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PAIN and INFLAMMATION

Orofacial Stimulation Test

Fehrenbacher, Henry and Hargreaves Method

Cat. No. 31300

Mechanical Nociception

Thermal Nociception

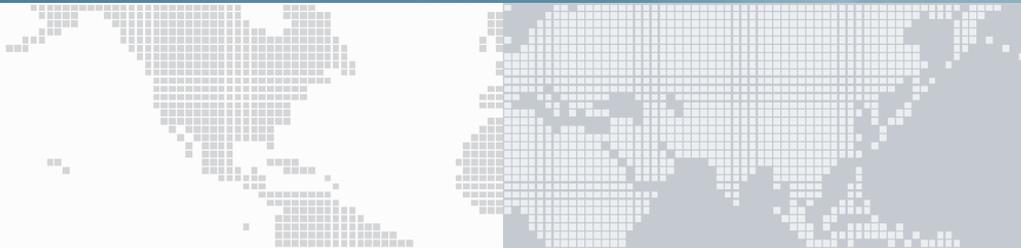
Trigeminal
hyperalgesia

General

The **Orofacial Stimulation Test** by **Ugo Basile** measures hypersensitivity to thermal or mechanical stimulation of the trigeminal area.

Rats voluntarily contact a thermal or a mechanical stimulator with their *unshaved vibrissal pad* in order to access a food reward. Metrics obtained are the **duration** of feeding and the **number of feeding** attempts, measured by interruption of an infrared barrier traversing the opening to the reward.

Feeding duration and number of attempts are strongly dependent on changes in the applied thermal or mechanical stimulus.



Main Features

- Mechanical and thermal nociception assays within the same experiment
- High throughput: up to 16 animals can be tested simultaneously
- Intact vibrissal pad, as the test does not require any shaving
- The ORO-Software, included as standard, manages up to 16 cages

Ugo Basile: more than 25,000 citations

Instrumentation and Methodology

Orofacial pain problems are common and involve structures and mechanisms unique to the trigeminal nerve. Few methods are currently available for orofacial pre-clinical 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 new **Orofacial Stimulation Test**, developed by Fehrenbacher, Henry and Hargreaves, integrates higher-order brain functions into measurements of orofacial nociception.

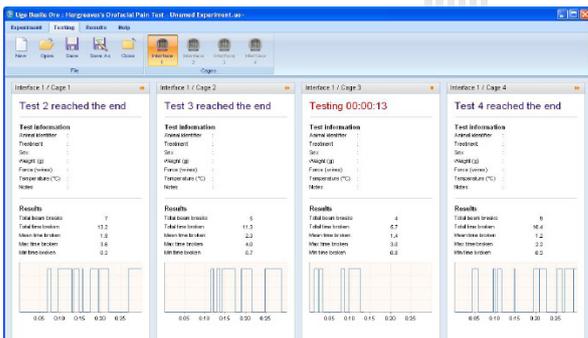
This innovative approach permits highly integrated nociceptive responses to thermal or mechanical stimulation.

Animals are trained & tested in standard home cages.

The snout is inserted through an opening to lick the reward bottle. Tests are performed in the presence of thermal or mechanical stimuli contacting the vibrissal pad.

Following treatment to induce hypersensitivity, (e.g., trigeminal ligation or injection) trials are repeated to determine the effect of treatment on feeding behavior/reward. Assay sensitivity (inflammation-induced decreases in feeding behavior and reversal of hypersensitivity by local and systemic administration of analgesics) has been proven (Hargreaves et alia, ms in prep.); the feeding behavior is strongly correlated to mechanical or thermal orofacial nociception, as the animal must contact the stimulator in order to access the food reward.

The **Ugo Basile Orofacial Stimulation Test** quantifies feeding behavior by measuring and recording the beam-break number and duration (including min, max and mean), via the **ORO-Software** included; the software acquires data from up to 16 cages simultaneously.



Orofacial Software: testing window

The Data are shown in real-time both as numeric summary results and in a graphic format. Data are automatically analyzed across time according to an adjustable time window, independently viewable for each of the 16 cages.

The results of all the tests are available in a spreadsheet format which can easily be copied to other programs for further analysis.

Either the thermal or the mechanical stimulator is mounted onto a **stimulation/detection "wall"**, which also incorporates a drinking bottle and fits inside standard rat home cages (e.g. Tecniplast or Allentown).



Stimulus/detection "walls" mounted into standard home cages

The **thermal stimulator** relies on a copper tubing loop and a circulating water bath, whose temperature can be adjusted from ambient to 70°C, to reach hot nociceptive thresholds. Chin inserts are included to test animals of different size.



The **mechanical stimulator** relies on thin wires attached to a mounting plate. The system comes with several plates, each with a different number of wires in order to apply different force levels to the animal vibrissal pad.



A kit of Mouse adaptors for both thermal and mechanical stimulation is available, see ordering information.

The "System and Method for Assessing Hypersensitivity to Orofacial, Thermal and Mechanical Stimulation" (U.S. Provisional Patent Application 61/235,590) was invented by **J. Fehrenbacher, M. Henry & K. Hargreaves**, in the Lab. of Dr. Hargreaves at **UT San Antonio** and developed commercially by **Ugo Basile R&D**. Dr. Fehrenbacher is now at **IUPUI**.

Ordering Information

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|------------------|---|
| 31300 | Complete system for one animal |
| 31320 | Complete system for two animals |
| 31340 | Complete system for four animals |
| 31300-001 | Electronic unit (four channels) |
| 31300-002 | Additional cage assembly (includes thermal and mechanical stimulators and feeding detector) |
| 31300-003 | Circulating water bath |
| 31300-010 | ORO-Software, for data acquisition and analysis from up to 16 cages |
| 31300-323 | Optional Kit of Mouse adaptors for thermal and mechanical stimulation (for 1 cage) |

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