

All demonstrated procedures must be approved by the institutional animal care and use committee (IACUC). **The approved protocol may be requested during the veterinary review of your video.**

**Authors are responsible for obtaining all necessary permission for the documentation of procedures involving animal use in their facilities.**

Please refer to the [JoVE SciEd series on Laboratory Animals](#).

For rodent surgery, please review the following video: [Principles of Rodent Surgery for the New Surgeon | Protocol \(jove.com\)](#)

### **Public Sensitivity Considerations**

- Only show the portion of the animal necessary for the procedure rather than the entire animal. This can be done using a sterile surgical drape.
- Similarly, if tumors, abscesses, or other lesions are to be filmed in situ, the anatomic site of interest (e.g., abdominal cavity, lungs) can either be isolated by a closer video shot or using a drape covering the rest of the animal.

*Alternatively, the organ or tissues of interest can be excised first and then filmed on an appropriate background.*

- Footage of anesthesia/euthanasia should not be included in the video. It may only be included if the following three conditions are met:
  - (1) *no* other videos of the same method already exist on JoVE
  - (2) the method of anesthesia/euthanasia involved is critical to the procedure or science being explained
  - (3) the method of anesthesia/euthanasia involves no evidence of distress exhibited by the animal
- In non-survival procedures or dissections of euthanized animals, **the workspace should be kept clean**. Discarded tissue should be kept outside the video shot, and excess blood/fluids should be cleaned.
- Do not hold/pick up animals by the end of the tail. If picking up animals by the tail, grab the base of the tail and reposition the animal so that prolonged tail holding doesn't occur.
- Injection needles must be sterile, single use, and sharp. Significant effort should not be required to insert them.
- If animal housing rooms or facilities are to be filmed, ensure that these comply with veterinary and institutional standards, including obtaining the necessary approvals from your institution. Important considerations include but are not limited to overall cleanliness, appropriate cage type and size, and presence of windows (light-dark cycle control).

### Surgery

*Observe appropriate safety procedures, such wearing personal protective garments and, if applicable, working in a biological safety cabinet or fume hood.*

- Confirm a surgical plan of anesthesia prior to starting surgery with appropriate monitoring (e.g., toe pinch).
- Assess and maintain the depth of anesthesia during surgery.
- Use ophthalmic ointment on eyes to prevent dryness while under anesthesia.
- Provide thermal support (e.g., heating pad or blanket) and monitoring as needed.
- Animal surgeries, dissections, or euthanasia should not be performed in view of other animal subjects.

NOTE: The type of anesthesia and the route of administration must be approved by the IACUC and should comply with humane standards of care. The approved protocol may be requested during the veterinary review.

### Maintaining Sterile Conditions During Survival Surgery

- Sterile surgical instruments and other sterile items (e.g., overhead surgical lamp handles) should only be handled with sterile gloves and should not come in contact with non-sterile surfaces.

*Spraying autoclaved tools/ instruments with alcohol is not necessary*

- Surgical instruments should not be modified with tape or in any other way that will prevent proper sterilization.
- **150% of the area surrounding a surgical site should be shaved or cleared of fur** using depilatory cream. Clipping/shaving should be performed on a stable surface after anesthesia induction. Prior to skin preparation, loose hair on or around the animal should be removed using a vacuum.

*Due to differences in international veterinary opinions regarding shaving of surgical fields, deviation from this standard may be acceptable if the authors provide specific documentation from their IACUC indicating that the amount of shaving they use has been approved.*

- **Hair/fur should be kept clear of any surgical wound** and should not be pulled or stretched by suturing.
- **The surgical area must be disinfected several times in a circular motion with both an iodine-based or chlorhexidine-based scrub and alcohol.**
- Use a sterile surgical drape around the incision site when possible.
- Sterile gloves are required for all survival surgeries unless the home institution has a policy that allows for "tips only technique" in rodents (only).

- Only sterile instruments or gloves may come into contact with the surgical field.
- Scissors should not be used to make skin incisions for recovery surgeries.
- Retractors should be used to pull back the abdominal wall rather than using needles to pin it back.
- Do not drag suture material over non-sterile surfaces while suturing wounds.
- **Do not use silk sutures** in the skin as it is a braided suture that allows bacterial growth and causes a robust inflammatory response

Example of good shaving practices:



### Survival Procedures

- **Animals must receive post-surgical treatment, such as recovery housing and treatment for post-surgical pain** (ideally including a preemptive dose of analgesics immediately prior to the initial incision).
- Do not leave an animal unattended until it has regained sufficient consciousness to maintain sternal recumbency.
- Do not return an anesthetized animal to the company of other animals until fully recovered.
- If the animal is to survive for a designated amount of time and then be euthanized, these details should be provided in the text.

### Non-Survival Procedures

- If the animal is not intended to survive the procedure, the text should discuss the euthanasia method.