

**University of Missouri –Kansas City  
Institutional Animal Care and Use Committee Policy**

**Tail Biopsy of Mice**

The UMKC IACUC is obligated to provide policies that notify and train personnel concerning the appropriate techniques, equipment, and agents for performing appropriate procedures to ensure humane care and use of laboratory animals.

**Policy:**

For the production of genetically altered rodents, it is often necessary to sample tissue for DNA analysis. Commonly, the tip of the tail is sampled for this purpose. The section of tail removed should be the smallest section that permits the necessary testing. It is recommended that tail samples be limited to no more than 5 mm of tissue.

In the mouse the terminal tail vertebrae ossify and enervation becomes fully functional between 2 and 4 weeks of age. At this point tail biopsy becomes more painful. Thus tail sampling is recommended in mice less than three weeks of age. In mice of this age, biopsy of the distal tail no more than 5 mm total may be performed without anesthesia. Animals over 3 weeks of age should be anesthetized by use of inhalant agents, injectable agents and local agents such as topical formulations of lidocaine and prilocaine (EMLA cream®).

Sampling should be performed using a sterile, sharp instrument, such as a scalpel blade or scissors. Adequate hemostasis should be achieved by direct pressure by holding the tail between the thumb and finger, or by silver nitrate, cautery, or tissue adhesive.

If possible, alternatives to tail biopsies should be strongly considered:

- Tissue can be obtained by ear punching, which can also serve as identification. Ear punching is performed using an instrument that removes a small (2-4 mm in diameter) circular section of tissue from the ear pinna. Multiple samples can be collected from one or both ears. Collection of the small tissue samples produced during ear punching may generate enough tissue (DNA) to allow analysis by PCR.
- Small quantities of blood from the saphenous vein, orbital sinus, lateral tail vein, submandibular vein, or other acceptable blood collection route may be used for analysis,
- PCR analyses using saliva<sup>1</sup> and hair<sup>2</sup> have also been described among others.

**Revisions to the Policy:**

This policy is intended to be flexible and readily adaptable to changes in regulatory requirements. The UMKC IACUC has the authority to amend this policy as needed. The UMKC Institutional Animal Care and Use Committee has reviewed and approved this policy.

**References:**

- <sup>1</sup>Irwin, M.H.; Mofatt, R.J.; Pinkert, C.A. Identification of Transgenic Mice by PCR Analysis of Saliva. *Nature Biotechnology* (1996) 14, 1146-1148.

- Schmitteckert, E.M.; Prokop, C.; Hedrich, H.J. DNA Detection in Hair of Transgenic Mice—A Simple Technique Minimizing the Distress on the Animals. *Laboratory Animals* (1999) 33(4), 385-389.
- Zimmermann, K; Schwarz, H.P.; Turecek, P.L. Deoxyribonucleic Acid Preparation in Polymerase Chain Reaction Genotyping of Transgenic Mice. *Comparative Medicine* (2000) 50(3), 314-316.