Behaviour: Fear Conditioning Training and Testing

1. Purpose

Mice are placed in a novel operant chamber to so that learning and memory of a pairing of tone and shock can be assessed. This is dependent on the amygdala and the hippocampus.

2. Procedure

2.1 Fear conditioning training: FC-TR

A mouse is placed into one of the fear condtitioning boxes and the training protocol is played. The volume of the tone is calibrated to be between 83 and 86 dB, and is 300 Hz continuous tone.
The tone is played three times, for 30 s each time, starting at 120, 220 and 320 s into the trial. The last 2 seconds of the tone, a 0.45 mA shock is applied to the electrified grid floor (Start times 148, 248 and 348 s). The total duration of the training trial is 420s.

2.2 Fear conditioning Testing: FCTE

In this the mouse is returned to the operant box, approximately 18-22 hours later, and a memory test is completed.

For this, the protocol is played, and the tone is 300 Hz, between 83 and 86 dB. The onset of the tone is 180 s into the trial, and it plays for 180 s. The total duration is 360 s.

Use mice housed and treated according to environmental conditions in the Battery protocol.

HOME OFFICE LICENCED PROCEDURE?: YES (can be done under delegation).

3. Materials

- Coulbourn Instruments video based conditioned fear systems (4), Whitehall PA, USA)
- Acctimetrics Software systems: FreezeFrame Control and Data Acquisition, and FreezeView Data Analysis software (available through Coulbourn Instruments)
- Trigene wipes (Medichem, Seven Oaks UK)
- AVID chip Identification reader

4. Quality Control

A panel of inbred strains are used to establish protocol. The WT mice are monitored for drift in the baseline phenotype. Video record of each mouse is recorded and

archived so, if necessary, the tapes can be subsequently analysed. This may be for novel analysis or for a confirmatory analysis.

5. Example Data

The list of variables (below) collected from each animal is downloaded into the *g2c in_vivo*, the database for the behavioural data for subsequent analysis.

- During Training:
    - Percentage of time the animal spent frozen in 30 s bins
- During Testing:
    - Percentage of time the animal spent frozen in 30 s bins
    - Percentage of time the animal spent frozen in the absence of the tone
    - Percentage of time the animal spent frozen in the presence of the tone

6. Supporting Information

7. Document History

This document created on 21 January 2008.

Amended: 3 March 2008