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Durham Animal Holders

New animal holders for trigeminal stimulation

Cat. No. 37100

- Orofacial Pain assessment
- Mechanical and Thermal Nociception

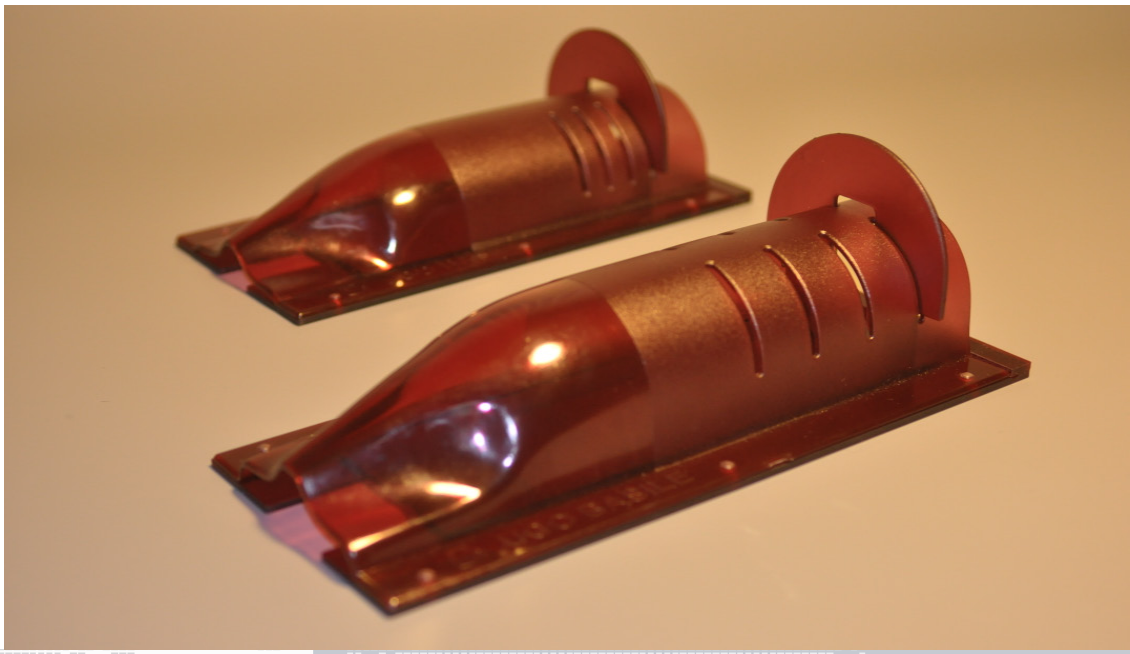
Trigeminal hyperalgesia

General

The **Durham Animal Holders** are the newest accessory for use with the **Plantar Test / Hargreaves Test**, and **Dynamic Plantar Aesthesiometer**, manufactured by Ugo Basile.

These animal holders complete the scope of the infrared (IR) thermal stimulus of the Plantar Test, or the mechanical stimulus of the Dynamic Plantar Aesthesiometer, used for assessing hind paw withdrawal. This new invention allows the application of the same stimulus to the region innervated by the trigeminal nerve.

The 37100 includes two holders, form molded for testing specific size ranges of animals; the two sizes have been optimized for yourg adult rats as well as for bigger rats.



"Very nicely done - easy to use and it greatly facilitates consistent handling of animals"

Dr. Ken Hargreaves, UT Texas

Main Features

- Correlation thresholds in submandibular (trigeminal) region and hindpaw plantar surface
- Test orofacial nociception using a standard Plantar Test (Hargreaves) device, a Dynamic Plantar Aesthesiometer, or an eVF Electronic Von Frey

Ugo Basile: more than 10,000 citations

Innovative design and material

The Durham Holders are designed to hold an animal comfortably and effectievely. They are made of a proprietary polymer with a deep-red color which appears dark to the animal.

The holders conformation is optimized to two specific animal size ranges; the smaller holder will accommodate rats from 175 grams to 250 grams, and the larger holder will accommodate animals from 225 grams to over 400 grams.

In practice, the rat crawls in happily and becomes snugly nestled within the holder. Normally the rats don't back out, but inserting the vertical back plate ensures that the animal stays in place.

The position of the removable back panel insert can be adjusted from slot to slot, which allows the animal to be securely held in place, without being crowded.

The rat crawling towards the front helps quite a lot and the subject is almost self-positioning for applying the IR stimulus to the submandibular region of the rat face.

Access Panels

There are two different windows through which the stimulus may be presented:

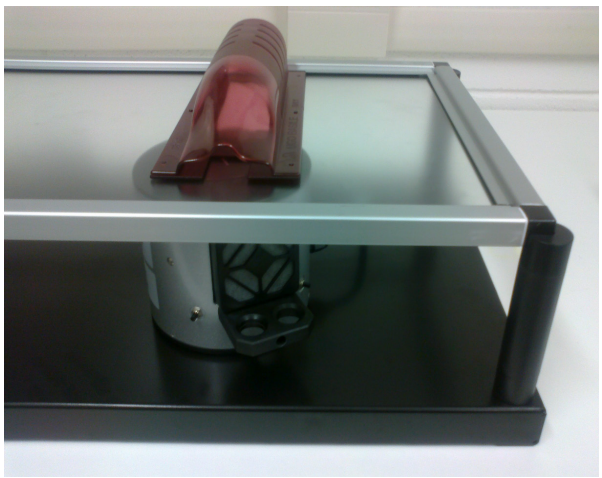
- **Submandibular access panel:**

The opening under the chin is a perfectly sized rectangular aperture just below the animal's chin. It allows the IR or mechanical stimulus to be aimed precisely and to stimulate the area innervated by the mandibular branch of the trigeminal nerve.

The aperture is large enough that both right and/or left side may be individually stimulated!

- **Plantar access panel:**

The holder allows the animal to be positioned in such a way to use the classic Plantar Test instruments for stimulating the hindpaw, as well as the areas innervated by the trigeminal nerve.



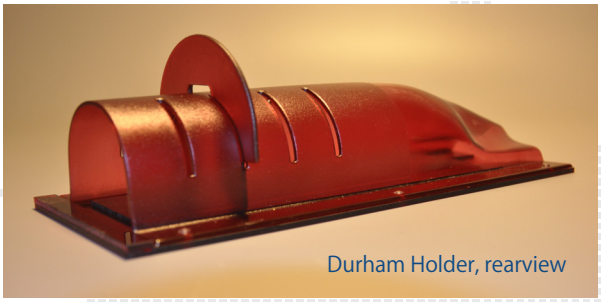
The picture above shows a Durham Holder positioned on a classic Ugo Basile Plantar Test (Hargreaves) device.

Rationale of the technique

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.

The holders may appear similar to the classic Broome style animal holder; however, those restrainers are clunky, made of clear acrylic, and do not have stimulus apertures, so they could never be used for this stimulation.



Durham Holder, rearview

Acknowledgements

The Durham Holders were invented and validated at the Center of Biomedical and Life Sciences at Missouri State University; specifically, in the laboratory of Dr. Paul Durham, director of Biomedical & Life Sciences and Professor of Cell Biology at Missouri State University.
Filip Garrett and Allison Overmyer performed the validations. Prototypes were put together by Larry Vause.

Ordering Information

37100	**Set of two Durham Holders for rats:**	
	37102 medium size	
	37103 large size	
Physical	Weight	0.4 Kg (two holders)
	Gross weight	1.0 Kg
	Packing	39x27x21cm

Bibliography - Method Papers

- F.G. Garrett et alia: "**Validation of a Novel Rat-Holding Device for studying heat- and mechanical-Evoked Trigeminal Nocifensive Behavioral Responses**" *J. Orofacial Pain, 26 No. 4, 336- 344,* ***2012***
- F.G. Garrett, A.E. Overmyer, L.A. Vause, J.L. Hawkins, J.B. Hayden, and P.L. Durham "**Development of a novel device for measuring withdrawal latency by thermal stimulation in rodent facial pain models using the Hargreaves Plantar Apparatus**" *Poster presented at SFN 2010*

Papers mentioning 37100 Orofacial Holders

- R.J. Cady et alia: "**Dual Orexin Receptor Antagonist 12 Inhibits Expression of Proteins in Neurons and Glia Implicated in Peripheral and Central Sensitization**" *Neuroscience 269: 79-92,* ***2014***
- J.L. Hawkins et alia: "**Nicotine Stimulates Expression of Proteins Implicated in Peripheral and Central Sensitization**" *Neuroscience 290: 115-125,* ***2015***