



Laboratory Animal Resources Center Tail Tipping for Genetic Monitoring 2014, Revised 2019

Procedure of Collecting Tail Tissue for Genetic Monitoring in Mice

- The tail tipping or biopsy procedure must be described in the investigators' approved IACUC Protocol. DNA analysis using tail tissue allows young mice to be genotyped prior to weaning.
- Age
 - The ideal time to perform tail tip biopsy is between 10-17 days of age. At this age, the tail is still soft and the tail vertebrae have not yet calcified. Local anesthetics are optional for mice at or under 21 days of age. Recommended topical analgesics for tail tip biopsy for young mice include immersion of the tail tip for 10 seconds in ice-cold 70% ethanol just prior to biopsy, or immersion of the tail tip in 0.5% bupivacaine for 30 s after biopsy¹.
 - Appropriate analgesics or anesthesia must be used when performing tail tip biopsy on mice >21 days of age. Consult with a LARC veterinarian regarding analgesic options.
- The mouse is gently restrained by the scruff and the tail is wiped with alcohol.
- The tail biopsy procedure is performed using clean gloves and a sterile sharp scalpel or razor blade. Sharp scissors may be used if they are guaranteed to be sterile and sharp.
- Restrain the mouse and make one clean cut through the tail. The size of the biopsy should be about **1-2mm** and must not exceed 5mm of tissue.
- Disinfect the scalpel in a glass bead sterilizer or wipe with alcohol between mice. Do not use iodine solutions because they may interfere with DNA analysis.
- Following the biopsy procedure, bleeding should be controlled using local pressure with sterile gauze. Research staff must *ensure that bleeding has stopped before returning the mouse to its cage*.
- If bleeding continues longer than expected, consult a LARC technician or veterinarian. Chemical cauterizing agents must be used with caution as the chemical may be toxic if ingested by the mouse. Electro-cautery should not be used on unanesthetized mice.

References

1. Dudley ES, Johnson RA2, French DC3, Boivin GP4. Effects of Topical Anesthetics on Behavior, Plasma Corticosterone, and Blood Glucose Levels after Tail Biopsy of C57BL/6NHSD Mice (*Mus musculus*). *J Am Assoc Lab Anim Sci*. 2016;55(4):443-50.
2. Hankenson FC, Garzel LM, Fischer DD, Nolan B, 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*. 2008 Nov;47(6):10-8.
3. Jones CP, Carver S, Kendall LV. Evaluation of common anesthetic and analgesic techniques for tail biopsy in mice. *J Am Assoc Lab Anim Sci*. 2012 Nov;51(6):808-14.