



**Florida State University  
Animal Care and Use Committee**

**Guidelines for Rodent Tail Biopsy**

## **1.0 Scope and Application**

Genetic identification of genetically engineered rodents is critical to the conduct of research and reduction of animal numbers. Genotype is frequently determined by Polymerase Chain Reaction (PCR) analysis of DNA extracted from tissues of young rodents. Common DNA sources include tail biopsies, ear punches, hair, blood, fecal, and oral samples. While rodent tail biopsy is a safe, effective and humane procedure, the FSU ACUC encourages investigators to consider less invasive methods for DNA collection such as ear punches, hair, blood, fecal, and oral samples. When alternative methods are not feasible, tail biopsy must be scientifically justified in the Animal Use Protocol and the methods outlined below must be followed, unless specific exception is approved by the FSU ACUC.

## **2.0 Summary of Method**

- Methods for tail biopsy for DNA analysis and/or genotyping must be described in the Animal Use Protocol.
- **Anesthetic requirements**
  - **For mice and rats  $\leq$  21 days old:** Investigators are strongly encouraged to apply a local anesthetic to the tail and perform the tail biopsy as early as possible within this age range. Local anesthesia may be achieved by immersion of the tail in ice-cold ethanol for 10 seconds, by application of ethyl chloride spray, or use of other suitable anesthetics recommended by LAR veterinary personnel.
  - **For mice  $>$  21 days old and rats  $\leq$  35 days old:** Use of a local or general anesthetic is required prior to tail biopsy, and choice of anesthetic agent should be made in consultation with LAR veterinary personnel.
  - **For rats  $>$  35 days old:** Use of general anesthetic is required, and choice of anesthetic agent should be made in consultation with LAR veterinary personnel.
- Tail biopsy length should be limited to the smallest amount possible. In general, a biopsy of approximately 2 mm is sufficient to generate DNA for multiple PCR reactions. If longer tail samples are required, scientific justification must be provided in the Animal Use Protocol.
- Rodents must be manually/physically restrained or under general anesthesia for tail biopsy. Use a sterile scalpel, razor blade, or scissors to cleanly excise the distal tip of the tail. Scalpels or scissors

must be disinfected between animals. If a scalpel or razor blade is used, also disinfect the work surface on which the tail is placed between animals.

- Investigators must ensure hemostasis is achieved prior to returning the animal to the primary enclosure. If needed digital pressure, silver nitrate, or some other means should be applied to achieve hemostasis. Animals that have been anesthetized must be continuously monitored until able to maintain sternal recumbency.
- Post-procedural analgesia should be considered. The need to provide an effective analgesic (e.g. an opioid such as buprenorphine) post-biopsy increases with age of the rodent post weaning, length of the biopsy, or with repeated biopsies. Choice of analgesic should be made in consultation with LAR veterinary personnel.
- If additional DNA is required for retesting, alternatives to a second tail biopsy must be considered. Repeat tail biopsies require anesthesia and must be justified in the Animal Use Protocol.

#### Revision History

Author: Kathleen Harper, DVM, PhD and William A. Hill, DVM, MPH, DAACLAM, CPIA

Approval Date: March 20, 2019

Revised: May 29, 2019