THE UNIVERSITY OF QUEENSLAND
STANDARD OPERATING PROCEDURES
LABORATORY ANIMAL RESEARCH

SOP No:	**AHT 22b**
SUBJECT:	**Active Place Avoidance test- Mice (October 2013)**
REASON FOR USE:	**It has been demonstrated that this task is under hippocampal dependence [1]. Therefore by its use we can specifically assess hippocampal-dependant memory through animal's performances. The other alternative would be the water maze, which has shown similar properties. However it has been shown that water maze may not be adapted to studies with aged animals, as they tend to float in the water rather than swim, [2]. Briefly, a stationary shock zone, defined by the user via a commuter programme is set within the rotating arena. The animal is placed in the arena, as the grid is continuously rotating, the animal must actively avoid this area. By utilising visual cues placed around the room the animal learns the exact location of the aversive zone and therefore able to avoid it.**
POLICY:	**This technique may only be performed personnel skilled in this procedure. This assay utilises a negative- reinforcement/ aversive-experience spatial learning in response to a mild electric shock.**
PRECAUTIONS:	**Surgical cap and mask, surgical scrubs (freshly laundered), gloved hands, closed shoes (with clean shoe covers if appropriate).**
EQUIPMENT:	**Active Place Avoidance apparatus includes a rotating grid on which a clear Perspex cylinder (80cm in diameter, 40cm high) is placed. This grid is coupled to a computer tracker system that operates the rotation of the grid, location of the shock zone, the tracking of the animal and the timing and intensity of the shock.** **Curtain separating rig and computer/user** **70% alcohol** **Paper toweling.** **Specific visual cues to be placed around the room.** **Sealed clinical waste bin with bag.**

PROCEDURE:

1. **Prior to initiation of behavioural test ensure equipment is on and operational. Test rotation speed of the grid.**
2. **Set lighting to the level required. Typically this is not at the brightest level. 60% is what is commonly used.**
3. **Set visual cues around the room as needed.**
4. **Bring animals into the room 30min prior to initiating experiment.**
5. **Have the tracking programme set and ready. This includes duration of the behavioural test (typically 10min), rotation of grid (1rpm), shock zone area and location on the grid, time to shock (500ms), intershock latency (1500ms) and intensity of shock (0.2mA to 0.7mA scrambled shock, typically 0.5mA is used) and tracking of the animal.**
6. **Gently pick up mouse with gloved hand and move to active place avoidance rig.**
7. **Place mouse in required location on the grid.**
8. **Close curtain completely to separate experimenter and mouse on the rig.**
9. **Start active place avoidance programme.**

10. During testing keep noise to a minimum and ensure that tracking of the mouse is occurring and that the animal is reacting to shocks.
11. At completion of test gently remove animal from arena and place in housing cage.
12. Clean grid thoroughly with paper towelling and 70% EtOH. Ensure all urine and scat is collected and placed in the sealed bin. This ensures that the next animals are not using odour as a cue, nor are they getting stressed smelling the excretions of previous animals.
13. Save tracking data from the animal.
14. Set computer for next animal and repeat for each animal repeating steps above.
15. Performing this assay usually includes one day of habituation where the animal does not receive shocks and then up to five days of acquisition. A final probe test where the animal does not receive a shock can also be conducted. Animals only receive 1 daily session
16. At the completion of animals thoroughly clean equipment with 70% EtOH and paper towels.

RECOMMENDATIONS:

DATE ISSUED: 9 October 2013

REVISED:

CHAIR OF AEC

REFERENCES

1. Cimadevilla JM, Kaminsky Y, Fenton A, Bures J (2000) Passive and active place avoidance as a tool of spatial memory research in rats. J Neurosci Methods 102: 155-64.
2. van Praag H, Shubert T, Zhao C, Gage FH (2005) Exercise enhances learning and hippocampal neurogenesis in aged mice. J Neurosci 25: 8680-5.
3. Cimadevilla JM, Fenton AA, Bures J (2001) New spatial cognition tests for mice: passive place avoidance on stable and active place avoidance on rotating arenas. Brain research bulletin 54: 559-63.
4. Shen H, Sabaliauskas N, Sherpa A, Fenton AA, Stelzer A, et al. (2010) A critical role for alpha4betadelta GABAA receptors in shaping learning deficits at puberty in mice. Science 327: 1515-8.
5. Friedman SB, Ader R, Grota LJ, Larson T (1967) Plasma corticosterone response to parameters of electric shock stimulation in the rat. Psychosom Med 29: 323-8.