

Animal Identification

Proper identification of animals plays an important role in research, whether animals are being used as experimental subjects, for breeding purposes, or as a source for tissues, cells, or fluids. Identification of animals links animal-specific information to experimental records, and facilitates communication between investigators, technicians, and animal care personnel.

A minimum baseline of information to be accessed through the identification system should include the investigator's name, the stock or strain designation, the animal's age or date of birth, and the source of the animal. Of particular importance to many immunologists is the genetic information contained in the stock, strain, substrain, or hybrid designation, including haplotype when available. This information should be maintained in close proximity to the facility housing the animals and must be accessible to both research and support staff.

Basic information as noted above is usually maintained on cage cards. Cage cards should be utilized to identify single- or group-housed rodents where individual identification is not necessary. When larger animals such as rabbits are housed in single cages, both cage cards and individual animal identification by ear tag or tattoo are recommended. In some cases it is necessary to individually identify rodents. Specific procedures for marking or identifying individual rodents and rabbits are described in the following protocols.

NOTE: Wear disposable gloves when handling animals in the following protocols.

EAR NOTCH OR PUNCH FOR MOUSE, RAT, AND HAMSTER

BASIC PROTOCOL 1

Materials

Ear punch—either hole (National Band and Tag) or notch (Harvard Apparatus)

1. Manually restrain the mouse, rat, or hamster (*APPENDIX 4D*).
2. Place the ear punch in the preselected location on the ear (*Fig. A.4E.1*).
3. Engage punch quickly and firmly to ensure a clean cut.
4. Return the animal to its cage.

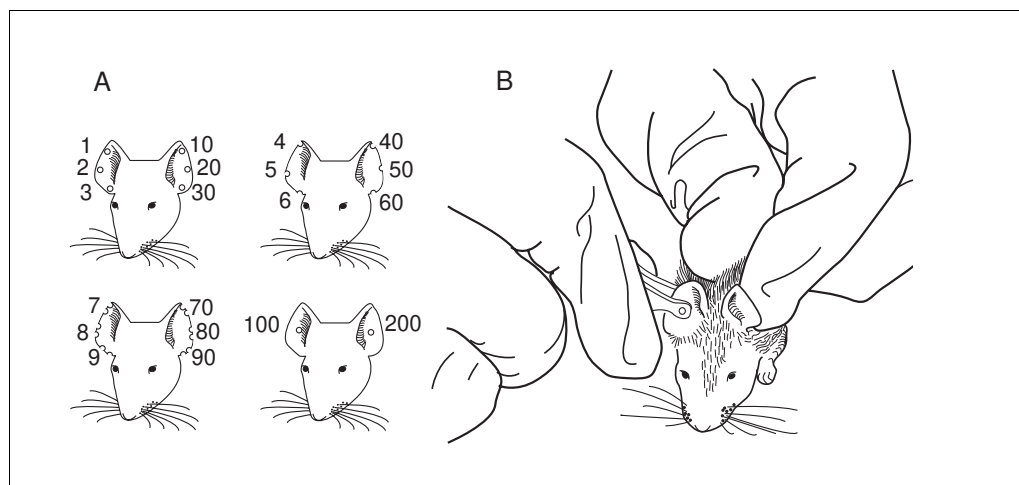


Figure A.4E.1 Ear punch identification of rodents. Determine the location of the identifying punch(es) according to the illustrated code (**A**). Restraining the animal manually, place punch in the desired position and firmly and quickly punch hole (**B**).

EAR TAG FOR MOUSE, RAT, AND HAMSTER

Materials

Ear tags (National Band and Tag)

1. Manually restrain the animal (*APPENDIX 4D*), allowing access to the ears.
2. With the free hand, grasp a metal tag between the thumb and forefinger. Position the coupling device of the tag near the base of the caudal one-half of the ear.

Placement of the ear tag must not impinge on the external ear canal. The location described will permit secure attachment and minimize movement and trauma.

3. Couple the tag by quickly pressing the thumb and forefinger together.
4. Repeat in the other ear if necessary to ensure long-term identification.

TATTOO FOR MOUSE AND RAT

Materials

Micro-tattooing forceps (Ketchum Manufacturing)

Green tattoo paste (Ketchum Manufacturing)

25- to 30-G, 0.5-in. needles

1. Prepare the micro-tattooing forceps with the tattooing paste and needles according to the manufacturer's instructions.
2. Manually restrain the animal (*APPENDIX 4D*), allowing access to the paws or tail.
3. Tattoo the toe pad, foot pad, or tail with unique pattern.

Anesthetization (APPENDIX 4B) may facilitate this procedure.

TATTOO FOR THE RABBIT

Materials

Ketamine/xylazine solution (*APPENDIX 4B*)

70% ethanol

Gauze sponge or swab

Tattoo machine (Animal Identification and Marking Systems)

Additional reagents and equipment for anesthesia (*APPENDIX 4B*)

1. Anesthetize the rabbit with ketamine/xylazine (*APPENDIX 4B*).
2. Swab the inside of the pinna with 70% ethanol on a gauze sponge or swab.
3. Tattoo unique identification on the inside of pinna (Fig. A.4E.2).
4. Observe the rabbit for recovery from anesthesia and return to the cage.

SUBCUTANEOUS TRANSPONDER FOR MOUSE, RAT, HAMSTER, AND RABBIT

Materials

70% ethanol

Gauze sponge or swab

12-G implantation device loaded with sterilized transponders, and associated receiving unit (BioMedic Data Systems or AVID Identification Systems)

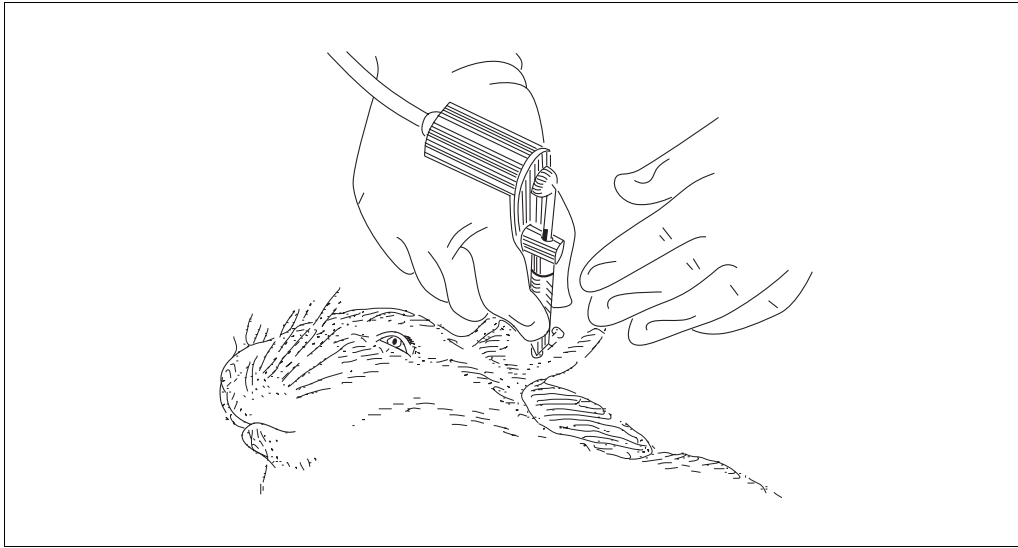


Figure A.4E.2 Tattooing the anesthetized rabbit on the inside of the pinna.

1. Restrain the animal for subcutaneous injection (*APPENDIX 4D*).
2. Swab the mid-dorsal region between the shoulder blades with 70% ethanol on a gauze sponge or swab.
3. Inject the implant using subcutaneous injection technique.
4. Scan the animal using the receiving unit to confirm transponder function and identification information.
5. Return the animal to the cage.

Anesthetization (APPENDIX 4B) may facilitate this procedure.

COMMENTARY

Selection of the best method of animal identification depends on several factors including species, whether animals are single- or group-housed, skin pigmentation, duration of study, and need for individual, positive identification. In most cases, a well documented and maintained cage card will suffice. If individual identification of group-housed animals is warranted, or if more positive identification of single-housed animals is desired, ear tags, ear punches, tattooing, or transponders should be employed in addition to cage cards.

Duration of identification is an important consideration. For example, a small percentage of ear tags may be lost over time and need to be replaced. Initial placement of tags in both ears can minimize this problem. In addition, chronic inflammation at the site of attachment may become clinically or experimentally relevant.

Ear notches are similarly less effective as the duration of identification lengthens.

Notches or punches may become “unreadable” due to ear chewing, improper placement, or trauma.

Lifetime identification of rodents has traditionally been accomplished by coded digital amputation (“toe clipping”); however, this procedure is considered by many to be inhumane and ethically unjustifiable except under special circumstances. The use of microchip transponders has become a reliable and reasonably priced alternative for lifetime identification. It is a biocompatible method used in long-term studies and is especially useful in pigmented animals. It allows animal identification data to be added automatically to a computer database file. Completeness of cage cards and use of proper technique to maximize effectiveness and duration of individual identification will ensure adequate record keeping. Hands-on training and experience are necessary to become successful at ear tagging, ear punching or notching, and tattooing.

Key References

Ball, D.J., Argentieri, G., Krause, R., Lipinski, M., Robinson, R.L., Stoll, R.E., and Visscher, G.E. 1991. Evaluation of a microchip implant system used for identification in rats. *Lab. Anim. Sci.* 41:185-186.

Fox, J.G., Anderson, L.C., Lowe, F.M., and Quimby, F.W. (eds.) 2002. *Laboratory Animal Medicine*, 2nd ed., pp. 179-180. Academic Press, San Diego.

Provide additional details on animal identification methods.

Contributed by John Donovan
Wyeth-Ayerst Research
Collegeville, Pennsylvania

Patricia Brown
National Institutes of Health
Bethesda, Maryland