



<b>Tissue Collection Procedures for Rodent Genotyping – Standard Operating Procedures</b>			
Document No.:	Edition No.:	Effective Date:	Page:
ACU-210	002	4/24/2024	Page 1 of 3

## Table of Contents

<b>1. Overview.....</b>	<b>2</b>
1.1 Purpose.....	2
<b>2. Genotyping Tissue Collection Methods.....</b>	<b>2</b>
2.1 Ear Biopsy .....	2
2.2 Tail Biopsy.....	2
<b>3. Responsibilities .....</b>	<b>3</b>
3.1 Drexel University IACUC Responsibilities .....	3
3.2 Principal Investigator Responsibilities .....	3
<b>4. Resources.....</b>	<b>3</b>
<b>5. Revisions .....</b>	<b>3</b>



Document No.:	Edition No.:	Effective Date:	Page:
ACU-210	002	4/24/2024	Page 2 of 3

## 1. Overview

### 1.1 Purpose

To provide guidance to the research community on the selection and execution of methods used to obtain mouse or rat tissue for genotyping purposes.

## 2. Genotyping Tissue Collection Methods

Researchers should select the least invasive method possible and should collect the smallest sample necessary for reliable results. Please contact ULAR for advice and guidance on selecting and implementing a tissue sampling method for genotyping.

### 2.1 Ear Biopsy

- 1) This method can be performed on animals 14 days old or older.
  - a) Ear punching should be performed on mice close to weaning age or older to ensure that the pinnae are large enough for the punch size.
- 2) This method does not require anesthesia.
- 3) A sharp commercial punch device can be used to remove a 2 mm diameter piece of tissue from the pinna. (Figure 1) A marginal notch can also be made in the pinna using small, sharp, sterile scissors or positioning the commercial punch device at the edge of the pinna, resulting in a hole that is only partially surrounded by tissue. (see Figure 1 for example)
- 4) Ear punching is also an effective technique for animal identification. A marginal notch can also be made in the pinna using small, sharp, sterile scissors or positioning the commercial punch device at the edge of the pinna, resulting in a hole that is only partially surrounded by tissue (Figure 1). This tissue can also be used for genotyping.

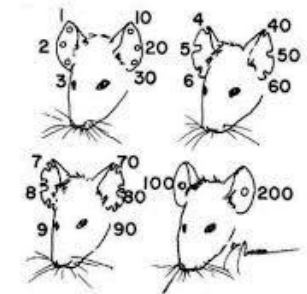


Fig. 1. Ear notch-punch code for identification of rodents. These number codes are used in various combinations to produce the desired number.

**Figure 1: Ear Biopsy and Notching Numbering System**  
Please note: This number system is an example only.

### 2.2 Tail Biopsy

- 1) *Animals less than 21 days old:*
  - a) Anesthesia is not required, but suggested, if 5mm of tissue is collected from the tip of the tail.
  - b) If more than 5mm of tissue is being collected or tissue is being collected more than once, anesthesia is required and the sampling of this amount of tissue must be justified and approved in the IACUC protocol.
- 2) *Animals 21 days and older:*
  - a) Tail biopsy for animals in this age group is strongly discouraged due to the cutting of ossified bone in the distal tail of these animals.
  - b) General anesthesia is required for all tissue collection for animals of this age.
- 3) Pressure on the open wound or use of a chemical coagulant is required to ensure hemostasis following amputation of the tail tip.



Document No.:	Edition No.:	Effective Date:	Page:
ACU-210	002	4/24/2024	Page 3 of 3

- 4) Post-procedural analgesia should be considered. The need to provide an effective analgesic (e.g. an opioid such as buprenorphine) post-biopsy will increase with the age of the rodent post weaning, length of the biopsy or with repeated biopsies.

### 3. Responsibilities

#### 3.1 Drexel University IACUC Responsibilities

The Drexel University IACUC and the IACUC Office are responsible for maintaining this guidance document, training, and monitoring. All exceptions to this procedure must be approved by the IACUC. For inquiries regarding these procedures, please contact the Director of Animal Welfare, a part of the Office for Research & Innovation (ORI), or the Attending Veterinarian.

#### 3.2 Principal Investigator Responsibilities

The Investigator is responsible for obtaining IACUC approval prior to implementation of any genotyping procedure and should highlight any deviation from this policy. The investigator is also responsible for ensuring that individuals performing genotyping procedures have been appropriately trained.

### 4. Resources

- [NIH ARAC Guidelines for Tissue Collection for Genotyping of Mice and Rats](#)
- [Guide for the Care and Use of Laboratory Animals](#)
- FELASA guidelines for the refinement of methods for genotyping genetically-modified rodents: A report of the Federation of European Laboratory Animal Science Associations Working Group <https://journals.sagepub.com/doi/10.1177/0023677212473918>

### 5. Revisions

Edition 001/Effective Date: 12/2003 – Original Document

Edition 001/Review Date: 01/2012

Edition 001/Review Date: 04/2021

Edition 002/Revision 4/10/2024 and Effective Date: 4/24/2024 – Revised Document.

- Updated formatting to new template.
- Changed title “Tissue Collection Procedures for Rodent Genotyping”
- Section 2 - title changed to “Genotyping Tissue Collection Methods”
- Section 2 - Removed Distal Phalanx Biopsy (toe clipping) from procedure
- Section 3.1 - Addition of Drexel IACUC Responsibilities
- Section 4 - Updated broken links, removed other institution’s policies and procedures, and added new resource.