



PURPOSE: This document details the minimum standards for recovery (survival) surgery in all laboratory rodent species.

RESPONSIBILITY: Prior to undertaking ANY surgical procedure, it is the responsibility of the principal investigator to ensure that staff carrying out those procedures are adequately trained and deemed competent in these procedures, and that provisions are made for post-operative care. All procedures must be described in an approved Animal Use Protocol.

All surgery must be performed by qualified trained individuals having completed the requisite courses that apply to surgery and demonstrated competency in all relevant procedures. All trainees must be directly supervised by a qualified person until they obtain competency in surgical techniques. ACRS veterinarians or technicians provide required classes in anesthesia and basic aseptic surgical skills. Specific surgical procedures are often taught by the principal investigator or other qualified research staff. The following is the University Animal Care Committee (UACC) Policy for rodent surgery.

PROCEDURES:

1. Surgical areas will be dedicated to that use only while surgeries are being performed. Areas will be kept neat and orderly and all contamination including bedding, feces, blood, etc. will be cleaned and disinfected prior to and after each surgery. Any equipment used during surgery must also be cleaned and disinfected prior to use.
 - a. A rodent surgical area can be a room or part of a room that is easily sanitized and not used for other activities when rodent surgery is in progress.
 - b. This area should not be a high traffic area or immediately next to room ventilation.
 - c. Pre-surgical animal preparation must be carried out in a different physical space from the designated surgical area.
2. All surgeries will be conducted following standard aseptic and atraumatic techniques. This includes the use of clean, sterilized (autoclaved, gas or chemically sterilized; disinfection with alcohol is not acceptable) instruments and equipment, proper preparation and closure of the surgical site, and appropriate clothing and preparation for the surgeon. Appropriate surgical instruments and suture material will be used for all procedures.

- a. The use of a hot glass bead sterilizer for sterile tip surgery is acceptable to sterilize instruments between no more than 5 animals (per day), at which time instruments must be reautoclaved. Only the sterilized tip of the instrument can enter the surgical field since the remainder of the instrument is contaminated (not sterile). Instruments tips must be manually cleaned with sterile water to remove any blood or tissue and dried with sterile gauze between each use of the hot bead sterilizer. If multiple surgeries are performed over the course of two or more days, instruments must be autoclaved at the end of each day. The surgeon will wear at minimum a closed, clean lab coat or scrub top, sterile surgical gloves over scrubbed hands, head cover, and surgical face mask or respirator (unless the surgery takes place in a certified laminar flow hood) during surgery. A new pair of sterile gloves is required for each animal.
 - b. The surgical site(s) will be prepared by removing hair appropriate to the size of the surgical site (large enough to allow surgical access and maintain asepsis but not compromise thermoregulation). This area will be prepared with a triple scrub of Betadine or Chlorhexidine scrub alternated with alcohol or sterile saline. A sterile surgical drape (sterile paper, plastic, or cloth drape, or clean plastic food wrap) appropriate to the size of the surgical site will be used to cover the incision site.
 - c. Surgical techniques used will reduce pain and improve post-operative recovery by minimizing trauma, tissue handling and tension at the surgical site. This includes appropriate use of correctly sized surgical instruments, and use of suture material of the most appropriate size and material for incision closure.
3. The animal must be assessed as fit and healthy before exposure to anesthesia, and must be fully anesthetized (no toe pinch reflex) prior to and throughout the duration of the surgical procedure. Supplemental oxygen will be provided while the animal is anesthetized, and the animal will be maintained on a warm, padded surface in a position that ensures normal breathing and blood flow. A corneal lubricant (eye gel) will be used to protect the eyes from abrasion or drying. Animals will be monitored and attended by a trained individual throughout the duration of surgery and anesthetic recovery.
 4. Animals will be administered suitable analgesic agents as per the approved Animal Use Protocol.
 5. Rodents will be recovered from surgery in a quiet area away from the surgical area and they will be continually monitored as needed until fully recovered.
 - a. Animals must be singly housed in a warm, paper-towel lined cage (no loose bedding) until fully ambulatory and then returned to the group in their home cage.

- b. Animals should receive supplemental heat, and adjunct nursing care including wound care. Warmed isotonic fluids will be given as per the approved Animal Use Protocol. Easily accessible palatable food and an alternative water source (e.g., recovery gel) may also be provided during the recovery period.
 - c. Gross contamination by blood, bedding, prep solutions, etc. will be cleaned as needed from wounds. All sutures/wound clips will be removed when the surgical site has healed (typically 7-10 days post-surgery).
6. Animals with abnormal wound healing/closure or unexpected (based on estimates in the Animal Use Protocol) morbidity or mortality following surgery require consultation with an ACRS Veterinarian. The Veterinarian, in consultation with the Principal Investigator, will decide the best course of action for the animal. These actions are the responsibility of the research staff.
7. A written record of the surgical details, condition of the animals following surgery, and any treatments given, as well as relevant endpoint scores (humane intervention point checklists) will be maintained in the unit and be readily accessible throughout the post-operative recovery period.
- a. Monitoring of physiology (e.g., weight loss and loss of body condition, pallor of extremities), behaviour (e.g., movement in cage, nest building) and pain (e.g., species-specific facial grimace scale) will be carried out and recorded by competent trained individuals.
 - b. Monitoring schemes and documentation will be updated as procedures are refined over time.

Approved by the UACC, 21 October 2009

Revised by the UACC, 02 June 2022