

IACUC Policy on Genotyping Mice and Rats  
11/19/15 Michael Wong

IACUC Approved: 12/3/15	Other Approvals:
Revised and Approved: 10/20/16 MW	

To identify the genotype of genetically engineered animals, it is necessary to obtain tissue (often via biopsy) from the animal for DNA testing. The method of genotyping and age of animals to be genotyped must be described within the IACUC protocol.

Requirements:

Tissue sampling must be performed using a sharp, sterile instrument, e.g. scalpel blades, scissors, or ear punches. Methods of sterilizing instruments include, but not limited to, purchase of sterile packed instruments, autoclaving, or bead sterilization. Instruments must be cleaned between individual animals and sharpened/replaced regularly to ensure minimal tissue injury. Hemostasis must be accomplished with the use of topical coagulants, e.g. styptic powder, manual compression, or cautery. Animals must not be returned to the home cage until hemostasis is achieved.

Ear Punch/Notch

Anesthesia is not required when performing this procedure. Ear punch/notch can be used for individual animal identification and genotyping of the collected tissue.

Tail Snip/Biopsy

The maximum amount of tail that can be removed is 5mm. The maximum amount of tail snip/biopsy is one. If more tissue is required a different method of collection is required.

Anesthesia is not required in rodents up to 21 days of age, but is recommended. The ideal age for genotyping is 10-17 days of age, while tail tissue of most strains is still soft and not calcified.

General anesthesia and/or analgesia is required if performing a tail snip/biopsy in rodents 22 days or older. Injectable anesthetics such as ketamine/xylazine or gas anesthetics such as isoflurane are acceptable. Analgesics such as buprenorphine or meloxicam must be administered at least 15 minutes prior to tail snip to ensure adequate analgesia is present at the time of the snip. Please see the IACUC POLICY ON RODENT AND RABBIT ANESTHESIA AND ANALGESIA for other options.

Toe Clipping

Not recommended and requires IACUC approval and justification.

References:

1. National Institutes of Health Office of Animal Care and Use ARAC Guidelines, Guidelines for the Genotyping of Mice and Rats. [http://oacu.od.nih.gov/ARAC/documents/Rodent\\_Genotyping.pdf](http://oacu.od.nih.gov/ARAC/documents/Rodent_Genotyping.pdf)
2. **Hankenson FC, Garzel L, Fischer D, Nolan B, and Hankenson K.** 2008. 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**(6):10-18.
3. **Jones C, Carver S, Kendall L.** 2012. Evaluation of Common Anesthetic and Analgesic Techniques for Tail Biopsy in Mice. *J Am Assoc Lab Anim Sci* **51**(6):808-814.