

# IACUC PROCEDURE STATEMENT

Policy/Procedure: RODENT TAIL CLIPPING FOR GENOTYPING

Policy/Procedure ID: 15-7-002

Effective: July 16, 2015

## A. Background

The intent of this policy is to describe procedures required for tail tissue collection in rodents for genetic analysis. This policy is intended for use by research staff who are approved to perform this procedure on an animal use Protocol. This policy is approved by the Bowling Green State University's Institutional Animal Care and Use Committee (IACUC).

It is often necessary to obtain tissues samples from potentially genetically modified rodents (rats and mice) to determine or confirm their genotype. A number of methods exist for tissue sampling, and the chosen technique should balance the humane treatment of the animal with research needs. The most commonly used method is the removal of tail tissue ("tailing", "tail snip", "tail clip") for DNA analysis.

Factors for consideration to ensure that pain and distress to rodents undergoing this procedure are minimized include: the age of the rodent sampled, use of local or general anesthesia and analgesia, and proper training of personnel performing the procedure. Less invasive methods are available to obtain DNA including ear punches, hair samples, saliva/oral swabs, blood, or fecal analysis, and BGSU's IACUC encourages the use of these less invasive methods whenever possible.

## B. Tail Clipping Procedure

1. Only the minimum amount of tissue should be taken. The definition of "minimum amount" for the purpose of this policy, is 5 mm or less of tail tissue and no ossified vertebral tissue, as per standards set forth by the National Institute of Health (NIH) for rodent tail clipping. The yield of DNA does not proportionally increase with tail fragments larger than 5mm.

2. Tail clipping is not considered a surgical procedure; however, tail clipping will be performed using aseptic techniques. Because tail clipping is not a surgical procedure:

a. Skin preparation: Alcohol, Nolvasan or other disinfectant may be used to wipe down the tail prior to cutting the tail tissue.

b. Instrument preparation: Sterile instruments are not required for this procedure, wiping with alcohol, Nolvasan or other disinfectant is acceptable. Instruments that have been exposed to autoclave, glass bead sterilizer, or chemical disinfectants are preferred for this procedure. Whether sterile or simply clean, all instruments must be clean and free of visible debris.

c. A clean scalpel is the preferred instrument to amputate the tail tip. Sharp scissors may be used if only soft tissue is amputated. Never use dull instruments for the tail clipping procedure.

d. Perform the tail clip as follows: With clean and sharp scalpel or scissors, cleanly excise the distal portion (maximum 5 mm) of the tail. Great care should be taken to remove all tissue from the scissors or scalpel after each animal. Disinfect the scalpel or scissors between animals. If a scalpel is used, also disinfect the work surface on which the tail is placed between animals.

e. The investigator must monitor the animals to assure hemostasis after the animals are returned to the cage. If needed, apply digital pressure, Quik Stop, or some other means of hemostasis. Notify the University Animal Facility (UAF) staff immediately if bleeding is excessive or does not stop after following the steps above.

3. When possible, it is preferable that tail clipping for genotype analysis be performed **at or before Day 17**, to minimize the potential for pain and distress. Additionally, DNA yields are higher in more immature tissue (Hankenson, et al.). However, BGSU's animal care and use program allows for tail clipping without anesthesia or analgesia up until Day 21.

a. Once a rodent is beyond 21 days of age, anesthesia and analgesia are required, as recommended by the Attending Veterinarian (AV). Use of analgesia and anesthesia must be approved by the IACUC for each protocol. If anesthesia cannot be provided to a post-21 day animal, scientific justification is required as to why anesthesia and/or analgesia cannot be used and why the procedure cannot be done before 21 days of age.

b. Investigators and research staff should be aware that tail ossification rates may be altered in genetically modified rodents and so close attention should be paid to watch for signs of pain and distress following the tail snip. In such settings, the UAF staff should be notified, and the AV may be consulted regarding anesthetic and/or analgesic recommendations. In this circumstance, the research protocol may need to be amended accordingly.

i. Signs of pain and distress in rodents after tail clips may include:

- Restlessness
- Excessive licking/grooming of the tail
- Vocalization
- Scruffy, unkempt appearance
- Lethargy

e. A rodent may not undergo multiple or serial tail snips without scientific justification and IACUC approval.

### **C. Training and Recordkeeping Requirements**

Every BGSU Investigator who has rodent tail clipping in an IACUC-approved research protocol is responsible for ensuring that all personnel in the lab that perform this procedure are properly trained, and that training is recorded and uploaded into IRBNet. It is preferred that the Investigator act as the primary trainer for all laboratory procedures such as this; however, UAF is available to train personnel on the tail clip procedure by request.

Every BGSU Investigator who has rodent tail clipping in an IACUC-approved research protocol is responsible for maintaining accurate procedural logs in a manner that can be

shown upon request, and easily understood by the IACUC, the Research Compliance Officer, the UAF staff, or any other party responsible for post-approval monitoring of research activities at BGSU.

#### **D. References**

1. 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; 47(6):10-18.