

| University Animal Care Committee Standard Operating Procedure | | |
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| Document No: 7.20 | Subject: Manual Restraint of Mice | |
| Date Issued: November 14, 2013 | Revision: 2 | Page No: 1 |

Location: Queen's University

Responsibility: Principal Investigators (PI), Research Staff, Veterinary Staff

Purpose: The purpose of this Standard Operating Procedure (SOP) is to describe commonly-used manual restraint techniques for mice.

1. Introduction and Definitions: Correct manual restraint of mice is used in order to avoid and/or limit pain and distress to the mouse. It is a valuable tool for competently performing several standard procedures such as blood collection, tissue collection and ear-punching. Additionally, it aids in administering substances via the most commonly used routes. Limiting the use of anesthesia through proper restraint is of benefit to the animal and researcher.

Abbreviations: intravenous **IV**, subcutaneous **SC**, intraperitoneal **IP**, intramuscular **IM**, per os **PO**

2. Materials:

- Personal Protective Equipment (gloves, lab coat, mask, cap)
- Cage and wire lid
- Restrainers

3. Procedures:

- **General:** Mice should be gently lifted from their cage and moved as required through the use of their tail. Grasp the base of the tail (upper 1/3) with the thumb and forefinger of one hand, and place the animal either on the cuff of a lab coat, or the wire top of a cage. Do not grasp towards the tip of the tail. This can result in injury to the animal (tail slough), or to the handler if the mouse is able to swing around and bite. Maintain a hold on the tail until restraint is achieved to minimize the risk of the animal escaping. Mice cannot be left unattended outside of their cage. Depending on the hygiene level of the room, the animal may need to be humanely euthanized if it escapes from restraint or its home cage and is outside a sanitized area.



http://www.theodora.com/rodent_laboratory/restraint.html

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<http://www.sciencemag.org/news/2018/02/are-happy-lab-animals-better-science>

- Using a restrainer or tube to transport mice may be less stressful for them than picking them up by their tails, particularly if the handler is inexperienced or nervous.

- **Scruff Hold:**

This hold is commonly used for health assessment, ear-punching, oral gavage, submandibular blood collection, genotyping (tail snip) and IP injections.

- Lift the mouse from its home cage to a wire lid, or any other surface that provides traction to the mouse.
- Using your thumb and index finger, scruff the loose skin over the neck, shoulders and back. The mouse's head should be immobilized, and the front arms slightly splayed. It may help to lightly "slide" finger and thumb along the spine from hind end to shoulders before attempting the scruff.
- Take care not to hold the skin too tightly; this can restrict breathing and potentially suffocate the animal.
- Lift the mouse with the hand performing the scruff hold.
- Secure the tail between the ring or small finger and the palm of the same hand.
- Use the other hand to execute the desired procedure. Adjust the holding angle as required by the specific procedure.



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- **Tent Hold:**

This hold is commonly used for SC injections.

- Lift the mouse from its home cage to a wire lid, or any other surface that provides traction to the mouse.

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- Use your thumb and index finger to loosely scruff the skin between the shoulders and form a skin tent.
- Elevate the front legs slightly; this will cause the mouse to grasp the wire lid securely with hind legs for stability.
- Optionally, the mouse may be lifted from its home cage and placed on a wire lid. Tent the loose flank skin and administer the injection. As this technique uses a loose hold, it should only be done by experienced users working with calm strains.



http://www.theodora.com/rodent_laboratory



<http://www.procedureswithcare.org.uk>

- **Saphenous Hold:**

This hold is commonly used for saphenous vein blood sampling or IM injections.

- Lift the mouse from its home cage and gently feed head first into a restrainer such as a 50ml conical tube, a large syringe, or a commercially available holder. There should be air holes in the device.
- Both hind legs should be outside of the restrainer.
- The targeted hind leg should be immobilized in the extended position by grasping the fold of skin between the tail and thigh immediately above the knee joint. This stretches the skin over the ankle making it easier to shave or pluck, and stabilizes the saphenous vein. If the sample is weekly and the leg must be alternated, the grip may change to grasping the thigh skin anteriorly. This will be determined by the technician's dominate hand and the limb being sampled.



http://www.lssu.edu/faculty/jroese/AnimalCare/mouse_blood.htm