MOUSE IDENTIFICATION

1. PURPOSE

1.1. The purpose of this Animal Care and Use Procedure (ACUP) is to list methods and procedures that can be used to identify mice. This ACUP is approved by the Cornell Institutional Animal Care and Use Committee (IACUC). Any deviation must be approved by the IACUC prior to its application.

2. SCOPE

2.1. This document applies to all mouse users at Cornell University.

3. INTRODUCTION

3.1. Proper identification of research animals is an essential component of a research project. Identification allows an animal to be monitored throughout the course of a project and assists animal care staff in providing appropriate care to individual animals. This document describes various methods of identifying mice. Cage cards are required for all mouse cages. Additional forms of non-invasive and invasive identification can be applied to individual mice within a cage to meet the needs of the intended research. All forms of invasive identification must be listed on the IACUC approved research protocol. Contact the Center for Animal Resources and Education (CARE) at Cornell University by emailing care@cornell.edu for more information or for assistance.

4. MATERIALS AND EQUIPMENT

4.1. Cage cards
4.2. Identification specific materials (e.g., ear tags, ear punch)

5. PROCEDURE

5.1. Cage Cards – REQUIRED FOR ALL MICE
5.1.1. Cage card information must include, at a minimum: species, strain or stock, sex, number of animals in the cage, investigator and protocol number, date of birth or arrival.

5.1.2. The cage card is a sufficient method of identification for:

5.1.2.1. Individually housed mice or a breeding pair.
5.1.2.2. Groups of mice on protocols where individual identification is not necessary.

5.2. Temporary Markings

5.2.1. Use an indelible (permanent) marker to write numbers, bars, or other distinguishable markings on the tail or the ears.

5.2.2. Temporary markings last up to 3-4 days. Repeat markings can be made every 3-4 days as necessary.

NOTE: Use of any of the invasive procedures listed below requires IACUC review and approval. Thus, invasive identification methods should be described in the research protocol procedure section.

5.3. Tattooing

5.3.1. Use an electric tattoo machine to write identifiers on the tail.
5.3.2. Use only sterile, sharp tattoo needles.
5.3.3. This procedure is easier to perform under general anesthesia. If not using general anesthesia, a local anesthetic on the tail should be applied before tattooing, such as EMLA cream or a local anesthetic spray. See ACUP 101 Rodent Anesthesia and ACUP 102 Analgesia for further details.
5.3.4. Have the identification key readily available in the animal room to allow prompt identification of individuals.

5.4. Micro-tattooing

5.4.1. Use a micro-tattoo machine or a 27 gauge needle to inject tattoo ink in the toe or foot pads, the tail, and/or the ears. In the case that a micro-tattoo machine is unavailable, a 27 gauge needle may be used to make puncture(s), followed by rubbing tattoo ink into the area.

5.4.2. Whenever possible, use a simple identification code to limit the number of tattooed areas.
5.4.3. Have the identification key readily available in the animal room to allow prompt identification of individuals.

5.5. Ear Tags

NOTE: Do not use this method on unweaned mice.

5.5.1. Use tags that are about 5 mm long.
5.5.2. Rinse tag in 70% alcohol before use to help prevent ear infection.
5.5.3. Place the tag in the applicator so that the holed end of the tag is positioned over the notched area of the applier. The pointed end should be opposite the hole.

5.5.4. Scruff the mouse so that the ears are easily accessible.

5.5.5. Place the ear between the point and the hole of the tag. The numbers should be in an upward configuration so that they can be easily read without restraining the animal.

5.5.6. The tag should be positioned at the lateral base of the ear, approximately 3 mm from the edge of the ear pinna (see picture below).

5.5.7. Once the tag is positioned correctly, squeeze the applicator firmly to apply the tag.

5.5.8. Monitor the tag implantation intermittently for signs of local infection or inflammation (redness, swelling, bleeding).

5.5.9. Do not place a second ear tag without first consulting a CARE veterinarian.

5.6. Ear Notching / Punching

**NOTE:** Use this method on mice with ears large enough for desired mark(s) – usually at least 10 days of age.

5.6.1. Restrain the mouse by the scruff and use the ear punch to create holes and/or notches in the ears, following an identification chart.

5.6.2. Whenever possible, use a simple code to limit the number of notches/punches.

5.6.3. Have the identification key readily available in the animal room to allow prompt identification of individuals.

5.6.4. If possible, use the excised tissue as a sample for genotyping to replace the need for a tail biopsy.

5.7. Microchipping

**NOTE:** Do not implant microchips in mice less than 3 weeks old.

5.7.1. Use appropriate anesthesia and analgesia during implantation. Refer to ACUP 101 Rodent Anesthesia and ACUP 102 Analgesia.

5.7.2. Test the microchip before implanting it into the mouse by scanning it with a compatible reader while it is still in the package.

5.7.3. Apply disinfectant to the area (e.g., chlorhexidine, povidone iodine).

5.7.4. Implant microchips subcutaneously in the dorsal neck area. The standard size for a mouse microchip is about 2 x 13 mm.

5.7.5. Using the reader, test the chip again after implanting to confirm proper function.

5.7.6. Keep a compatible reader in the room to allow easy identification of the mice.

5.7.7. Reuse microchips only after proper cleaning and sterilization (follow manufacturer’s recommendation).
5.8. **Toe Amputation (Clipping)**

**NOTE:** Toe clipping is only acceptable if the genotype needs to be known before weaning. This method replaces a tail biopsy as a sample for genotyping. If very young mice must be genotyped, a combination of micro-tattoo (described above) and tail biopsy is preferable to toe clipping.

5.8.1. Mice must be under 17 days of age. Toe clipping of mice older than 17 days of age requires scientific justification and must be reviewed by the IACUC.

5.8.2. No more than 2 digits (total) can be clipped, and they must be on separate limbs.

5.8.3. The digit can be severed at any level distal to the middle of the 1st phalanx (P1).

5.8.4. Use clean, sharp iris scissors or a clean, sharp scalpel blade to remove the toe segment.

5.8.5. If the procedure is to be performed on multiple mice, wipe the scissors or blade with an antiseptic solution (e.g., isopropyl alcohol, 70% ethanol) between each animal.

6. **PERSONNEL SAFETY**

6.1. Medical Emergencies: **CALL 911**.

6.2. When working with animals wear appropriate PPE, observe proper hygiene, and be aware of allergy, zoonosis, and injury risks. Refer to the CARE Occupational Health and Safety webpage for more information.

7. **ANIMAL RELATED CONTINGENCIES**

7.1. Post contact information for emergency assistance in a conspicuous location within the animal facility.

7.2. Non-emergency veterinary questions and requests for care, email CARE veterinary staff at care@cornell.edu.

7.3. Emergency veterinary care is available at all times including after working hours and on weekends and holidays by calling the CARE pager (1-800-329-2456).

8. **REFERENCES**


8.5. ACUP 101 Rodent Anesthesia: 
http://ras.research.cornell.edu/care/documents_k/ACUPs/ACUP101.pdf

8.6. ACUP 102 Analgesia: 
http://ras.research.cornell.edu/care/documents_k/ACUPs/ACUP102.pdf

8.7. ACUP 542 Maintaining Clinical Records for Animal Research Models: 
http://ras.research.cornell.edu/care/documents_k/ACUPs/ACUP542.pdf

8.8. CARE Occupational Health and Safety webpage: 
http://ras.research.cornell.edu/care/OHS.html

9. APPENDIX

9.1. None

10. HISTORY

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