LAB_095 Rodent Vasectomy

I. OBJECTIVE

To perform humane vasectomy surgery in rodents that is necessary for some reproductive procedures, transgenic research or preclinical studies that require pseudo-pregnant females.

II. COMMENTS / RECOMMENDATIONS

- Users must keep monitoring records, which includes surgical records (example templates can be obtained by contacting the UQBR Veterinarians or Animal Ethics Unit Veterinary Officer).
- Any associated experimental compounds or medications (including your anaesthetic protocol) must be detailed within the Animal Ethics Committee (AEC) application.
- PPE is facility dependent, however, this should at least include disposable gloves, long sleeved lab gown, face mask, safety glasses, hair bonnet, closed in shoes.
- Wherever possible, active heating (e.g. a heat mat) must be used at all times.
- Clean surgical technique must be practiced, as per LAB_002 Clean Technique for Laboratory Animal Surgery
- Wherever practicable, aseptic surgical technique must be practiced, as per LAB_001 Aseptic Technique for Laboratory Animal Surgery
- In the event of equipment failure, or anaesthetic recovery mid-surgery, "alleviating unanticipated pain and distress must take precedence over an individual animal reaching the planned endpoint of the project, or the continuation or completion of the project. If necessary, animals must be humanely killed without delay" (Clause 2.4.18, Australian code for the care and use of animals for scientific purposes 8th Edn., 2013)

III. EQUIPMENT

- Disinfectants: surface disinfectant (e.g. 70% ethanol) and skin disinfectants (e.g. chlorhexidine based). Refer to LAB_001 Aseptic Technique for Laboratory Animal Surgery and LAB_002 Clean Technique for Laboratory Animal Surgery for options.
- Clean recovery boxes – standard housing boxes including sterile feed, water, appropriate nesting materials (to aid thermal support) and environmental enrichment.
- Active heating equipment (e.g. fit for purpose heat mats, Aria Ventilated Cabinets®)
- Anaesthetic agents – as per AEC approved protocol
- Analgesic agents – as per AEC approved protocol
- Ophthalmic lubricant (non-medicated, viscous and pH neutral: e.g. Refresh "Lacri-lube"©, Visco-tears© gel)
- Electric clippers or depilatory cream (e.g. Nair hair removal cream©)
- Sterile surgical instruments
  - Including: scalpel, fine surgical scissors, curved forceps, needle holders
- Sterile surgical consumable
  - Including: gauze, cotton tips, absorbable suture (size: 5-0 or 6-0), 7mm or 9mm wound clips and wound clip applicator.
- Cauteriser

IV. PROCEDURE

Scrotal Method

1. Prepare yourself and the work station as per LAB_001 Aseptic Technique for Laboratory Animal Surgery / LAB_002 Clean Technique for Laboratory Animal Surgery
2. Prepare clean, warm recovery boxes (e.g. resting on a heat mat).
3. Anaesthetise the animal and provide analgesia, as per AEC approved protocol.
4. Apply ophthalmic lubricant to both eyes, using a sterile cotton tip.
5. Prepare the animal for surgery in dorsal recumbence including the removal of fur if required as per LAB_001 Aseptic Technique for Laboratory Animal Surgery / LAB_002 Clean Technique for Laboratory Animal Surgery
6. Check for the absence of a withdrawal reflex. If a withdrawal reflex is present, the animal is not sufficiently anaesthetised and anaesthetic depth needs to be increased prior to proceeding.

   If movement of skeletal muscle, or withdrawal reflexes are present at any point throughout the procedure, activity must stop and only resume once sufficient anaesthetic depth regained. If you are having difficulty maintaining appropriate anaesthetic depth consult a UQBR veterinarian (once the animal has recovered, and before proceeding to anesthetise any more animals).
7. Make a 5mm midline incision between the testis, apply blunt dissection of underlying tissue to locate the midline between the two internal sacs containing the testis. The midline will appear as a light white line.
8. Make an incision in one internal sac near the midline. You should be able to identify the vas deference that will appear as a bright white cord with a single blood vessel.
9. Exteriorise the vas deferens, remove a portion of the vas deferens by crushing and tearing using forceps or using cautery.
10. Repeat the removal of a portion of the vas deferens to the opposite testis.
11. Close the incision using either suture material or wound clips. The surgical site is then gently cleaned with gauze or a cotton tip moistened with skin disinfectant to remove any blood contamination.
12. Place the animal into a recovery box, maintained on a heat mat until fully ambulatory. If available, recovery boxes may then be placed into a climate controlled, Ventilated Cabinets® for ~12 hours recovery.
13. Clean and disinfect all equipment between each animal.
14. Continuously monitor all mice during surgery and throughout the recovery phase until fully ambulatory. Mice should be reassessed within 6 hours post recovery, then at least daily for the following 2 days. Ongoing monitoring is as described by the approved AEC activity.

    Allow three weeks post-surgery before using males for test mating.
15. Skin sutures or wound clips must be removed 10-14 days following surgery (anaesthesia is required for this procedure, as per LAB_060 Rodent Anaesthesia - Isoflurane)

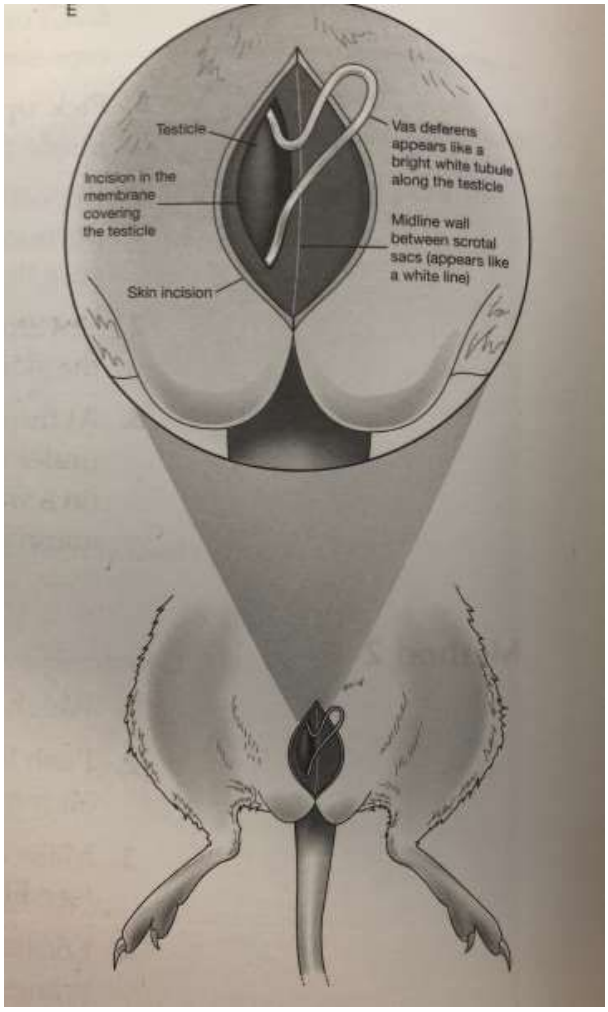

Figure 1 Visual Representation of Anatomy when performing the Scrotal Approach (Gertsenstein et al. 2003).

V. REFERENCES

1. Manipulating the Mouse Embryo 3rd Edn Nagy, Gertsenstein, Vintersten and Behringer (2003) Cold Springs Harbour Laboratory Press.
2. National Health and Medical Research Council (NHMRC) 2008, *Guidelines to promote the wellbeing of animals used for scientific purpose,* viewed 13 October 2021, https://www.nhmrc.gov.au/about-us/publications/guidelines-promote-wellbeing-animals-used-scientific-purposes
3. Office of the Gene Technology Regulator (OGTR) n.d., viewed 13 October 2021, http://www.ogtr.gov.au/
4. University of Queensland n.d., *Health, safety and wellbeing,* viewed 13 October 2021, https://staff.uq.edu.au/information-and-services/health-safety-wellbeing
5. University of Queensland n.d., *Health and safety risk assessments,* viewed 13 October 2021, https://staff.uq.edu.au/information-and-services/health-safety-wellbeing/health-safety-workplace/risk/assessments

Version #	**Reviewing AEC** (note: all other relevant AECs ratify the approval)	**AEC Review Date**	**Approved Until**
2	LBM	16/02/2022	16/02/2025

Conditions:

- Investigators named in an animal ethics application, relative to this SOP, must be competent to implement the SOP
- Any variation to this SOP must be described in the relevant animal ethics application
- If this SOP has not been reviewed and approved by a UQ AEC within the last three years it is no longer valid and cannot be used in animal ethics applications until reapproved (see "AEC Reviewed/Approved" date in this document's header).