



Topcat Metrology Ltd



"Looking behind the measurement"

www.mousemet.com www.topcatmetrology.com

The MouseMet Dual Modality Test Regime for Mice and Rats System prices from £1950

- Studies make use of many mice. In a new environment, they need to explore and nociceptive testing can only start when they settle. Time is wasted and the mice are stressed each time they are moved to a new environment for the next test.
- Traditionally, testing with von Frey filaments is carried out in a wire floored cage and the mouse is then transferred to a another location for thermal testing (hotplate or tail flick). A system which can test thermal thresholds in the same environment as mechanical clearly causes the mice less stress- and saves substantial time and money.
- **MouseMet measures mechanical AND thermal thresholds, at 2 minute intervals, on groups of 2, 4 or 6 mice** or (with RatMet) on one rat. With additional sets of runs, the acclimation time can be removed completely.

MouseMet Mechanical ("Electronic von Frey")

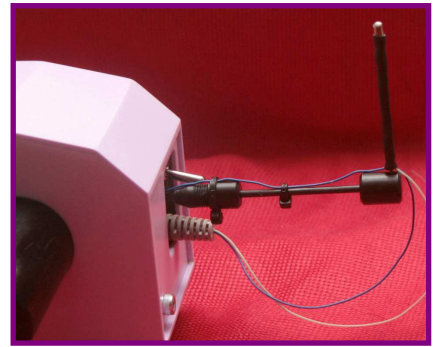
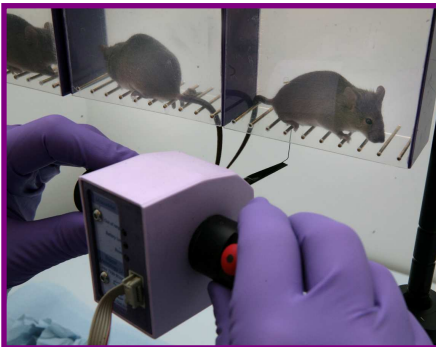
A validated alternative to filaments, with significant technical advantages:

It is the only system with a force range designed specifically for mice and which eliminates the effects of hand tremor on the measurement.

MouseMet Thermal ("Hotplate or Tail flick replacement")

A validated alternative, building on Topcat's 20 years' experience of thermal nociceptive testing.

The thermal probe, just 2mm diameter, is brought gently into contact with the plantar surface of the foot and heated until threshold.



Mechanical thresholds (Electronic von Frey)

MouseMet Mechanical is "soft" in all 3 axes in order to absorb hand tremor. It is quick and easy to use and its force range (0.1 to 7 gf) is more appropriate for mice than other EvF systems. (Rat version also available with 1 – 80 gf).

To apply the force, the probe tip is brought into contact and the transducer rotated by the handles. With the elbows supported comfortably on the bench, this is a very controllable action, minimising operator fatigue and mistakes.

At threshold, the probe is withdrawn and the red button pressed. The graph of force, with the peak measurement, is displayed with a yellow guide line showing a rate of 1gf/sec. The next test may be carried out immediately, although 2 minutes should be allowed between tests on the same foot.

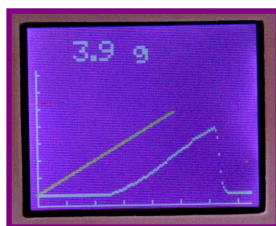
Thermal thresholds

MouseMet Thermal is also "soft" to allow delicate and consistent placement of the probe on the plantar surface.

To start heating, the thermal probe is brought into contact and the transducer rotated by the handles. At the trigger force (factory set at 1gf, but adjustable), the probe will heat automatically, at 2.5 C/sec.

At threshold, the probe is withdrawn. Heating stops and the display holds the threshold temperature until reset is pressed.

The probe takes 1 minute to cool. 5 minutes should be allowed between tests on the same foot.



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The MouseMet Testing Environment

The runs are long and narrow to encourage the mouse to sit pointing left or right, on parallel bars spaced appropriately for the feet. This provides good access to the plantar surface and excellent visibility through the sides of the run.

The support system, for multiples of 2, 4 or 6 runs, is height adjustable, allowing the operator to rotate the handles of the transducer easily with elbows comfortably supported on the bench.



MouseMet Mechanical is faster to use than filaments, providing a threshold for each test (rather than requiring several tests and the up-down or % response calculation). It also allows the tester to check the force ramp on the computer screen immediately.

All thresholds are measured with the same probe. This removes the ambiguity of filament testing where the contact area is different for each one.

The transducer is also more robust than filaments (which give an artificially low threshold force if already bent from previous ill treatment).

Mechanical Specifications:

Force range: 0.1-7gf
Tip diameter: 0.3mm
Power supply: Two PP3 9V batteries
Transducer weight: 170g

MouseMet Thermal has been designed specifically for the plantar surface of a mouse's foot. The probe is a direct development from our well known thermal threshold testing systems for larger species (from rats to horses).

We know that consistency of the application force is crucial for this type of test.

The thermal probe is therefore mounted on a MouseMet mechanical transducer to eliminate the effects of hand tremor and to control precisely the trigger force at which heating starts. This ensures repeatable thermal transfer.

As with all Topcat's systems, there is a thermal cut-out, factory set but adjustable but the user.

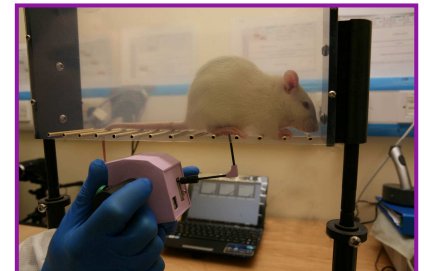
Thermal Specifications:

Heating Rate: 2.5C/sec
Tip diameter: 2mm
Thermal cutout: 60 C
Power supply: Two PP3 9V batteries
Transducer weight: 230g



RatMet

The Mechanical Transducer has a force range of 1-80gf.
The thermal transducer is the same as that for mice.
Runs are supplied individually.



Validation:

MouseMet Mechanical has been validated against von Frey filaments in five studies at three separate laboratories. In all cases, MouseMet data were as tight or tighter than the filament data. In two studies MouseMet detected a significant difference between groups where filaments did not. The posters are available on the validation page of the website, www.mousemet.co.uk

Research Publications (mech system):

Deuis JR et al (2013) <http://dx.doi.org/10.1016/j.pain.2013.05.032>

Deuis JR et al (2014) <http://dx.doi.org/10.1093/neuonc/nou048>

Deuis JR et al (2015) <http://pubs.acs.org/doi/abs/10.1021/acschemneuro.5b00113>

Thermal system:

Deuis JR et al (2016) <http://www.tandfonline.com/doi/full/10.1080/23328940.2016.1157668>

Patents: The MouseMet system is protected by the following patents: GB2489793, GB2489933, US 8,944,008 B2 and is the subject of European Application 12161418.4

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