

Guideline for Tissue Collection for Genotyping of Mice and Rats

Summary/Purpose: Provides procedures for tissue collection in rodents for genetic analysis.

BACKGROUND

Animal Use Protocols (AUPs) must meet all federal regulations. The Institutional Animal Care and Use Committee (IACUC) has the responsibility to ensure that all animal use activity meets federal law, Public Health Service policy, and accreditation standards. All animals maintained by The University of Mississippi (UM) must be covered by an active, IACUC-approved protocol. This policy addresses procedures for tissue collection in mice and rats for genetic analysis. Tissue samples frequently are obtained for studies involving DNA, various proteins, or physiological assays.

RESEARCHER RESPONSIBILITIES

The Principal Investigator (PI) should work with the Attending Veterinarian to ensure tail and ear snip, and ear punch procedures are consistent with this policy, or any time they are unsure of proper procedures.

The IACUC has established the following guidelines for tissue collection from mice and rats for genetic analysis. Please note that use of the following procedures must also be described in an active IACUC approved protocol.

1. TAIL BIOPSY

a. Age and anesthesia guidelines:

i. Mice and Rats \leq 21 days old:

1. No anesthesia or analgesia required.

Note: Higher DNA yield has been reported from tail snips at 18 days of age or younger, due to a lower percentage of ossified sample. For the best results, we recommend collecting samples prior to day 18.

ii. Mice and rats $>$ 21 days old:

1. Tail snipping at this age is discouraged and should be avoided if possible
2. Procedures for tail snips at this age must be described and justified in the protocol
3. Use of a systemic analgesic given prior to tail snipping is required unless scientifically justified

b. Tail biopsy general procedure:

- i. Gently, but securely, restrain animal (manual or mechanical)
- ii. Anesthesia if required.
- iii. Snip tail with sanitized sharp scissors or disposable blade (recommended)
- iv. DO NOT remove more than a total of 5mm of tail, 2-3mm is usually sufficient
- v. Place tail tip into a tissue collection tube

- vi. Check for bleeding, if bleeding occurs:
 - 1. Apply pressure to the cut portion of the tail with gauze until bleeding has stopped
 - 2. If continuous pressure does not stop the bleeding, Kwik Stop® can be used.
 - 3. Observe rodent until it recovers (about 3-5 minutes)
- vii. Return animal to its cage
- viii. Clean off biologic material (e.g., blood or fur) from scissors and sanitize after each snipping
- c. Repeat tail snips –**
 - i. Requires anesthesia.
 - ii. Requires justification in AUP.

2. EAR PUNCH

- a.** A small amount of tissue collected from 1 or 2 ear punches is often adequate for genotyping.
- b.** If this procedure is also being used to identify animals, the tissue can be used for genotyping.
- c.** May be performed on any age rodent without general anesthesia.

3. EAR SNIP

- a.** Using a sharp pair of scissors, 2-3 mm may be snipped from the tip of the ear to collect tissue for genotyping.
- b.** May be performed on any age rodent without general anesthesia.