THE INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE

Rodent Identification Guidelines

There are several IACUC approved methods used to identify rodents. Each method has both advantages and disadvantages. In long-term studies it is important to choose a method that is permanent and easily read. All methods must be described in the approved protocol prior to use in animals. Some techniques require specific training and certification by either Office of Animal Care and Use (OACU) Training and Compliance Team, or by Laboratory Animal Coordinator (LAC).

**Long Term Methods:**

- **Ear Notching** – This method is frequently used in both mice and rats. There are several tools that may be purchased to achieve this. Most resemble a hole puncher and are very cheap. There are previously created maps that serve as a numbering system, or the researcher may create a map. This technique requires certification prior to approval.

  **A) Advantages** – Ear notching can be done quickly causing very little pain or distress. The instruments are not costly and can be obtained easily.

  **B) Disadvantages** – This method can not be applied until the ears are fully developed. This may be too late for those that use young rodents. This may not work with fractious strains. Rips or tears caused by fighting may leave the pattern indiscernible. Tools used to notch ears dull easily so must be replaced frequently.

- **Ear Tagging** – Ear tags can be purchased with numbers and/or letters. Correct placement of the tag makes them fairly easy to read. Ear tags should be placed in the lower half of the ear to facilitate normal ear position and on the outer third of the ear to avoid the area with the highest concentration of capillaries. This technique requires certification prior to approval.

  **A) Advantages** – Ear tags are inexpensive and are fairly easy to apply. This method does not require the use of anesthesia. Tagging can be done quickly and does not seem to cause pain and only minor distress.

  **B) Disadvantages** – Tags can fall out if not applied properly. They can also be lost if ears are ripped or torn in strains that fight. Different sized tags are
available for different species. Tags are relatively heavy for weanlings and may cause young mice to tilt their head even when the proper sized tag is applied. Some strains are prone to scratching the tagged area which can lead to infection, hematomas, and granulomas. In a very limited number of cases, a member of the DLAM veterinary team has seen ear tags stimulate tumor growth.

> **Microchipping** – Microchips, electronic transponders, are safe and reliable.

A) **Advantages** – Microchips may be applied without the use of anesthesia. Applying microchips seems to cause little or no pain. Even though the chip may migrate to a different area, they are not lost so prove to be a reliable method. Animals can be identified without handling and removing them from the cage. Some microchips are designed to provide other information such as core body temperature and heart rate.

B) **Disadvantages** – The equipment used to read the chips is fairly expensive. Microchips cost five to ten dollars each. Despite what manufacturers say, the chips can be reused. In order to reuse the chips they must be sterilized by ethylene oxide. The hospital will do this as a service for fee. If not implanted properly there is a slight risk of infection. In a very limited number of cases, a member of the DLAM veterinary team has seen microchips stimulate tumor growth.

> **Tattooing** – This method seems to be growing in popularity. It is both permanent and fairly easy to apply.

A) **Advantages** – This method works in all strains, even the more fractious. The cost is very reasonable after the initial expense. Tattoos can be applied to rodents of any age. The markings are easily read, especially when applied to the tail of light colored rodents. When placed in the proper area, it is not necessary to handle the animal to read the tattoo. Tattooing causes only minor pain and distress and does not require the use of anesthesia.

B) **Disadvantages** – The identifying marks may be a little difficult to read in young pigmented mice. This improves as the mice age. The initial cost is rather expensive. There is a small chance of inducing infection if the tattoo is not applied correctly.

> **Toe Clipping** – Toe-clipping, as a method of identification of small rodents, should be used only when no other individual identification method is feasible, should be performed only on neonates (<10 days of age), and its use must be scientifically justified in the approved IACUC protocol. The IACUC allows a maximum of four toes and no more than two per foot. Do not cut the hallux (“dew-claw” or “little toe”) as this may decrease the rodent’s grasping ability.
See the entire policy [here](#). This technique requires certification prior to approval.

**A) Advantages** – Toe clipping can be done at a very early age, post natal day one. The tissue can be used for genotyping. No anesthesia is needed. This seems to cause little or no pain when performed early enough. The young react to being removed from their mother, but do not react to the clipping of the toe.

**B) Disadvantages** – Toe clipping may not be performed after post-natal day ten. The young show signs of distress when removed from their mother and siblings. This may cause a small amount of pain. The general public views this as a form of brutal mutilation. There is a small possibility of infection. A reduction in the number of toes may reduce the ability to grasp objects.

**Short Term Methods:**

- **Hair Clipping** – Trim patterns in fur. Keep a record or picture to identify rodents.
  
  **A) Advantages** – Causes no pain.
  
  **B) Disadvantages** – This is very temporary. The hair will grow back within ten days and must be repeated. In animals as small as mice, removal of much hair can affect their ability to maintain body temperature.

- **Permanent Markers and Fur Dyes** – It is easy to apply marks or dyes to different body parts. Temporary identification can be achieved with non-toxic stains or dyes that come in a variety of colors.
  
  **A) Advantages** – This method is non-invasive. It causes only minor stress due to restraint.
  
  **B) Disadvantages** – This method can be time consuming because it must be redone soon after application. If you are working with nursing pups, the mothers will groom the neonates excessively and the markings may disappear overnight. This could result in a loss of identity.

If you would like to inquire about equipment used, or training provided, in the methods discussed above, please email the OACU Training & Compliance Team. You may send questions to the general IACUC email account iacuc@med.unc.edu.