PERFORMANCE OF TISSUE BIOPSIES

1. PURPOSE

1.1. The purpose of this Animal Care and Use Procedure (ACUP) is to describe methods to be followed when performing tissue biopsies in research animals. This ACUP is approved by the Cornell Institutional Animal Care and Use Committee (IACUC). Any deviation must be approved by the IACUC prior to its application.

2. SCOPE

2.1. This ACUP is intended for use by investigators and their staff who have received approval to collect tissue biopsies from research animals. This ACUP does not cover mouse tail snip biopsies, for details on mouse tail snipping, see ACUP 208 Mouse Tail Snipping.

3. INTRODUCTION

3.1. Performing a tissue biopsy has the potential to result in pain, infection, hemorrhage, and/or delayed healing at the biopsy site. This ACUP defines standard practices to minimize risk and pain when performing tissue biopsy. Contact the Center for Animal Resources and Education (CARE) at Cornell University veterinary staff by emailing care@cornell.edu if you have any questions. Tissue biopsies are typically considered to be minor surgical procedures.

4. MATERIAL AND EQUIPMENT

4.1. Medications

4.1.1. Antibiotic
4.1.2. Sedative/analgesic
4.1.3. Local anesthetic

4.2. Procedural Supplies

4.2.1. Clippers
4.2.2. Antiseptic soap (e.g., chlorhexidine scrub or povidone-iodine scrub)
4.2.3. Antiseptic rinse solution (e.g., chlorhexidine solution, povidone-iodine solution, or 70% alcohol)
4.2.4. Sterile gloves
4.2.5. Biopsy device (e.g., Tru-Cut®; trocar, or biopsy forceps).
4.2.6. Scalpel
4.2.7. Sterile wound closure material (e.g., suture and needle driver).

5. PROCEDURE

5.1. Pre-Operative Care

**NOTE**: Consult a veterinarian if peri-operative complications occur.

**NOTE**: Medication administered outside of the protocol details must be approved by a CARE veterinarian or a veterinarian with a formal agreement to provide veterinary care.

5.1.1. If antibiotics are indicated, administer prior to biopsy.
5.1.2. Administer sedative prior to biopsy if the animal shows signs of nervousness or discomfort.
5.1.3. If an analgesic sedative has not been given, administer an analgesic prior to biopsy.
5.1.4. Shave and brush the surgical area to remove hair and debris.
5.1.5. Using antiseptic soap, scrub the biopsy skin entry site starting at the incision location and working progressively towards the margins of the shaved area.

**NOTE**: Iodine and chlorhexidine compounds require 5 minute contact time for proper antimicrobial activity. Many surgical scrubs should not be diluted, follow manufacturer’s instructions regarding the addition of water.

5.1.6. Remove the antiseptic soap by wiping with sterile gauze or rinsing with 70% ethanol solution.
5.1.7. Repeat scrub-rinse until the clipped area is clean.
5.1.8. Administer local anesthetic in the area where the incision will be made.

5.2. Biopsy Procedure

5.2.1. Use aseptic technique:

5.2.1.1. Wash hands.
5.2.1.2. Wear sterile gloves and applicable protective clothing.
5.2.1.3. Do not touch non-sterile surfaces or objects.

5.2.2. Confirm that the level of sedation and analgesia is adequate. For example, use hemostats or a clean needle to apply pressure to the area to be biopsied and monitor the animal for a reaction.
5.2.3. Make a small dermal incision to allow biopsy tool access.
5.2.4. Obtain tissue biopsy.
5.3. **Wound Closure**

5.3.1. Repair the wound with sutures or surgical staples.

5.4. **Post-Operative**

**NOTE:** If post-operative complications occur, including signs of pain, contact a clinical veterinarian.

5.4.1. Follow protocol details for peri-operative medications. If there is an increased risk of post-operative infection due to the environment or the health status of the animal, additional doses of antibiotics may be warranted. Consult a veterinarian before administering post-operative antibiotics to determine the most appropriate course of action.

5.4.2. Document details of the procedure in the animal’s medical records.

5.4.3. If an animal was under general anesthesia for the biopsy procedure, maintain close supervision until it fully regains normal reflexes.

5.4.4. Separate the animal from the group and maintain under observation for several hours after biopsy.

5.4.5. Observe for signs of pain at least once daily (e.g., inappetence, vocalization, hunched posture, increased respiratory rate).

5.4.6. Examine the biopsy site daily until sutures/staples are removed. Observe for signs of healing or complications (e.g., redness, swelling, excessive drainage, or dehiscence).

5.4.7. Monitor the animal for signs of infection (e.g., feed intake, activity, and/or body temperature) at least once a day for 1 week.

5.4.8. Remove skin sutures or staples 10–14 days post biopsy.

5.4.9. Document post-operative activities in each animal’s medical records.

6. **PERSONNEL SAFETY**

6.1. Medical Emergencies: **CALL 911.**

6.2. When working with animals wear appropriate PPE, observe proper hygiene, and be aware of allergy, zoonosis, and injury risks. Refer to the CARE Occupational Health and Safety webpage for more information.

7. **ANIMAL RELATED CONTINGENCIES**

7.1. Post contact information for emergency assistance in a conspicuous location within the animal facility.

7.2. Emergency veterinary care is available at all times including after working hours and on weekends and holidays:

   7.2.1. Biomedical settings: CARE (pager 1-800-349-2456)

   7.2.2. Farm animal settings: Ambulatory and Production Medicine Service at (607) 253-3140.

7.3. Non-emergency veterinary questions and requests for care, email CARE veterinary staff at care@cornell.edu.
8. REFERENCES

8.1. Allergy Prevention:  
http://ras.research.cornell.edu/CARE/documents/OHS/AllergypreventionFactsheet.pdf

8.2. ACUP 102 Analgesia:  
http://ras.research.cornell.edu/care/documents_k/ACUPs/ACUP102.pdf

8.3. ACUP 707 Animal Related Injury:  
http://ras.research.cornell.edu/care/documents_k/ACUPs/ACUP707.pdf

8.4. ACUP 715 Personal Protective Equipment:  
http://ras.research.cornell.edu/care/documents_k/ACUPs/ACUP715.pdf

8.5. Occupational Health and Safety – Zoonoses Information:  
https://ras.research.cornell.edu/care/zoonoses.html


9. APPENDIX

9.1. None

10. HISTORY

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<td>05 OCT 17</td>
<td>Most Recent Annual Review – Reviewed by: J. Wright</td>
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<tr>
<td>16 OCT 15</td>
<td>New Format – Converted by: J. Kirby</td>
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<td>31 MAY 10</td>
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<td>New Issued – Original Author: Dr. T. Peralta; Referees: D. Dwyer, S. Smith, R. Butler, T. Overton</td>
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