

The Mechanical Conflict System

A Novel Rodent Algesiometer



Patent pending

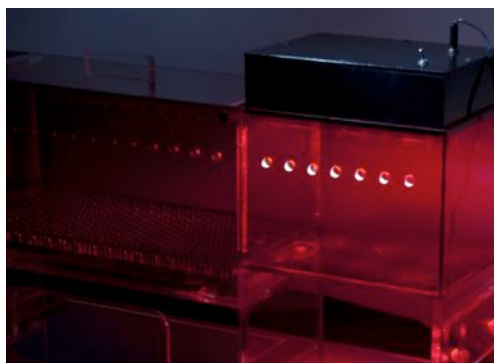
A New Approach to Preclinical Pain Research Developed by Scientists at the University of Michigan

The Mechanical Conflict System (MCS) provides an operant method of pain testing with rodents that addresses the limitation of reflexive methods, namely the lack of cognitive

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 or tapered probes that are not sharp enough to cause any tissue damage when walked on by the rodent. As shown on the reverse side, significant stimulus-response relationships are observed between probe height and measured responses [time taken to exit the light box (latency) and total time spent crossing the probe array]. Publication of method validation and results with drug studies using well-established chronic pain models are in preparation for 2010.

Bright light serves as the aversive conditional stimulus (CS) for test initiation



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



Please see other side for product details.

COY LABORATORY
PRODUCTS INC.

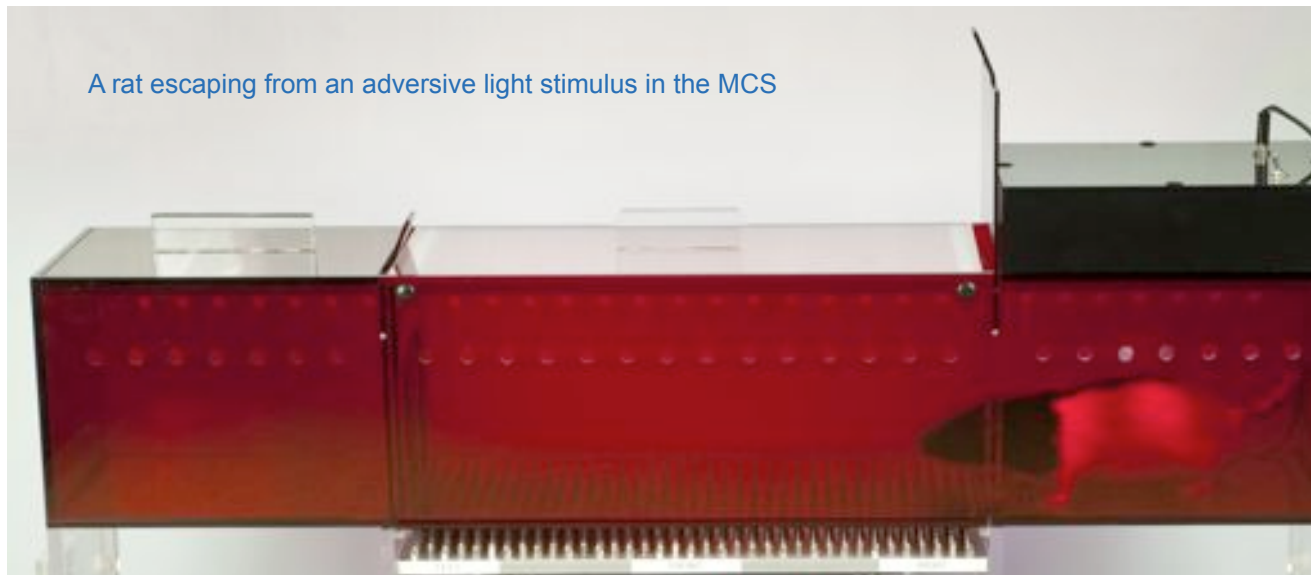
Glove Boxes and Custom Research Tools

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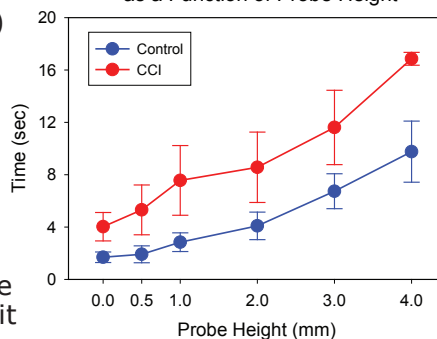
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Validation of the MCS Stimulus Test Protocol

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.

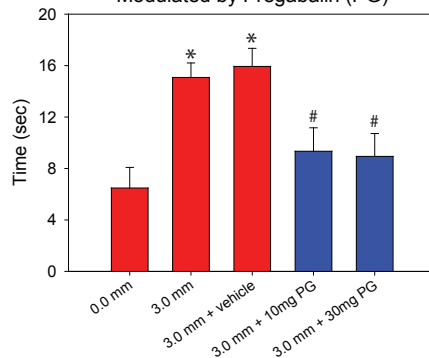
Latency to Exit the Light Chamber Increases as a Function of Probe Height



Proof of Concept for Drug Evaluation

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 chronic pain, returned exit latency to near baseline levels.

Latency to Exit in CCI Rats Is Modulated by Pregabalin (PG)



* = increased latency compared to 0.0 mm (baseline), $p \leq 0.05$
= decreased latency compared to 3.0 mm + vehicle, $p \leq 0.05$

Features and Benefits

- Easy to disassemble/assemble for transport and cleaning
- Constructed from durable acrylic
- Cost effective and small enough to allow multiple units in one lab
- Testing is faster than other operant tests (most tests are completed in less than 1 minute)
- Animal training is simple and fast
- Addresses the limitations of reflexive methods
- Allows for variety of conditional stimuli beyond light



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