

# Mouse Ear Tattoo: A Quick and Easy Alternative to Ear Punches and Tags

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## Abstract

Some of the more common methods for individual mouse identification include tattooing of the tail or toes, ear punches and ear tags. Each method has its advantages and drawbacks so an alternative method was explored. The Aramis Micro Tattoo system is designed to use a standard hypodermic needle which is re-inked in a well on the opposing side and is commonly used for tattooing the toes of mice. A study was performed to see if this method could be used to tattoo the ears of individual mice using a set pattern for numbering. The micro tattoo equipment, non-toxic ink and a 25 g needle were used to tattoo small dots in a set pattern on the animal ears, giving each a unique number. The animal was gently restrained and the ear punctured the required number of times, excess ink was wiped away and the animals returned to their cages. The ability to quickly identify individual animals and the longevity of the tattoos were monitored over the course of multiple studies. The end result provided an easy method for tattooing and allowed for quick identification of any individual animal. The animals showed no adverse effect and the tattoo pattern has remained readable out to two years. A standard identification chart that is used for toe tattooing can be modified or one created specifically by the user. A cage of up to ten mice can be quickly tattooed, allowing for rapid visual identification without handling the animals. The process has been repeated using hundreds of animals and has produced excellent and reliable results with very little work involved to individually identify the animals.

## Introduction

The various methods of mouse identification each has its own advantages and disadvantages. RFID implants provide a reliable method but the expense may be too high for large groups of animals. Ear tags are cost effective and easy to apply but for long term studies ear tags may be pulled out or lost as a result of fighting or becoming snagged. Tail tattooing is also a widely used method but it requires the technician to have adequate skill to apply the tattoo for long term readability and without injury. Tail tattooing can also be a time consuming process if large numbers of animals are involved. As a result, a quick and easy method to identify mice was developed using a common micro tattoo system normally used for toe tattooing.

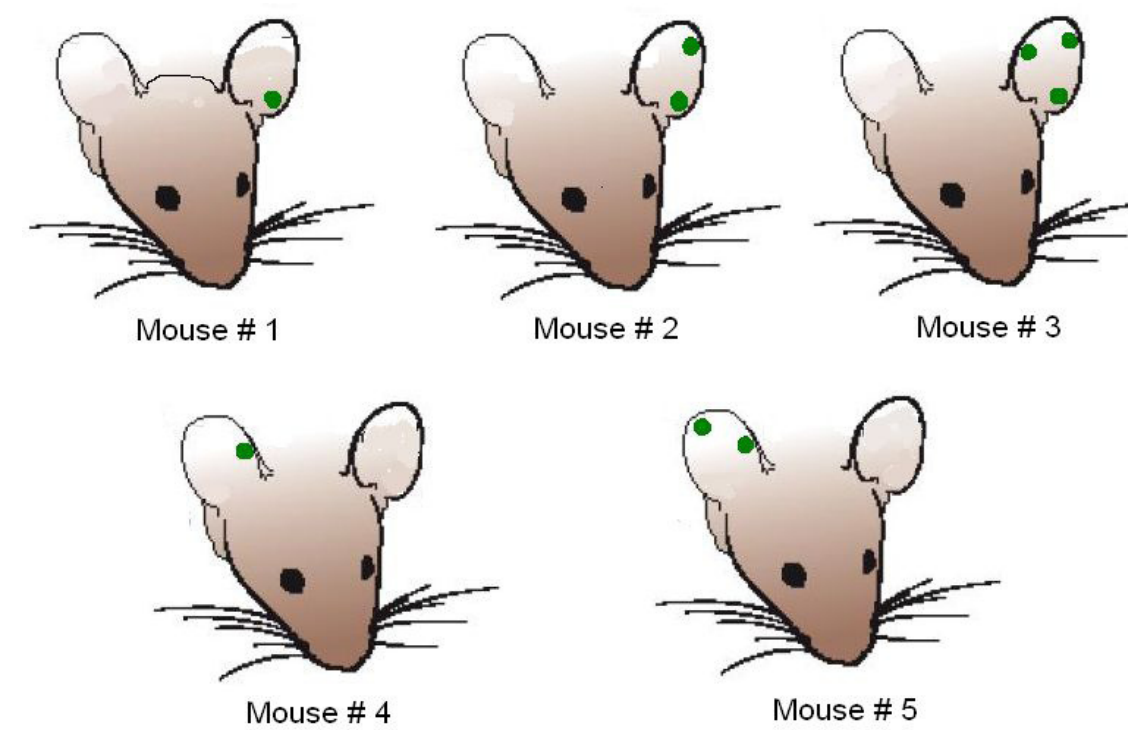
## Material and Methods

The Aramis Micro Tattoo system (Braintree Scientific Inc., Braintree Ma.) is designed for tattooing the toes of mice. The tattoo apparatus consists of a forceps like device with a magnifying glass attached (Figure 1 ). A 25g hypodermic needle is passed through a hole and screwed in, the needle than passes through a hole on the opposing side into an ink well. The ink consists of a non-toxic paste that can be squeezed into the ink well. A pipette tip can be cut down and used as the ink well to aid in cleanup and provide a larger repository for ink for use in multiple animals. Our studies commonly involved 10-20 Balb/C mice housed 5 per cage on a micro isolator rack system. The mice are part of a monoclonal development program and some animals may be housed for extended periods of time, sometimes as long as 18-24 months. A numbering system was developed (Figure 2) using a simple dot pattern for identification of individual animals. The mice were tattooed following a pre-bleed during which the animals were anesthetized using sevoflourane. The anesthesia was helpful during the tattooing, but is not a requirement. The animals were gently restrained by scruffing the back of the neck and the needle is passed through the ear the required number of times, the needle is re-inked after passing into the ink well on the opposing side. Any excess ink is gently wiped off using a damp gauze pad and the animals are returned to their cages. Animals are observed for a short period of time for any signs of stress.

**Figure 1. Aramis Tattoo System**



**Figure 2. Tattoo Numbering System**



## Results

After this method of tattooing was implemented, the ability to quickly identify the mice improved. Individual animals could be observed in their cages without having to remove them to read a tag, scan a RFID chip or read a tail tattoo. Animals have displayed no adverse effect to tattooing and it does not appear to have any effect on the ear's blood flow. The ear tattoo method also proved to be a simple, quick method for identification. Very little time was required to apply the dots for each animal and the tattoos have remained visible and easily readable for extended periods of time (Figure 3, 4, 5). Animals showed very little discomfort and the process was equivalent to a quick injection with a small gauge needle. The husbandry staff is usually notified that the mice have been tattooed so they are aware that any discoloring of the fur was the result of excess ink that could not be removed. Any dyed fur faded after 1-2 weeks and since the ink is non-toxic no additional action was required.

**Figure 3. Newly Tattooed**

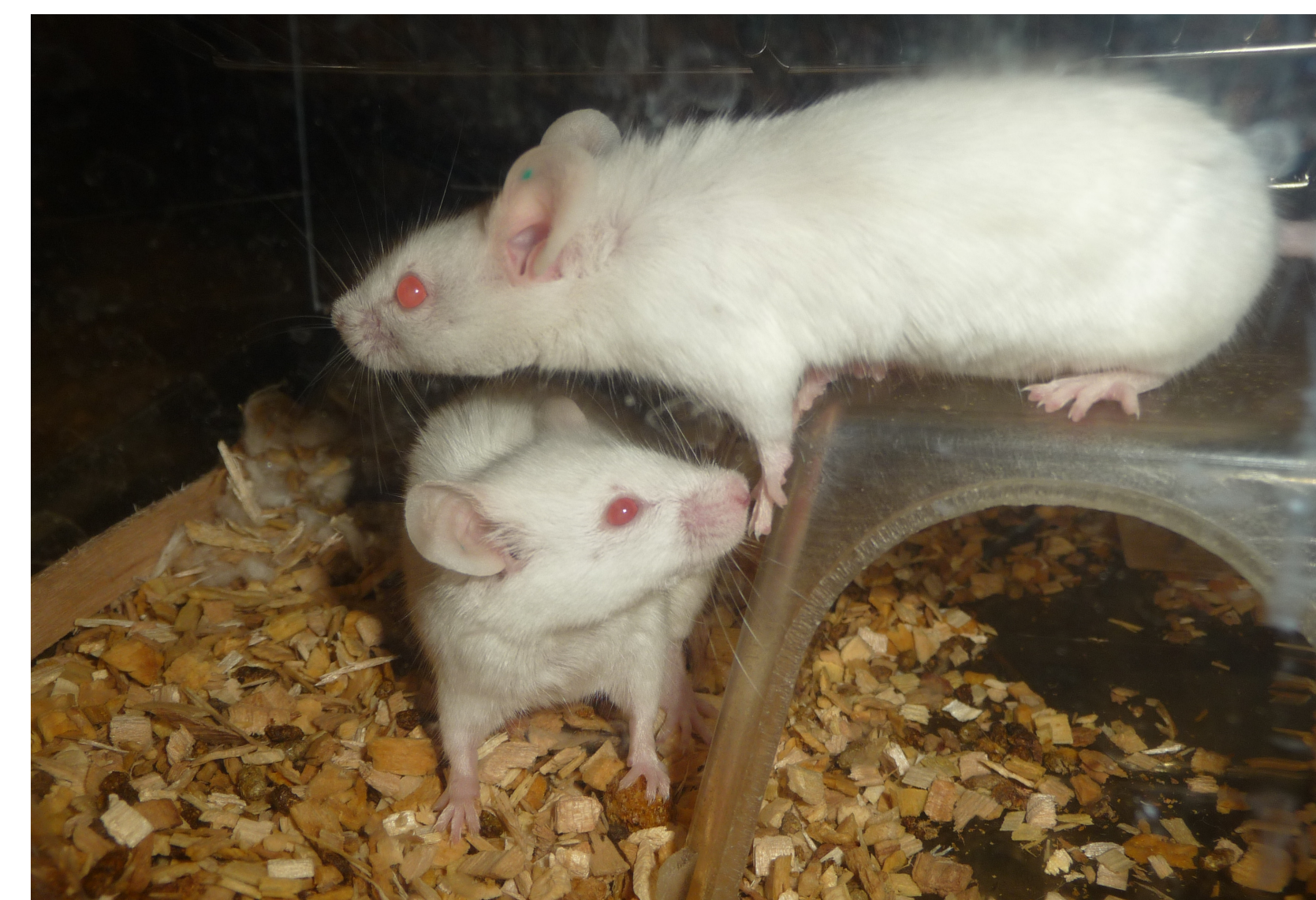


## Results (continued)

**Figure 4. Observed Through the Cage**



**Figure 5. Mice – 18 Months of Age**



## Discussion

This method has now been applied to hundreds of animals with much success. It has provided an easy way to identify individual animal for both standard observations through the cage and for any techniques, such as injections or bleeding, that are to be performed. The ear tattooing technique is simple, quick and has a very rapid learning curve. Multiple cages of mice can be tattooed with a repeating numbering system and card cages can be labeled to identify specific groups, i.e. #'s 1-5, 6-10, 11-15...etc. The method also provides additional advantages; the needle is disposable and sterile providing extra protection against any secondary infections. The method is also inexpensive and provides a durable, easily read marking.

Various gauges of needles can be used depending upon the size of the animal to be tattooed such as 27g or 30g needles for young mice. Although the resulting dots are smaller they are still visible as the mice grow. The use of the pipette tip for an ink reservoir also provides easy cleanup and limits the amount of ink that is wasted. The numbering system could also be modified with a little work to include larger variety of numbers or to suit individual preferences. This method has also been expanded for use in the identification of rats also on study. The results are very similar to those shown in the mice and have also proven to have their own advantages over the normal tail tattooing as well. Additionally this technique could also be expanded to other species such as guinea pigs or hamsters.

## References

1. Aramis Micro Tattoo System, (MTK-ARAMIS), Braintree Scientific Inc. P.O. Box 361 Braintree, MA 02185.