IACUC Mouse Tail Biopsy Policy

Date of IACUC Review and Approval: July 2010

I. General:

• Tissue for genetic analysis of mice may be obtained by tail biopsy (tail snip) when scientifically justified and approved by the IACUC.

• The following guidelines have been approved by the IACUC for the collection of mouse tail tissue. Note: tail biopsy must be described in the protocol/amendment and any proposed deviations from these guidelines require additional scientific justification.

II. Background:

1. The genotype of a mouse is typically determined by Polymerase Chain Reaction (PCR) or Southern Blot analysis.
   • PCR analysis requires a minimal amount of tissue which can be obtained from tail biopsy. PCR provides genotyping results quickly and cheaply allowing for efficient colony management.
   • Southern Blot analysis requires larger amounts of DNA which is typically obtained by the excision of the distal tail.

2. The tail is composed of bone, cartilage, blood vessels, nerves and skin. The extent of mature vertebrae is related to the age of animals and the location along the length of the tail. A tail biopsy (2-5 mm at the distal end of the tail) that severs coccygeal vertebrae prior to completion of mineralization, which occurs when the mouse reaches 3 weeks of age, causes only minimal pain.
   • Tail amputation in mice >3 weeks of age may be a painful procedure with the potential to produce significant hemorrhage and will require anesthesia or analgesics, as well as, a scientific justification supported by a literature search for alternatives which are less invasive and/or painful.
   • A mouse’s tail is important physiologically and behaviorally. Minimizing the amount of tail tissue removed will benefit the animal and its use in research.
III. Procedure:

1. Limit the amount of tail to be amputated to 2-5 mm; 2 mm would be preferable and will minimize cutting bone. If an additional testing is anticipated, section the original tissue and freeze a segment. A second biopsy is permissible but must be done under anesthesia (see #5).
2. Gently restrain the mouse.
3. Obtain tail biopsies, using clean procedures, by cutting the tip of the tail perpendicular to the long axis with very sharp scissors. Alternatively, use a scalpel or razor blade.
4. Assure hemostasis. In mice <3 weeks, hemostasis is easily achieved by light, direct digital pressure around the tip of the tail. When necessary, hemorrhage can be controlled by cautery; a medical-grade, non-toxic, styptic powder (Kwik Stop®) or surgical adhesives. Consult the veterinarians if problems with hemostasis are encountered or expected (e.g., mutant mice with clotting disorders).
5. If required, use a short acting inhalant anesthetic, such as Isoflurane: an open-drop technique, conducted in a fume hood while avoiding direct contact with the animal, would be acceptable. Closely monitor the animal’s recovery from anesthesia, which should be transient, and avoid co-housing sedated and active animals.

References