



A. PURPOSE

To provide investigators with guidance on appropriate techniques for biopsy of rodent tails for genotyping, blood collection, and other purposes.

B. GUIDELINES

Biopsy of rodent tails (tail tipping) is commonly used for obtaining blood or tissue for genotyping or other purposes. The use of tail biopsy must be reviewed and approved by the IACUC as part of an animal protocol. In addition, tail biopsy must not exceed maximum lengths described below without justification and IACUC approval. Consideration must be given as to whether post-procedural analgesia is appropriate.

The following guidelines for tail biopsy must be followed. Exceptions must be described in the protocol and approved by the IACUC prior to use.

Mice

- For mice less than 31 days age, anesthesia is not required with the following caveats:
 - Ideally, mice should be 10-21 days old, as at this age, the yield of DNA is highest and allows more efficient breeding colony management.
 - Use of topical anesthesia in spray, cream, gel or liquid formulations (e.g., bupivacaine, Cetacaine, EMLA, lidocaine) should be considered and used where possible.
 - A **sterile** scalpel, razor blade, or scissors must be used to remove no more than **2 mm of tail length** during the first tail biopsy. The biopsy instrument must be disinfected between subsequent animals.
 - If additional tail biopsy is required, then no more than an additional **3 mm of tail length** is to be removed
 - No more than 5 mm of tail length is to be removed from any one animal.
- For mice 31 days of age and over, anesthesia must be used.
 - Anesthesia can be general (e.g., isoflurane) or topical.
- The investigator must monitor the animals to assure hemostasis after the animals are returned to the cage. Acceptable methods of hemostasis are digital pressure, a styptic pen, silver nitrate solution or a cautery device. If hemostasis is not achieved with these methods, UAC clinical staff should be consulted.

Rats

- For rats less than 21 days age, anesthesia is not required with the following caveats:
 - Use of topical anesthesia in spray, cream, gel or liquid formulations (e.g., bupivacaine, Cetacaine, EMLA, lidocaine) should be considered and used where possible.
 - A **sterile** scalpel, razor blade, or scissors must be used to remove no more than 2 mm of the tail length during the first tail biopsy. The biopsy instrument must be disinfected between subsequent animals.
 - No more than 5 mm **total tail length** is to be removed, if additional tail biopsy is required.
- For rats over 21 days of age, anesthesia must be used.
 - Anesthesia can be general (e.g., isoflurane) or topical (e.g., bupivacaine, Cetacaine, EMLA, lidocaine).
- For rats over 35 days of age, general anesthesia must be used.



- The investigator must monitor the animals to assure hemostasis after the animals are returned to the cage. Acceptable methods of hemostasis are digital pressure, a styptic pen, silver nitrate solution or a cautery device. If hemostasis is not achieved with these methods, UAC clinical staff should be consulted.

C. REFERENCES, MATERIALS, AND/OR ADDITIONAL INFORMATION

- The guidelines for biopsy of mouse tails are based on:
 - Hankenson F.C., Braden-Weiss, G.C. and Blendy, J.A. (2011). Behavioral and activity assessment of laboratory mice (*Mus musculus*) after tail biopsy under isoflurane anesthesia. *JAALAS*, 50:686-694.
 - https://oacu.oir.nih.gov/sites/default/files/uploads/arak-guidelines/rodent_genotyping.pdf
- The guidelines for biopsy of rat tails are based on:
 - https://oacu.oir.nih.gov/sites/default/files/uploads/arak-guidelines/rodent_genotyping.pdf