COMPARATIVE MEDICINE
LABORATORY ANIMAL FACILITIES

STANDARD OPERATING PROCEDURES
FOR
TAIL BIOPSY IN MICE

Purpose: Tail snips are used to identify genetically modified rodents.. Identification is performed using methods that evaluate DNA such as PCR and Southern Blot. Investigators are encouraged to use PCR as this technique requires less DNA (and less tissue) than Southern Blot. Recent refinements of techniques have made it possible to extract DNA from sources like saliva, fur, feces, ear punch tissue and rectal swabs. Investigators are encouraged to collect DNA in the least invasive manner that will still yield appropriate information for the study. When less invasive DNA samples are not suitable, the following will provide guidelines to conduct the tail biopsy procedure safely and, effectively with minimal pain. The following guidelines are endorsed by the UB IACUC committee and PIs may refer to this SOP when writing their protocols.

Scope: This procedure applies to all CMLAF technicians and all principal investigators and associated staff. The above individuals will have completed rodent module training and will perform procedures according to an approved protocol

1.0 **Procedure**:

1.1 Considerations for the **age** of the mice:
- A. Tail biopsy should be performed in mice that are between 10-21 days of age. Before 21 days of age, pain perception is not fully developed and the tail bones have not yet ossified.
  - i. Anesthesia is not required
  - ii. Topical analgesia and hemostasis are required
- B. Guidelines for mice 21-28 days of age:
  - i. General anesthesia MUST be administered (Isofluorane)
  - ii. Topical analgesia and appropriate hemostasis must be applied.
- C. Guidelines for mice older than 28 days of age:
  - i. Tail biopsy is considered a survival surgery.
  - ii. Part 16 of IACUC protocol must be completed and approved
  - iii. General anesthesia must be administered. (Isoflurane)
  - iv. Post operative records must be completed and submitted to LAF
  - v. Systemic analgesics must be administered post operatively.

1.2 Guidelines for the **length** of the segment of tail to be removed:
- A. Length of the segment should not exceed 5mm of the distal tip of tail.
- B. 2mm or less should be adequate for PCR.

1.3 Repeat biopsies:

A. Avoid repeat tail biopsies if possible.

B. If repeat sampling is absolutely necessary, general anesthesia and analgesia (pain medication) must be used regardless of the mouse's age.

C. The maximum **total** length of tail that is removed, including all tail biopsy procedures, must not exceed 1cm.

1.4 Biopsy Technique:

A. Use a sterile blade or sterile sharp scissors to cut the tip of the tail.

B. Use a new sterile blade for each mouse to prevent infection and cross-contamination of DNA material between samples.

C. Use a bead sterilizer to remove any DNA material if scissors are used.

1.5 Analgesia:

A. For topical analgesia (ages 10-21, 21-28) apply 1 drop of bupivicaine (Marcaine®) on the incision site **before** the coagulant.

B. For survival surgery (>28 days) or for repeat biopsies use either of the following 2 options in addition to the topical analgesia:

a Buprenorphine (.05mg/kg subcutaneously)

b Carprofen (5mg/kg daily SC injection)

1.6. Hemostasis (control of bleeding):

A. Apply compression with fingers and sterile gauze to end of tail.

B. Kwik-stop (coagulant powder) or silver nitrate sticks (chemical cautery) should be applied to the tail tip to maintain hemostasis.

1.7. Recovery:

A. Place the mouse in a recovery cage with heat lamp until it can right itself

B. Ensure bleeding has stopped at the tail incision.

C. Do not return any mouse to its home cage until all bleeding has stopped and the mouse is mobile and alert.