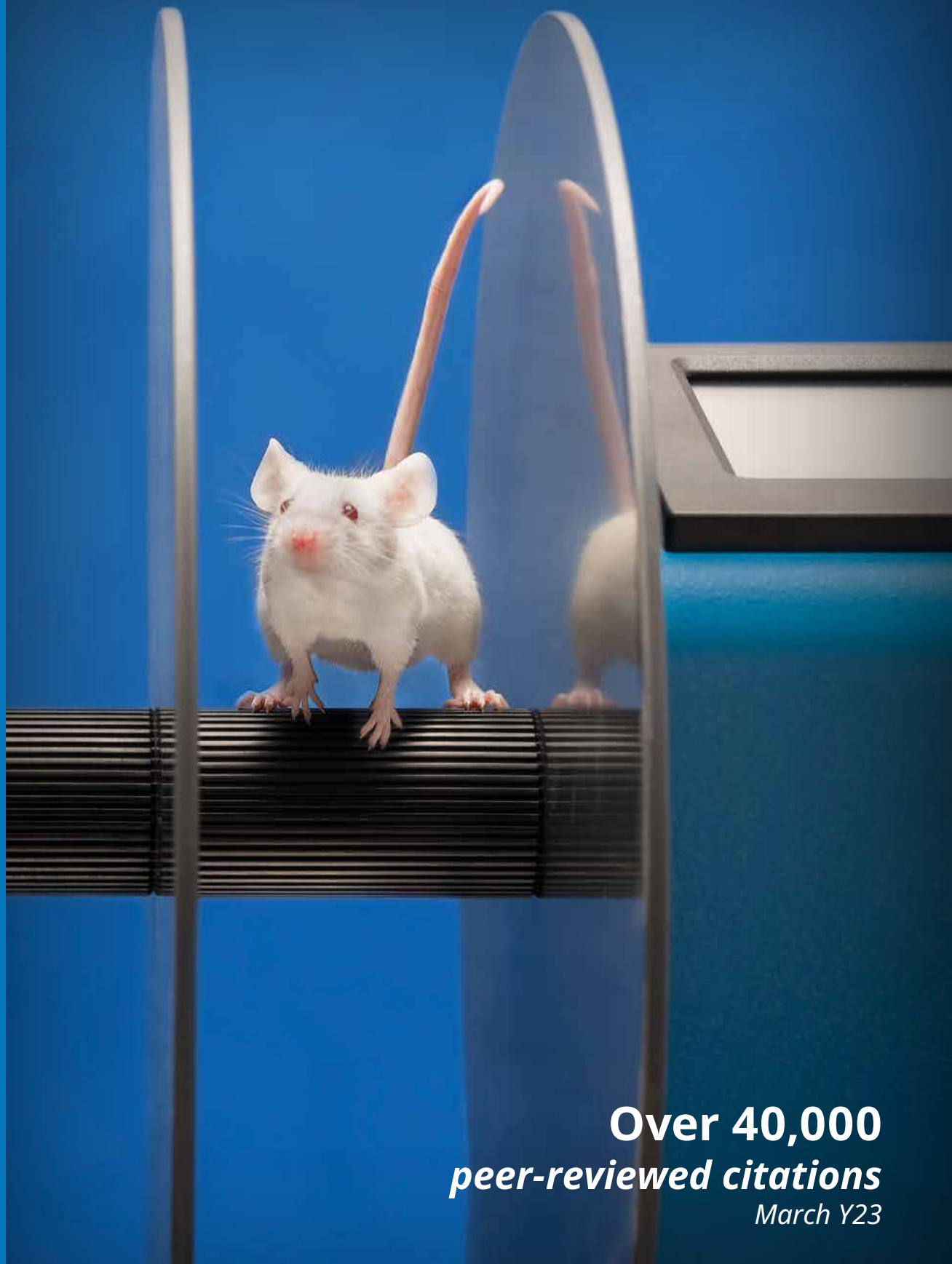


# UGO BASILE CATALOGUE



**Over 40,000**  
*peer-reviewed citations*  
March Y23



**TRANSFORMING IDEAS  
INTO INSTRUMENTS**



**ugo basile®**  
TRANSFORMING IDEAS  
INTO INSTRUMENTS



## 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 that provide optimal results with video-tracking software thanks to their very high contrast and non reflective surface. Designed for easy set-up and cleaning. The maze surface textures were selected specifically to maximize rodent comfort.

### MOTORY COORDINATION



Measurement of motor function can be used to assess the effect of drugs, to characterize transgenic or knock-out phenotypes, or other experimental conditions in mice and rats.

### TRANSDUCERS AND RECORDERS



Isolated tissue bath assays are a classical pharmacological tool for evaluating dose-response relationships in a myriad of contractile tissues.

### MISCELLANEOUS ECT/LMD



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

### VENTILATORS AND ANESTHESIA



Experimental procedures on animals often require anesthesia and/or assisted ventilation to be performed.

## WARRANTY & UB-CARE

Ugo Basile really understands and evaluates the needs of the scientists and researchers from all over the world. Our main concern is not only about efficiency and accuracy but also about providing highly reliable instruments that can last for years.

For this reason we feel confident in giving to all our products a standard 12 months warranty plus other 12 months for FREE by registering it on our website at: [register.ugobasile.com](http://register.ugobasile.com).

A paid service called "UB-CARE" is available for most of our products to extend the 2 years warranty for 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 a motivated team. The great advantage is the possibility for the R&D department to develop and build custom request products in a very short time.

## CONTACTS

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**ugo basile®**  
TRANSFORMING IDEAS  
INTO INSTRUMENTS

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## Dynamic Plantar Aesthesiometer

*Automated device for the detection of mechanical stimulation*

Automates the assessment of "touch sensitivity" on the plantar surface of rats or mice.

For assessment of hypersensitivity and allodynia for analgesia, nociceptive, neuropathic and postsurgical studies.

### ORDERING INFORMATION

| SKU       | Description  |
|-----------|--|
| 37550     | Dynamic Plantar Aesthesiometer   |
| 37100     | Set of 2 Durham Holders for Orofacial Stimulation                                      |
| 37450-278 | Additional Stimulation Base, complete with perforated metal sheet and animal enclosure |



### 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 or 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.

#### Features and Benefits

|                                    |   |
|------------------------------------|---|
| 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                   |
| The force is automatically applied | Consistency in force application, rate and direction        |

## e-VF electronic Von Frey

*Handheld 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.

### ORDERING INFORMATION

| SKU       | Description  |
|-----------|--|
| 38450     | e-VF Electronic Von Frey   |
| 37450-278 | Base assembly for plantar stimulation, with perforated metal sheet and animal-enclosure for up to 6 rats or 12 mice. |



### 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 (optional) and the capability to record automatically the force when the paw withdraws.

#### Features and Benefits

|                             |                       |
|-----------------------------|-----------------------|
| Resolution: 0.1g            | High Accuracy         |
| Max Applicable Force: 1000g | Wide range of animals |



Eppendorf tip

Nitinol tip



## Analgesy-Meter

### Randall-Selitto paw pressure method

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 drugs for anti-nociceptive studies, in healthy or inflamed limbs.

The device applies a steady increasing force, starting and stopping using the foot pedal. No calibration required. 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           |

### Application

The Ugo Basile Analgesy-Meter has been designed to perform rapid and precise screening of analgesic drugs on the normal and inflamed 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 upon model. 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 leave the paw without any researcher action.

### 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 |

## Pressure Application Measurement (PAM)

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

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

Once saved, data can be browsed on the control unit and/or transferred to a PC in proprietary, Excel or text format, to be managed by most statistical analysis packages available on the market.



Pressure Applicator (Pincher) option for the PAM

### 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 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 and data transfer.

### Specifications

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



## Librae - Incapacitance tester

*Unique auto-start features! Faster experimental procedures*

Measures the weight distribution difference between an injured and unaffected hind paw of a mouse or rat.

For the assessment of spontaneous pain in osteoarthritis, bone cancer, nerve injury and post-operative pain studies.

Automatic operation reduces operator bias, optimizes repeatability and saves time. Easy to set up. Data visualization to monitor trends. Fast and easy cleaning procedures.

### ORDERING INFORMATION

| SKU       | Description   |
|-----------|---|
| 47882     | Librae for Rats   |
| 47883     | Librae for Mice   |
| 47885     | Librae for Rats and Mice  |
| 47880-002 | Librae Incapacitance tester restrainer for rat in clear perspex                 |
| 47880-003 | Librae Incapacitance tester restrainer for mice in clear perspex                |
| 47880-004 | Librae Incapacitance tester adjustable restrainer for fat rats in clear perspex |



### Application

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 plot charts display on line the experiment output 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 are easily calibrated with the provided reference weight and show no screws or other parts potentially interfering with the animal, for a maximized experiment repeatability. Between two animals, the foot pads can be cleaned in a few seconds, being magnetically attached to the base.



*Easy side identification magnetic foot pads!*

### Features and Benefits

|                              |   |
|------------------------------|---|
| Autostart Features           | Automate the measurements by identifying immobility windows |
| Magnetic Pads                | Easy to be cleaned  |
| High precision force sensors | 0.1g precision  |

## Orofacial - Trigeminal Pain

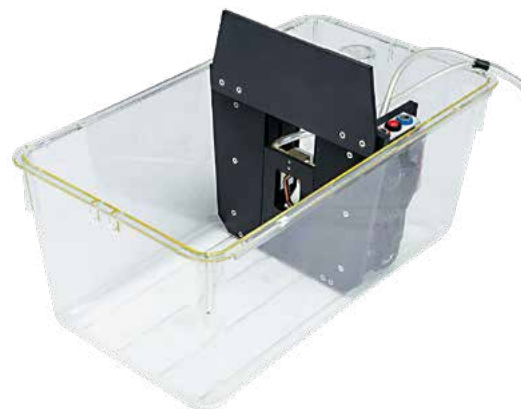
*Operating up to 16 cages simultaneously*

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 area. It is innervated by the trigeminal nerve and its related pain conditions can be investigated in up to 16 rodents/ cages at the time.

### ORDERING INFORMATION

| SKU       | Description   |
|-----------|---|
| 31300     | Orofacial Stimulation Test                            |
| 31300-323 | Optional Mouse Adaptor Kit                            |
| 31300-023 | Orofacial mouse adjustable for mechanical stimulation |
| 31300-024 | Orofacial mouse kit wall for thermal stimulation      |



### 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 ambient temperature up to 70°C  |
| Mechanical Stimulation | 3 mechanical stimulators with different wire number, 1 blank for habituation<br>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   |

## Plantar Test - Hargreaves Apparatus

*Automatic detection of paw withdrawal, for hyperalgesia screening*

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.

Unique: paw withdrawal latency is automatically detected by the Ugo Basile Plantar Test only. Manual scoring is also an option.



### 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 |



### 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)

#### 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)                                 |

## Tail Flick - Thermal stimulation

*Highly reproducible thermal stimulation test*

Accurately measures the nociceptive threshold to infrared heat stimulus on the rat or mouse tail. Used for rapid screening of analgesic drugs by measuring reaction time to heat, even in anesthetized animals, crucial for repeated tests, thanks to the reflexive nature of the tail flick response.

Adjustable I.R. intensity, bright touch-screen display with intuitive controls. Comfortable surface for the animal. Latency and thermal intensity data are automatically saved.

**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             |

### Application

The Tail Flick Unit basically consists of an IR source, whose radiant energy of adjustable intensity is focused by an embodied parabolic mirror on the animal tail.

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.

#### Specifications

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



*Thermal Conditioned Cabinet for Thermal Gradient Ring*

# THERMAL GRADIENT RING (TGR)

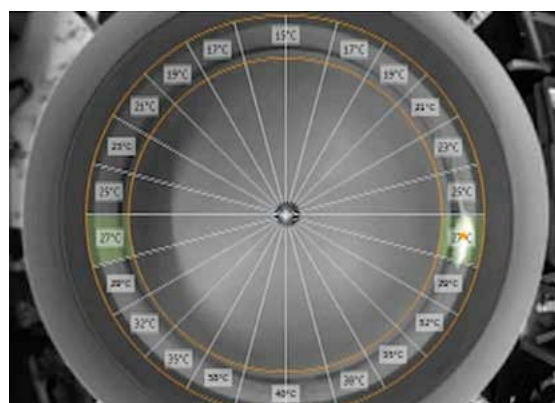
*"An innovative device for Thermal Preference Phenotyping in Mice"*

## Introduction

Records and analyses thermal preference phenotyping in mice, according to Zimmermann's method. For neuropathic pain studies, temperature sensitivity and insensitivity assessment, always with the animal freely moving and with no user's intervention.

Novel circular design. Addresses limitations associated with classic devices. Cost effective. Reproducible data.

- Circular design for bias-free, reproducible data. The mouse is free to move around the track. Overcomes classic challenges of duplicate values, border effects and spatial cues.
- Circular gradient track provides a more complex, more informative physiological environment than devices limited to dual thermal preference.
- Multi thermal gradient between the two extremes of a cold and a hot zone. The insulated aluminium runway has an ID of 45 cm and 57,5 cm OD.
- Each half of the ring is divided into 12 zones, in which the temperature is proportionally divided.
- A heating and a heating/cooling device (based on proven technology employed in Ugo Basile Hot/Cold Plate), are positioned at opposite sides of the ring to create a symmetrical thermal gradient. 6 embedded sensors measure and control the exact temperature gradient in real time.
- Data output includes (automatically calculated)
  1. Preference temperature time course: SD
  2. Time lag to cover zones above a defined temperature (time course)
  3. Zone histogram
  4. 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 environment temperature which is essential for correct thermal balance. Cabinet can hold up to two TGR devices.



## ORDERING INFORMATION

| SKU      | Description   |
|----------|---|
| 35550    | TGR - Thermal Gradient Ring                             |
| KB270    | Conditioned Temperature Cabinet                         |
| 35580-US | Thermal conditioned cabinet ready to hold 2 TGR devices |
| 35580-EU | Thermal conditioned cabinet ready to hold 2 TGR devices |

## 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                   | 24 cm        |



## Hot/Cold Plate

*Measures hot and cold hyperalgesia and allodynia*

The classic tool for thermal sensitivity, hyperalgesia and cold allodynia. Patients affected by chronic or neuropathic pain and allodynia do need novel drugs, when even opiates can't relieve such type of signalling to the brain. Multiple peltier elements allow reaching  $-5^{\circ}\text{C}$ / $+65^{\circ}\text{C}$  in an unbeatable short time.

Completely new interface, improved performances and user experience.

### ORDERING INFORMATION

| SKU       | Description                                   |
|-----------|---|
| 35300     | Hot/Cold Plate                                |
| 35150-002 | Optional Additional Hot Plate for TPP (35350) |

### Application

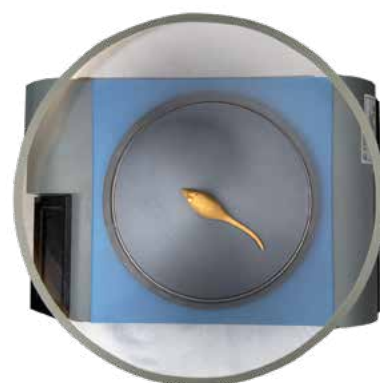
The hot and cold plate tests the pain response in animals, used in basic pain research and in testing the effectiveness of analgesics by observing the reaction to pain caused by hot or cold temperature.

Licking/flinching is a rapid response to painful thermal stimuli that is a direct indicator of pain threshold. Jumping represents a more elaborated response, as it encompasses an emotional component of escaping. When a central analgesic agent is administered to the animals, reaction time is markedly increased.

A new keypad USB connected is included for additional scoring of animal behaviors such as licking, stretching, jumping and more.



Animal behavior scoring keypad



#### Specifications

|                       |  |
|-----------------------|--|
| Temperature Range     | From $-5^{\circ}\text{C}$ to $+65^{\circ}\text{C}$ |
| Temperature Precision | $\pm 0.1^{\circ}\text{C}$                          |
| Temperature Modes     | Constant, Standard ramp, Fast ramp, Custom ramp    |

## Thermal Place Preference

*The classic two-temperature choice test*

The Thermal Place Preference Test delivers unambiguous information on temperature preference and pain thresholds in mice and rats.

Compared to the classic Hot/Cold Plate, the scoring is 100% objective and automated via video. The animal location time correlates to its temperature preference, in pain or thermosensation related studies.

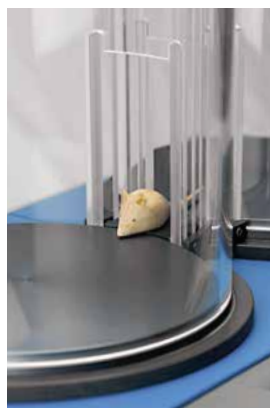
(Optimized for animal video-tracking); software included.

### ORDERING INFORMATION

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



Round Zones, no distractive corners



### Application

Both heat and cold evoke thermosensation, which, if with sufficient intensity, may elicit feelings of pain. Thermosensation is an essential sensory function that is subserved by a variety of transducer molecules. 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 a surface on which the animal is standing. It documents escape behavior in awake, unrestrained animals to innocuous and noxious heating of the floor where the animal is located. Animals learn to minimize pain by escaping to the opposite less-heated side; escape latency and exploration episodes on both sides can be recorded automatically.

#### 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 |

## Plethysmometer

### *Paw swelling in rodent inflamed paws*

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

### ORDERING INFORMATION

| SKU   | Description                     |
|-------|---------------------------------|
| 37140 | Plethysmometer Standard Package |

### Application

The Plethysmometer is an instrument designed to measure small changes in volume, usually via the displacement of water. In the 60s, Ugo Basile developed the first original device, designed specifically to measure paw swelling in rodents, since then, thousands of scientists have relied on our Plethysmometer to conduct their research on inflammation, publishing almost 3.000 scientific papers!

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.



### 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               |

## Durham Holders

### *Colored red to be invisible to rodents*

The Durham Holders are new rat holders for trigeminal stimulation, the newest accessory for use with the Plantar Test and Dynamic Plantar Aesthesiometer, manufactured by Ugo Basile.

### 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 test and they represent a step forward toward a multifactorial measurement of pain-related sensitivity in animal research. Quantification of localized hypersensitivity is common in the clinic, but not in animal experiments.

### 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 |



# STARTLE/PPI System

*"Fully automated experiment, data acquisition and reporting"*

## Application

Deficits of prepulse inhibition, 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 light 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 startling 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.

Deficits of prepulse inhibition, manifesting in the inability to filter out the unnecessary information, have been linked to abnormalities of sensorimotor gating, noted in patients suffering from illnesses like Schizophrenia and Alzheimer's Disease, or under the influence of drugs, surgical manipulations, or mutations. Animal models are widely used to test hypotheses linking genetic components of various diseases.



## ORDERING INFORMATION

| SKU       | Description  |
|-----------|--|
| 48163     | Startle/PPI System for mice, Single Cage System for mouse    |
| 48263     | Startle/PPI System, 2 Cages System                           |
| 48463     | Startle/PPI System, 4 Cages System                           |
| 48003-330 | Large cylindrical mouse restrainer (up to 75g)               |
| 48003-340 | Startle PPI Medium cylindrical mouse restrainer (up to 50g)  |
| 48003-350 | Startle PPI Small cylindrical mouse restrainer (up to 25g)   |
| 48003-360 | Startle PPI XXL cylindrical mouse restrainer (up to 100g)    |
| 48003-370 | Startle PPI Standard cylindrical rat restrainer (up to 250g) |

## 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 |

## Fear Conditioning

*The most popular Fear Conditioning in the world*

Complete system for Cued and Contextual fear conditioning tests using rodents. For neuro-behavioral, pharmacological and genetic studies. Automatic detection of freezing response using ANY-maze special Fear Conditioning. Fast set up and assisted setting up of experiment protocols. Software controlled light, sound and shock. Easy system expansion.

Easy control, easy set up, easy expansion.

Automatically detects the freezing response (Conditional Response), even in total darkness. Reporting information includes total freezing time, number and duration of freezing episodes, latency times between stimuli and freezing.

### ORDERING INFORMATION

| SKU       | Description                        |
|-----------|------------------------------------|
| 46001     | Fear Conditioning - Single Cage    |
| 46001-2   | Fear Conditioning - 2 Cages Setup  |
| 46001-4   | Fear Conditioning - 4 Cages Setup  |
| 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    |



### 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.

#### Specifications

|                 |                                   |
|-----------------|-----------------------------------|
| Shock Intensity | From 0.1 to 2.9mA, in 0.1mA steps |
| Illumination    | Dimmable visible and IR           |
| Sound           | 100Hz-18KHz, 100dB $\pm$ 3dB      |
| White Noise     | 77dB $\pm$ 3dB                    |



## Learned Helplessness

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 they often show analgesic reactions (S.I.A. Stress-Induced Analgesia).

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.

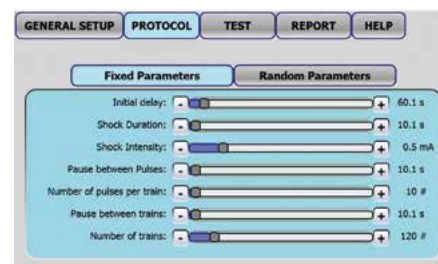
### ORDERING INFORMATION

| 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   |

### Application

A sophisticated generator of unpredictable random shocks delivered to the grid floor of a rodent box (dark isolation cube)

- 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.
- Easy data collection. Includes user-friendly reporting software to collect, visualize and export data into spreadsheets such as Excel.



#### Features and Benefits

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





## 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.

### 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, originally by psychologists, who were interested in animal behavior.

These procedures were later exploited by neuroscientists, who specifically perform systematic studies of the behavioral changes mainly produced by brain lesions, to define the functions of different C.N.S. sections.

Avoidance tests were soon extended to several other areas of research such as 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 |

## Passive Avoidance

### *Efficient butterfly door*

Passive Avoidance Test is used to assess memory function based on the association formed between a specific environmental context, which the animal learns to avoid and an aversive stimulus – represented by a mild foot shock.

Efficient and reliable. Silent, automated 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 Set-Up for Rats |
| 40553     | Passive Avoidance Set-Up for Mice |
| 40500-001 | Control Unit with Touch-screen    |
| 40550-010 | Software and activation code      |

## 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 on small laboratory animals (rodents).



### 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 |



# OPERON (Papaleo-Scheggia's method)

***"The ultimate automated tool for Intra/Extra-dimensional (ID/ED) attentional Set-Shifting Task"***

## Application

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.

- 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.
- 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.
- A dedicated version of ANY-maze video tracking software automatically manages OPERON cues, sensors and data acquisition.



*Pellet dispenser (for each chamber)*



*Operant wall and floor*



*Tactile texture revolver*

## ORDERING INFORMATION

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

## Specifications

|                  |                                  |
|------------------|----------------------------------|
| 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) |

## 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.



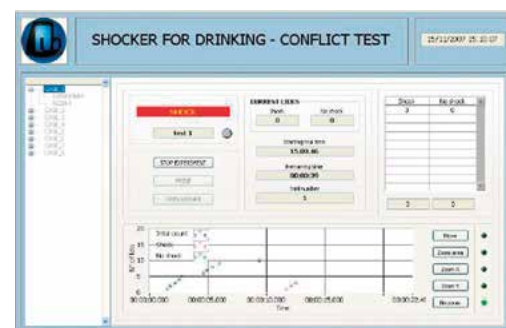
### ORDERING INFORMATION

| 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 receive 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 |

## Conditioned Place Preference

### Visual and tactile preference

A 2-compartment box that offers visual and tactile differences.

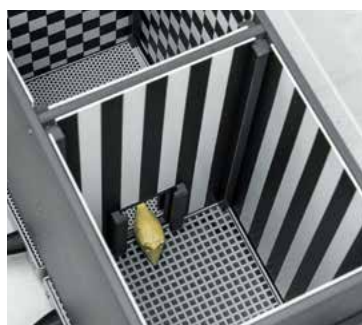
For evaluating the abuse potential of substances and the motivational effects of drugs in mice or rats.

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.

### 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 deduced. 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.

## Open Fields

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

The Open Field is used to assess exploratory behavior. Validated for use in the measurement of anxiety related behaviors. Also suited to the novel object recognition (NOR) test.

Decreased anxiety leads to increased exploratory behavior.

Increased anxiety results in less locomotor motion and preference for the edges of the field.

### ORDERING INFORMATION

| SKU      | Description                                  |
|----------|--|
| 47433    | Square Open Field for Mice Transparent Walls |
| 47432    | Square Open Field for Mice Grey Walls        |
| 47150    | Square Open Field Large + Partitions         |
| 47100    | Square Open Field Large                      |
| 47140-IR | I.R. Circular Open Field for Mice            |
| 47000    | Novel Object Recognition - Set of Objects    |
| LUX100   | LUX - Backlight                              |

Other colors available on request



### Application

The open field test (OFT) is an experiment used to assay general locomotor activity levels and anxiety in rodents in scientific research and willingness to explore.

Increased anxiety will result in less locomotor motion and preference for the edges of the field. Changes in these measures are often used to assess the sedative or stimulant effects of pharmacological agents.

| 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      |



Various colors and shapes available

## NOR - Novel Object Recognition

The object recognition test is now among the most commonly used behavioral tests for rodents. 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.

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.

| Specifications (Customizable on request) |   |
|--|---|
| Standard shapes                          | Squares, pyramids and spheres of various dimension  |
| Standard colors                          | White and black (other colors available on request) |



## LUX - Backlight for IR Mazes

The LUX 100 is an infrared backlight 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 filter and polarizer. 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.

| Specifications          |                     |
|-------------------------|---------------------|
| Dimension               | 100 x 100 x 17,5 cm |
| IR Wave Length Emission | 850 nm              |



## 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 of anxiolytic and anxiogenic agents.



### ORDERING INFORMATION

| SKU   | Description                                |
|-------|--|
| 47442 | Light/Dark Box for Rats, Transparent Walls |
| 47443 | 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 exploratory behavior in response to mild stressors, that is, novel environment and light. Time spent in the lit compartment 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.

The original apparatus consisted of a small dark safe compartment (one third) and a large illuminated aversive compartment (two thirds), while more recently other models have been validated (Takao and Miyakawa 2006) in which the size of the two chambers is the same.

Another difference between the original design and other models available is that the lit compartment is made of opaque white plastic. These differences, namely the size and transparency of the light chamber, allow for the simultaneous detection of bright-space anxiety as well as open space anxiety in the original version of the test.

| 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 |



## Elevated Plus and Zero Mazes

### Optimized for video-tracking softwares

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.

### ORDERING INFORMATION

| SKU   | Description                 |
|---|-----------------------------|
| 40142   | Elevated Plus Maze for Rats |
| 40143   | Elevated Plus Maze for Mice |
| 40162   | Elevated Zero Maze for Rats |
| 40163   | 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  |



IR Backlit compatible version

## 8 Arms Radial Maze

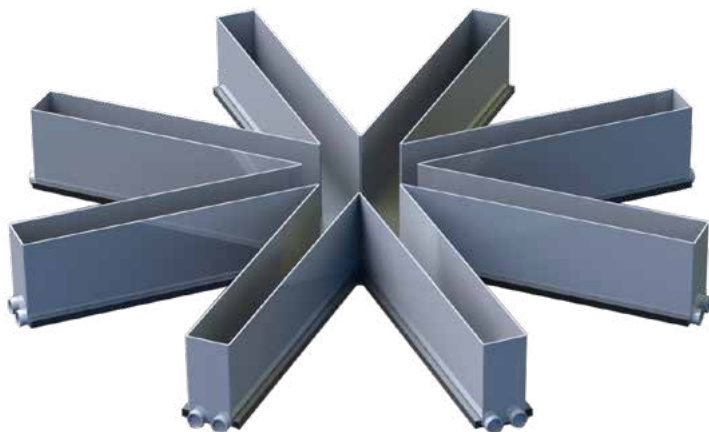
*Optimized for video-tracking*

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 |
| 40153 | 8 Arms Radial Maze for Mice |

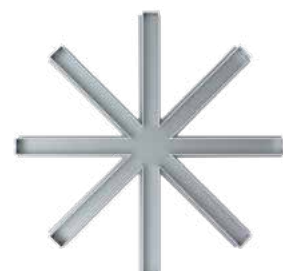


### Application

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 |

## Multi-Maze System

*Complete automated device! Fast and easy to assemble.*

Versatile, automated modular device 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.

### ORDERING INFORMATION

| SKU   | Description                              |
|-------|--|
| 41503 | 3 Arms Configuration                     |
| 41504 | 3 Arms Configuration + Start Compartment |
| 41508 | 8 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.

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

## 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.



### ORDERING INFORMATION

| SKU   | Description     |
|-------|-----------------|
| 40132 | T-Maze for Rats |
| 40133 | T-Maze for Mice |
| 40172 | Y-Maze for Rats |
| 40173 | Y-Maze for Mice |

Other colors available on request

### 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.

| T-Maze           | Mouse | Rat   |
|------------------|-------|-------|
| Short arm length | 35 cm | 50 cm |
| Long arm Length  | 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 |



## Delta Maze

### Unique Ugo Basile Product

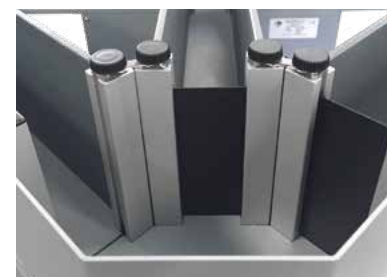
It is a fully automated T-maze with return arms and automatic doors. The special design with automated doors sliding underneath the floor make is compatible with cabled animals for electrophysiology and optogenetics applications. Once the animal has made its arm choice, it can then come back to the starting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

### 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; 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 set-up and facilitates video-tracking.



## Atlantis Platforms

### Hydraulic system to move the platforms

Atlantis System allows platforms in a Morris Water Maze to rise gently to near 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"* 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 Independent 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 |



## Porsolt - Forced Swim Test

The (Porsolt) forced swim test is used to test depression-like behavior in both mice and rats; this test is also known as the Behavioral Despair Test. The test includes placing a rat or mouse inside a cylinder filled with water; this tank is suitable for manual scoring or video-tracking.

Traditionally, floating is used as a parameter to analyze 'hopelessness' and thus depression-like behavior.

- Robust valve for water level adjustment/emptying
- Version for mice and for rats

May be used with top mounted or side mounted cameras for video-tracking and scoring

### ORDERING INFORMATION

| SKU   | Description               |
|-------|---------------------------|
| 40122 | Porsolt for large Rats    |
| 40123 | Porsolt for Mice and Rats |

| Specifications      | Mouse    | Rat      |
|---------------------|----------|----------|
| Diameter            | 20 cm    | 30 cm    |
| Height              | 42 cm    | 62,5 cm  |
| Tail Suspension Lid | Optional | Optional |







## 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.

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                       |
| 40192/3-320                       | Black Cups for Barnes Maze (fake shelters) |
| Other colors available on request |  |



*Olfactory Neutrality Cups*

## Morris Water Maze

### *Designed to operate with Atlantis platforms*

A 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                    |
| Other colors available on request |                                   |



## Application

"Water maze" test was developed by Richard Morris as a test of spatial learning for rodents. It relies on distal 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.

## Sociability

### 3-Chambers Apparatus

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                                     |
|-------|---|
| 46503 | Sociability Test for Mice - Transparent Cage    |
| 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      |



### 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.

| 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              |

## 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) |



## 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

### ORDERING INFORMATION

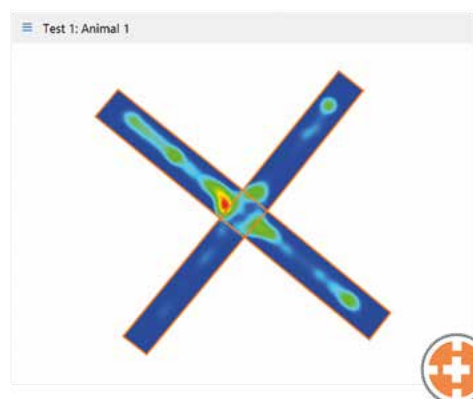
| SKU       | Description              |
|-----------|--------------------------|
| 47400-040 | Video-tracking IR Camera |

### 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                  |

### Application

The monochrome camera has a USB 2.0 interface and is the perfect solution for many industrial automation, quality assurance, security, surveillance and medical applications. The camera includes a C to CS mount adapter, making it compatible to C and CS mount lenses.



## 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

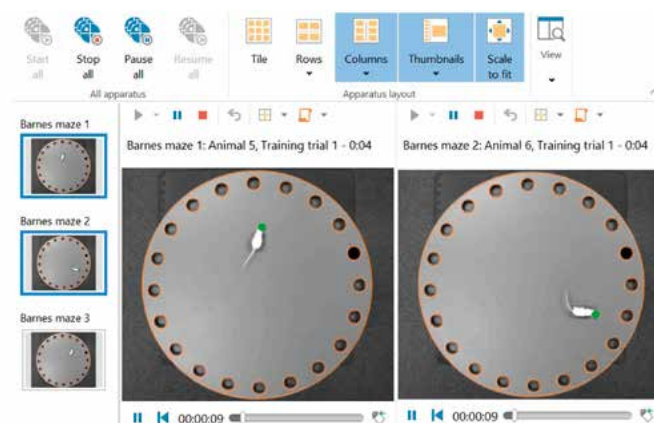
| SKU   | Description                             |
|-------|---|
| 60000 | ANY-Maze flexible video tracking system |

### 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 citation on Google Scholar*

The "Rota-Rod" technique originated by a 1957 paper of N.W. Dunham and T.S. Miya has proved to be of great value in research involving 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.

### 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  |
| 47650-325 | Set of 5 rod enlargers for 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.

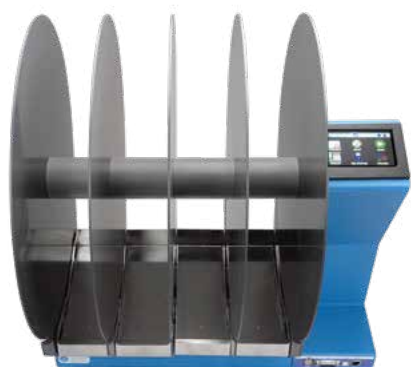
A provided software permits the experiment planning and the creation of custom ramps. Result data can be exported by the provided USB storage



### Rota-Rod for Mice

Assesses motor coordination using natural fear of falling response as motivation. Especially for Parkinson's, ALS and other 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.



### 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.



### Rota-Rod for Fat 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 30 cm.



# Grip Strength Meter

## Automatic peak strength detection

Automatically measures grip strength of forelimb, hind limb, or all four limbs, in rats and mice as they instinctively resist backwards movement. For assessing the effects of substances (drugs, toxins, muscle relaxants) and conditions (disease, ageing, neural damage) on muscle strength.

Integrated sensor and amplifier for precision measurements and consistency. Stand alone (battery powered) 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).

## ORDERING INFORMATION

| SKU   | Description                           |
|-------|---------------------------------------|
| 47200 | Grip Strength Meter for Mice and Rats |



Tiltable metal grid

## Features and Benefits

|  |  |
|--|--|
| Automatic peak detector                                | Peak pull-force automatically stored         |
| 5 tools included: bar, trapeze, plastic and metal grid | Complete system, no other accessories needed |
| Auto-Zeroing routine at every measurement              | No calibration required                      |

## Application

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.

### Automated detection, standalone or PC-based

- 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.
- Verification that desired force is applied at a consistent rate using Slope features.
- 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.
- The device can be used standalone or connected to a PC via the USB port, for monitoring and data recording.
- 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.) Software prompt to auto-zero before making new measurements.
- The meter is provided complete with a set of 3 grasping tools and 2 grids.
- Includes DCA software for signal monitoring.

## 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)                  |



# AUTOMATED TREADMILL

## *"Interchangeable lane assembly for Rats or Mice"*

### Application

*"Exercise is a multifactorial activity that affects virtually every organ and tissue in the body. Not only does exercise contribute many health benefits, but lack of exercise is implicated in many chronic health problems.*

*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".*

Fatigue is a common and frequently poorly-understood symptom in many diseases and disorders. New preclinical assays of fatigue may help to improve current understanding of fatigue-like behavior in rodents and many other exercise paradigms and study future treatment of fatigue.

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.

- 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), with a frequency of 1, 2 or 3 Hz.
- Airpuff stimulus is also available on request.
- Test settings and monitoring are managed on the 4.3" touch-screen in the control unit.
- The running-lane assembly can be manually tilted from -25° to +25°, in steps of 5°.
- Endurance, distance (absolute and relative) and speed are automatically measured and recorded.
- Speed can be selected from 3 to 100m/min, in steps of 1m/min, in constant, accelerating or custom ramp modes.
- A special lane-assembly for tethered mice is also available as an alternative to the standard model.
- A software to set up the experiment and the results is included.



### 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 |



## Running Wheels

*Different setup for many different needs*

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.



### 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 |



### Application

Revolutions of the activity wheel are automatically counted by the LCD counter (which operates with an extended-life battery).

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     |

## Activity Cage

*Spontaneous Activity for Rats and Mice*

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.

### ORDERING INFORMATION

| SKU   | Description            |
|-------|------------------------|
| 47420 | Multiple Activity Cage |

### Application

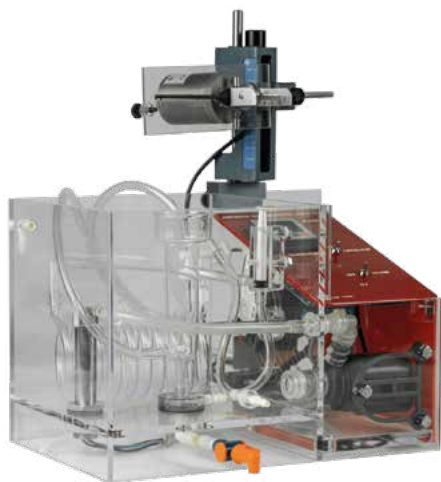
Activity Cages are useful to record spontaneous coordinate activity in rats and mice (individual or groups) and variations of this activity in time, e.g., in the following types of investigations:

- 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



### 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       |



## Isolated Organ Bath

*Ideal for teaching purpose*

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 live muscle tissue for several hours in a controlled environment and provides accurate recording of isometric or isotonic tissue contraction/release.

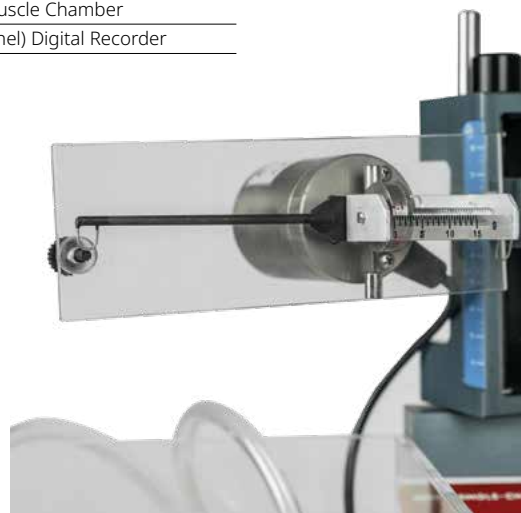
### ORDERING INFORMATION

| 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 |

### Application

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  $\pm 0.1^\circ\text{C}$  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 HV Stimulator can be added to the Isolated Organ Bath.



## Isometric and Isotonic Force Transducer

*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 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 ( $\mu\text{V}$ 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 $\text{gcm}^2$  | 7 $\text{gcm}^2$ | 7 $\text{gcm}^2$ | 7 $\text{gcm}^2$ |
| Lever Arm Displacement                   | 0.5 mm/g          | 0.3 mm/g         | 0.1 mm/g         | 0.6 mm/g         |

| Specifications     | 7006                                 |
|--------------------|--------------------------------------|
| Voltage Output     | 300 $\mu\text{V}$ per mm             |
| Linearity          | $\pm 2\%$ to $\pm 15^\circ$ rotation |
| Excitation Voltage | 6 $\div$ 15 V                        |
| Excitation Current | 20 mA                                |
| Operating Range    | $\pm 15^\circ$                       |
| Level arm Length   | 10 cm                                |
| Level arm travel   | 6 cm                                 |



## Electroconvulsive-Therapy (ECT)

### 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                    |
| 57800-015 | ECT Monitor, complete with connection cables |

### Application

It is particularly useful for:

- 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 pinpointing 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.

6 Hz model: 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.



## Lesion Making Device (LMD)

### Safe, localized, versatile

Compact, direct current (DC) Lesion Maker for localized electrolytic lesions in the brain.

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.





## 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                |

## 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. Gas Anesthesia (compared to injections) 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 providing excellent value.

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  |



## Application

- 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.)



## MORE THAN 40,000 CITATIONS!

### TRADITION AND INNOVATION

The Ugo Basile name is cited in more than 40,000 peer-reviewed papers. The reason for this is that 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. Thanks to this 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 logo

Partner informations