



Institutional Animal Care & Use Committee

Rodent Genotyping and Identification Methods

Collecting Tissue for Genotyping and Identifying Purpose Bred Mice and Rats

The Institutional Animal Care and Use Committee (IACUC) must approve all methods for tissue collection prior to performing procedures on animals. Tail clipping and ear punching are acceptable methods of tissue collection for the purpose of genotyping mice and rats. The specific method(s) must be described and approved in the Animal Care and Use Protocol. Under all circumstances, aseptic method should be followed. Reference to this document is sufficient description, provided the guidelines are adhered to as described below.

Tail Clipping

This method involves amputating a very small segment of the distal tail. At <21 days of age, the degree of ossification of the coccygeal vertebrae in the distal 0.5 cm is much less than that at 1 cm. After 21 days of age, the degree of ossification is similar at the distal 0.5 cm and 1 cm tail segments. Perception of pain is assumed to be more likely in bony versus cartilaginous tissue. Tail clipping on mice or rats ≤ 21 days of age does not require anesthesia. Animals must be appropriately restrained during the procedure to minimize trauma. Sterile sharp scissors (must be disinfected between uses) or a sterile blade per animal can be used for the procedure. Only the distal 0.5 cm should be amputated. Hemostasis can be achieved by using a silver nitrate stick, Quick Stop powder, or by applying a gauze sponge over the site with gentle pressure until bleeding stops. Animals >21 days of age or animals requiring a second tail sample must be appropriately anesthetized using ketamine/xylazine, ketamine/dexmedetomidine or isoflurane or local anesthetic. Animals >35 days of age that require tail clipping must be under general anesthesia using ketamine/xylazine, ketamine/dexmedetomidine or isoflurane during the procedures and administered a systemic analgesic (i.e., buprenorphine, meloxicam, carprofen) given at least once following the procedure. If multiple tail clippings are required a maximum of 1 cm total tail length can be amputated, with all tail clippings combined.

IACUC Approval Date: 03/ 29/2018

Review Date: 03/29/2018

Issue Date: 05/07/2018

Ear Punch

This method involves punching a hole or making a notch in the ear pinna. Commercial ear punches are available and inexpensive. Ear notching using an ear punch is a permanent form of identification. Ear notch remnants can usually provide enough tissue for DNA sampling during the initial PCR screening. Ear punch samples collected on animals do not require the use of anesthesia or analgesics, however, for identification purposes the animal must be appropriately restrained to ensure proper technique. The ear punch device used must be disinfected between cages of animals. These devices can be autoclaved.

Other Identification Methods

1. Micro Chipping: Injecting a small microchip transponder subcutaneously between the scapulae of the rodent. The microchip is detected by use of a reader.
2. Micro-tattooing: A permanent mark made using a needle and ink which is applied to the tail, toes, and foot pads.
3. Ear tagging: A metal tag with a unique identification number is attached to one ear of the rodent.
4. Non-toxic markers: Sharpies can be used to mark the tail or fur of rodents, however the mark must be reapplied every 24 hours to ensure the mark is still visible. Animal Marker is another product available which can be used on rodent's fur. Animal Markers can last between 6-12 weeks.

References

1. Guide for the Care and Use of Laboratory Animals, 8th Edition pg. 75
2. Hankenson FC, Laire, Garzel LM, Fischer DD, Nolan B, and Hankenson KD. Evaluation of tail biopsy collection in laboratory mice (*Mus musculus*): Vertebral ossification, DNA quantity, and acute behavioral responses. *J Am Assoc Lab Anim Sci* 47:10-18, 2008