



Title: Survival Surgery in Rodents
SOP Number: 021

FACILITY

- A. A separate facility for rodent surgery is not necessary. A rodent surgical area can be a room or portion of a room that is easily sanitized. The immediate area should not be used for other purposes during the time of surgery.
- B. Surgery should be conducted on a clean, uncluttered lab bench or table. The surface of the lab bench or table should be impervious to liquids. The work surface should be wiped with disinfectant before and after use or covered with a clean drape.

PREPARATION OF ANIMAL

- A. Hair should be removed from the animal in an area away from the surgical site to prevent contamination and the skin should be cleansed three times with disinfectants (e.g., dilute betadine, Nolvasan brand chlorhexidine, alternating with 70% ethanol).
- B. Surgical drapes are recommended for procedures that require exteriorization of the viscera, procedures performed on immune-suppressed rodents, or if the surgeon has difficulty preventing suture material or instruments from touching nonsterile areas.
- C. Ophthalmic ointment must be applied to both eyes to prevent corneal desiccation.
- D. Prior to making an incision, reflexes should be checked via tail or toe pinch, to assure appropriate depth of anesthesia.

PREPARATION OF SURGEON/SURGERY

- A. Hands should be washed with an antiseptic surgical scrub preparation and sterile surgical gloves must be worn.
- B. The surgeon should wear clean laboratory garments. Steam is the preferred method (autoclaving) of sterilizing equipment.

INTRAOPERATIVE MONITORING

- A. The animal must be monitored carefully during the surgical procedure.
- B. Surgeons should pay close attention to the animal's respiratory rate and character, and response to noxious stimuli (e.g., tail pinch).
- C. Monitoring of respiratory rate and character is facilitated by the use of transparent drapes.
- D. Although resting heart rate for rodents is rapid (typically more than 300 beats per minute), heartbeat should be checked periodically for significant changes in rate or rhythm. Heartbeat can be palpated through a sterile drape by the surgeon, or by a second person who is not performing sterile procedures.

POSTSURGICAL CARE

- A. Postsurgical care must include observing the animal to ensure uneventful recovery from anesthesia and surgery; administering analgesics as required; providing adequate care to surgical incisions and maintaining appropriate medical records.
- B. Placing the animals in a warm room or cage should prevent hypothermia. If necessary, the cage may be placed on bedding or padded surface and supplied heat sources. Caution must be used with heat sources as they can cause thermal burns and hyperthermia if used inappropriately.
- C. Researchers or ACS staff must observe animals until they are completely recovered from anesthesia (ie. alert and ambulating).
- D. For training in selection and use of supplemental heat sources, contact ACS staff at 806-834-3437.
- E. Dehydration can be ameliorated by appropriate fluid therapy. Initially giving 1 to 2 ml of warm (approx. 37 degrees C) fluids (0.9% NaCl or equivalent) per 100 gm of body weight by subcutaneous injection may sufficiently ameliorate dehydration. If blood loss occurred during the surgical procedure or if the animal is slow to recover from anesthetic, additional fluids may be necessary.
- F. To prevent cannibalism or suffocation, rodents should be housed individually until they are alert and ambulatory.
- G. If recovery from anesthesia will be prolonged, (i.e., over one hour), the animal should be rotated from side to side every 15-30 minutes to minimize hypostatic congestion of the lungs. This practice should be continued until the animal is able to maintain sternal recumbency.
- H. Post-surgical animals should be seen every day by a member of the investigator's staff or other individuals to whom post-operative care has been delegated until all sutures, wound clips, or other implanted devices have been removed.
- I. Sutures or wound clips generally should be removed 5-7 days after surgery.

SURGICAL RECORDS

- A. A "Surgical Record" should be completed for each animal that undergoes a surgical procedure.
- B. Records should indicate the type of surgical procedure performed, the date of the procedure, the person who performed the procedure, information on drug administration, intra-operative monitoring and should be maintained in the laboratory. This information must be available for review by the institutional veterinarians and the IACUC. Surgical cage cards are available through ACS for cage level display. Sample forms may be found following this SOP or online at www.depts.ttu.edu/acuc.
- C. In the event that infections or complications occur, the ACS staff must be notified. The ACS staff will review the entire surgical procedure (facility, preparation of the animal and instruments, expertise of the surgeon, and postsurgical care).

SEQUENTIAL SURGERIES

- A. After using a set of instruments, remove all organic material and place in bead sterilizer for 15 seconds. Be sure to allow instruments to cool before using on the sequential animal.

- B. Maintain sterile operating procedures and good lab practices at all times.

ALTERNATIVES

- A. In cases where adherence to the above procedures may invalidate research or complicate interpretation of research results, such as transplantation of cells or tissues, permission to use alternative methods must be described in the AUP and may be granted by the IACUC.

TRAINING

- A. Professional and technical personnel and students who perform anesthesia and surgery should be appropriately trained to accomplish these tasks in a humane and scientifically acceptable manner. The ACS staff is available to provide assistance with, or training in, aseptic technique and the proper administration of anesthesia, analgesia, and euthanasia.
- B. Guidelines for the Use of Anesthetics and Analgesic Agents refer to tables available online at www.depts.ttu.edu/iacuc or consult with Veterinary Staff.

Animal Surgery Record

PI Name:		ACUC #
Project Title:		
Animal ID	Species	Date
Surgical Procedure:		

Surgeon:

Assistant:

Presurgical Procedure: (Include surgical preparation, anesthetics and dose).

Brief Description of Procedure:

Post Surgical Care:

Individual Response:

Post Surgical Analgesic:

Amount given:

Frequency:

Surgical Outcome: