous and pharmacologically induced hypothermia protect mice against endotoxic shock", British Journal of Pharmacology
Tominaga, M. et al (2024), "Thermal gradient ring for analysis of temperature-dependent behaviors involving TRP channels in mice", The Journal of Physiological Sciences
Zimmermann, K. et al. (2024), "Topical menthol, a pharmacological cold mimic, induces cold sensitivity, adaptive thermogenesis and brown adipose tissue activation in mice", Diabetes, Obesity, Metabolism
Gaffney, C. M. et al. (2024), "Inflammatory Neuropathy in Mouse and Primate Models of Colorectal Cancer", bioRxiv
Tominaga, M. et al. (2023) "Involvement of skin repetitive in temperature detection regulated by TMEM79 in mice", Nature Communications
Valek, L. et al. (2022), "Cold avoidance and heat pain hypersensitivity in neuronal nucleoredoxin knockout mice", Elsevier
Tominaga, M. et al. (2022) "Thermal gradient ring reveals thermosensory changes in diabetic peripheral neuropathy in mice", Nature
Xue, Y. et al. (2022) "The Human SCN9AR185H Point Mutation Induces Pain Hypersensitivity and Spontaneous Pain in Mice", Frontiers in Molecular Neuroscience
Tominaga, M. et al. (2022) "Thermal gradient ring reveals different temperature-dependent behaviors in mice lacking thermosensitive TRP channels", The Journal of Physiological Sciences
Valek, L. et al. (2021), "Prodromal sensory neuropathy in Pink1-/-SNCAA53T double mutant Parkinson mice", Neuropathology and Applied Neurobiology
Bertamino, A. et al. (2020), "Exploration of TRPM8 Binding Sites by β-Carboline-Based Antagonists and Their In Vitro Characterization and In Vivo Analgesic Activities", Journal of Medical Chemistry
Valek, L. et al. (2020) 'Early prodromal sensory neuropathy in Pink1-SNCA double mutant Parkinson mice', Research Square
Zimmerman, K. et al. (2017), "Cold Temperature Encoding by Cutaneous TRPA1 and TRPM8-Carrying Fibers in the Mouse", Frontiers in Molecular Neuroscience
Zimmerman, K. et al. (2016), "Comprehensive thermal preference phenotyping in mice using a novel automated circular gradient assay" Journal Temperature

Hot/Cold Plate

"Measures hyperalgesia and cold 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



Screenshot of Keypad events settings

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

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

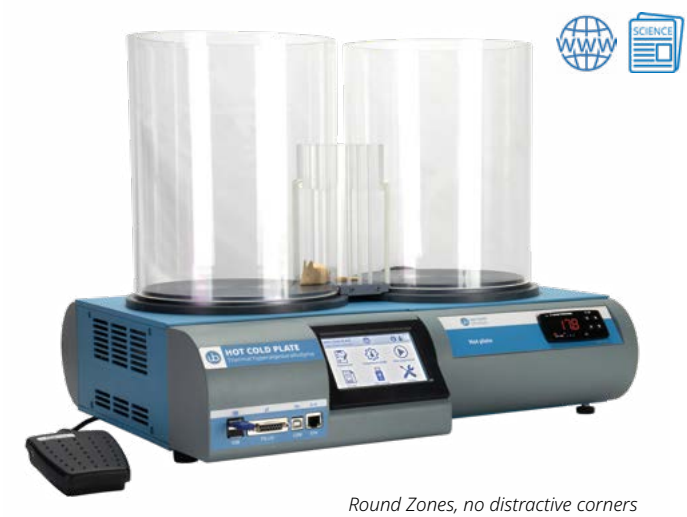
Chengyong Gu et al., 2023, "MAGL regulates synovial macrophage polarization vis inhibition of mitophagy in osteoarthritic pain", Molecular Medicine Reports
Eva Mercado et al., "SGK1.1 isoform is involved in nociceptive modulation, offering a protective effect against noxious cold stimulus in a sexually dimorphic manner", Pharmacology Biochemistry and Behavior
oritz Moller et al., 2022, "The Role of AlphαSynuclein 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

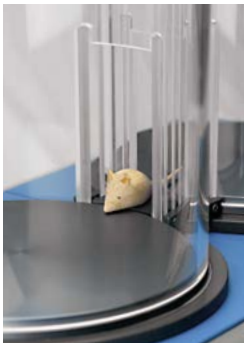
The Thermal Place Preference Test delivers unambiguous information on temperature preference and pain thresholds in mice and rats allowing for automatization of behavior and unambiguous scoring (optimized for optional animal video-tracking).
Compared to the classic Hot/Cold Plate, the scoring is 100% 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.



PAM used for joints or other body parts

ORDERING INFORMATION

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

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



Pressure Applicator (Pincher) option for the PAM used on paw

References

Hidenobu Tamai et al., 2023, "Transient receptor potential ankyrin 1 in the knee is involved in osteoarthritis pain", 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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