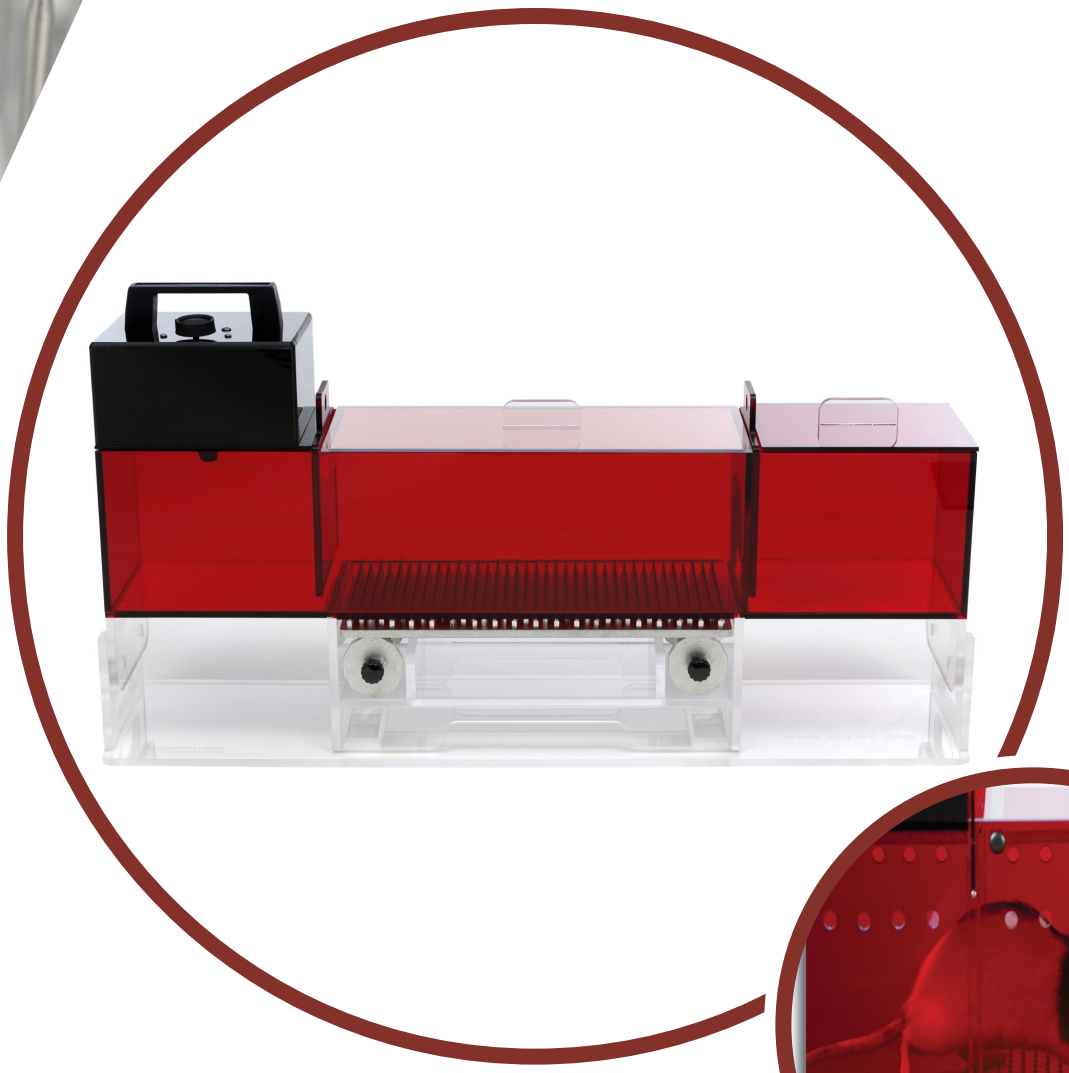
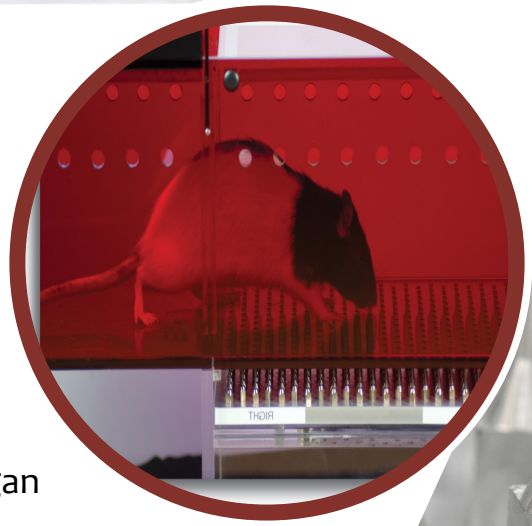
COY LAB PRODUCTS

Flexible Solutions. Reliable Results.

Mechanical Conflict-Avoidance System:

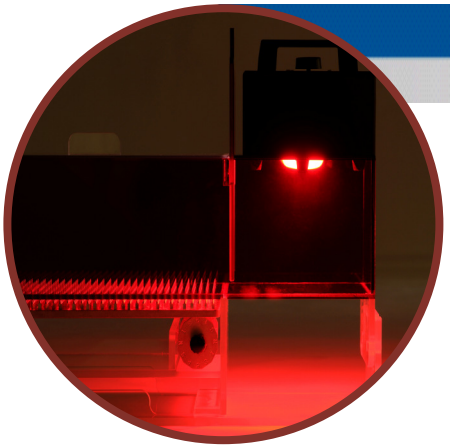
An Operant Analgesia Meter for Rats





➲ MCS – Harte, Morrow Method

- Novel operant approach to preclinical pain research developed at the University of Michigan
- Leverages innate photophobia
- Rodents escape aversive light to rewarding dark chamber by deciding to cross nociceptive probes
- Adaptable to other noxious stimuli



Bright light serves as the aversive stimulus for test initiation

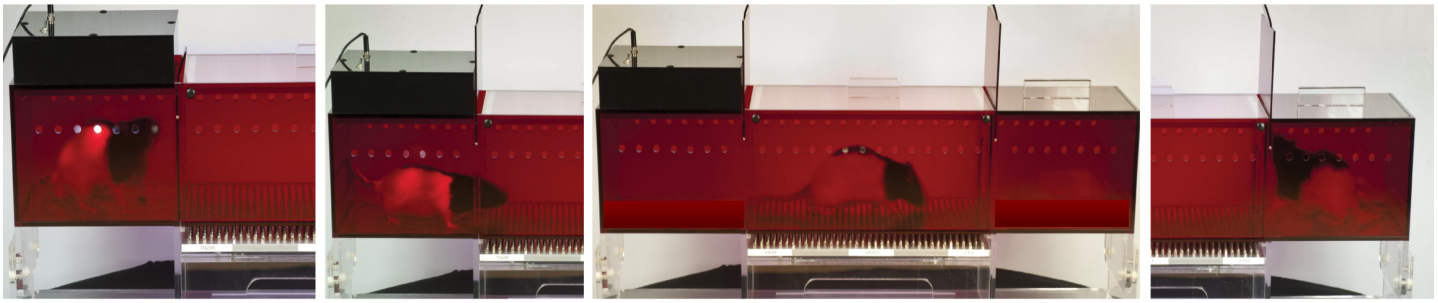
Mechanical Conflict-Avoidance System (MCS)

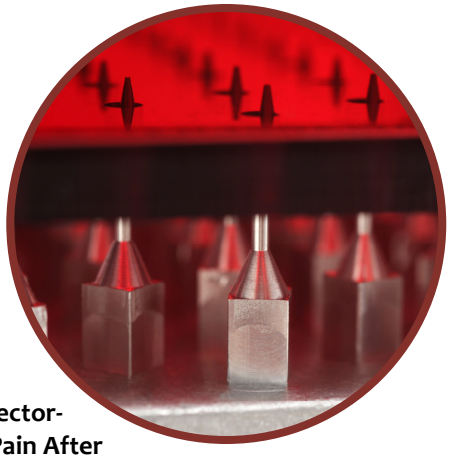
The MCS – Harte, Morrow Method provides an operant method of pain testing with rodents that complements reflexive methods by addressing cognitive and motivational processing. Rodents are placed on one side of a height-adjustable array of nociceptive probes and given the opportunity to cross the array to escape from an aversive lighted area to a preferred dark area. The array consists of blunt tapered probes that are painful but not sharp enough to cause any tissue damage when walked on by the rodent.

Using various pain models, studies can be done with such measured responses as

- Number of complete crosses
- Time to exit the light chamber (latency)
- Time to cross the probes, etc.

Significant stimulus response relationships have been observed between probe height and these measured responses.





Animals can cross an array of nociceptive probes to reach a preferred dark compartment

Publications Utilizing the MCS

Lau, D., Harte, S.E., Marrow, T.J., Mata, M., Fink, D.J. (2012) **Herpes Simplex Virus Vector-Mediated Expression of Interleukin-10 Reduces Below-Level Central Neuropathic Pain After Spinal Cord Injury.** *Neurorehab Neural Repair: September 2012 vol. 26 no 7: 889-897*

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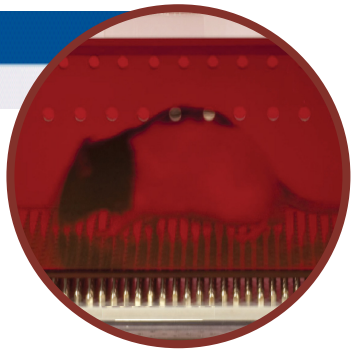
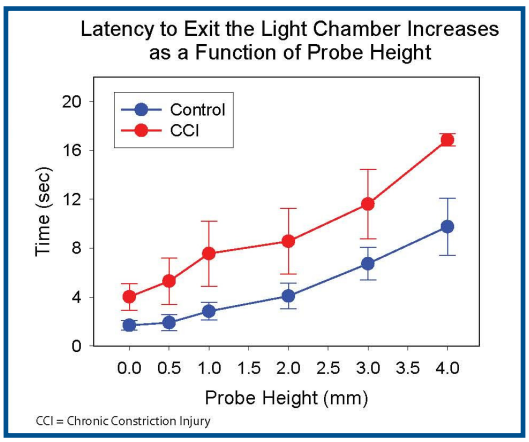
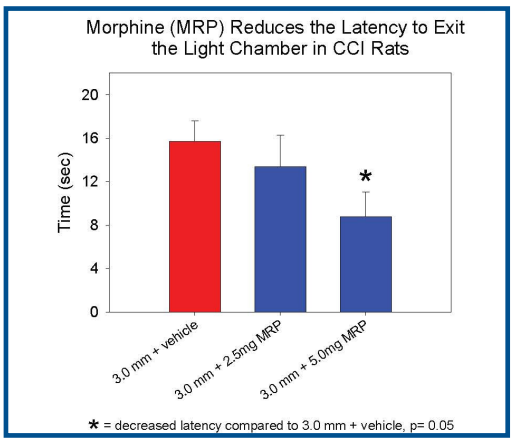
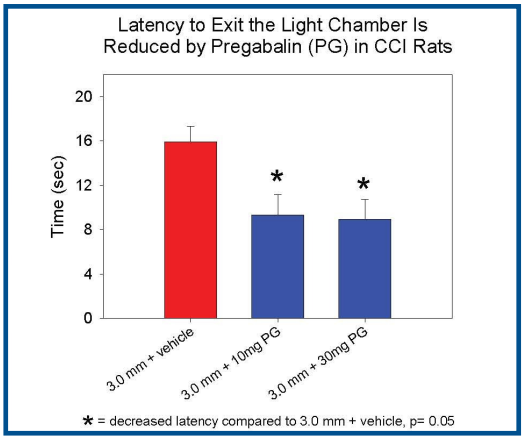
Stimulus Test Protocol Validation & Drug Evaluation

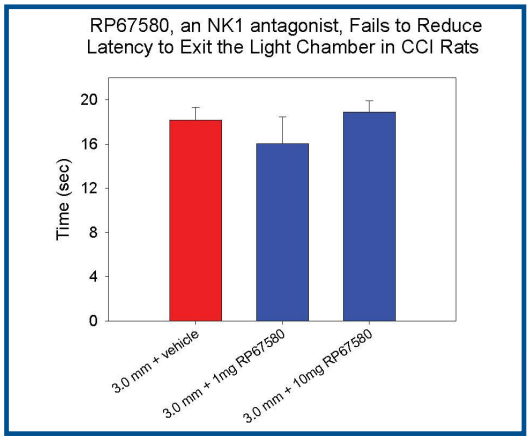


Healthy control rats and those with neuropathic pain induced by unilateral chronic constriction injury (CCI) of the sciatic nerve underwent MCS testing with tapered probes of varying heights presented in pseudo-random order. Results show a significant stimulus-response relationship between the latency in which rats exit the light chamber and probe height.









CCI rats exhibited an increased latency to exit the light chamber when their escape was impeded by 3.0 mm probes. Pregabalin, an effective analgesic for human neuropathic pain, returned exit latency to near baseline levels as did Morphine at 5 mg/kg. RP67580, an NK1 antagonist, did not return latency to baseline levels in the MCS. (data courtesy of Drs. Steven Harte & Thomas Morrow)

Features and Benefits

- Easy to disassemble/assemble for transport and cleaning
- Constructed from durable acrylic
- Compact enough to allow multiple units in one lab
- Animal training is fast and simple
- Testing is faster than other operant methods (most MCS tests are completed in less than 1 minute)
- Complements reflexive methods
- Adaptable to other stimuli beyond mechanical and light
- Red color enables researcher observation while rats perceive it as black/dark

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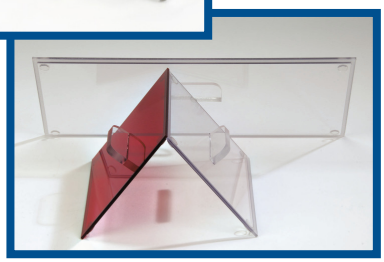
MCS Components

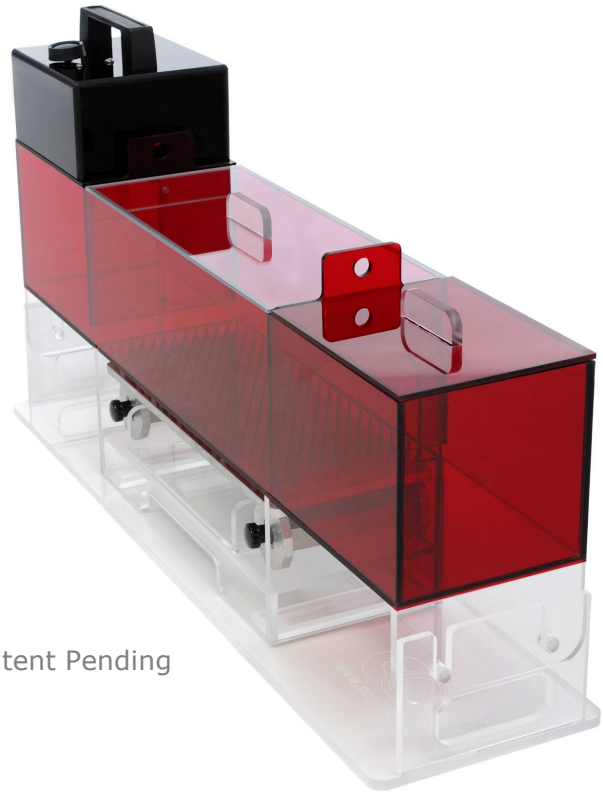
Standard Parts & Accessories:

- Light Meter (NIST Traceable)
- Probe Bed
- Height Adjustment Wheels for Probes
- Light Box with LED
- Chamber Covers
- Runway with Base and Doors
- Power Cord with Switch
- Extra Door Glides



Optional Items:

- Transformer for 220 volt operation
- Red cover for probe chamber



Patent Pending

Specifications

Dimensions (w x d x h)	32.2 x 8.25 x 17.75 (inches) 87.3 x 21 x 43.2 (cm)
Power Requirements	24 Watts 120v AC 60Hz*
Probe Height Increments	0.5, 1, 2, 3, 4, 5 mm
Accuracy of probe height above base	+/- 0.5mm (across entire array)
Light Output (Avg.)	500-600 foot –candles

*optional transformer available for use with 220v, 50Hz

Primary Materials of Construction

- Acrylic
- Polycarbonate
- Stainless Steel Probes in Aluminum Plate

The MCS for rats is the first in a series of Operant Conflict-Avoidance Systems. If you are interested in working with mice or a thermal stimulus, contact Coy to find out the latest developments in these areas. If custom-designed equipment is what you need, we can also provide this quickly and efficiently from our manufacturing and engineering facilities in Grass Lake, Michigan.

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