

LAB_039 Handling and Restraint in Rats and Neonates

I. OBJECTIVE

To describe the procedures for handling and restraint of rats used within UQBR facilities.

NB: The use of (*) indicates this statement is dependent on the facility procedures

NB: The use of () indicates this statement is dependent on AEC Approvals**

II. SAFETY

1. PPE use is essential when handling laboratory rodents.
2. This procedure has the risk of rat bite injury – take appropriate care.
3. All accidents, injury or near misses are to be reported immediately to the Facility Manager and recorded on a UQ OHS Incident Report Form
4. This procedure has a risk of causing musculoskeletal injury when performed regularly – consider suitable ergonomic design whenever possible.

III. EQUIPMENT

- PPE *
Minimum PPE is gloves and gown, additional PPE may be required based on facility or additional risk e.g. working with infectious animals.
- Disinfectant *
- Change station/Bio-safety cabinet *
- Facility approved restraint device*
- Towel for restraint*

IV. PREPARATION

1. Check AEC approvals to ensure that the correct procedure and personnel are approved for the planned work
Deviations can occur between approved procedures listed versus what is planned with the animal – check that these match and that the relevant personnel are approved.
2. Prepare equipment items
Ensure you have sourced the most appropriate restraint for the technique. There should be no contamination of devices or restraints during this process.
3. Turn on Change station or Biosafety Cabinet *
4. Wipe surfaces with disinfectant
Ensure equipment is operating as required. Disinfect equipment that will contact the animals.

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IV. PROCEDURE

Handling Procedure – Three steps

1. Rodents can be gently moved by grasping the tail at the base

It is important to lift rodents only by the base of the tail, this is the most supportive part of the tail that will carry the weight of the rodent.

2. The rodent can then be placed onto/into desired space

Surfaces include – Cage lid, cage wire or bench. Specific procedures may require a restraint device.

3. Ensure the rodent body is supported wherever possible during handling to minimise stress

This is important to distribute the weight of the animal evenly. If the body of the rodent is not supported, it will struggle or circle in the air and could cause injury to the animal or handler. The handler should remain calm and prevent any unexpected movements while handling the mice to minimise stress to the animal.

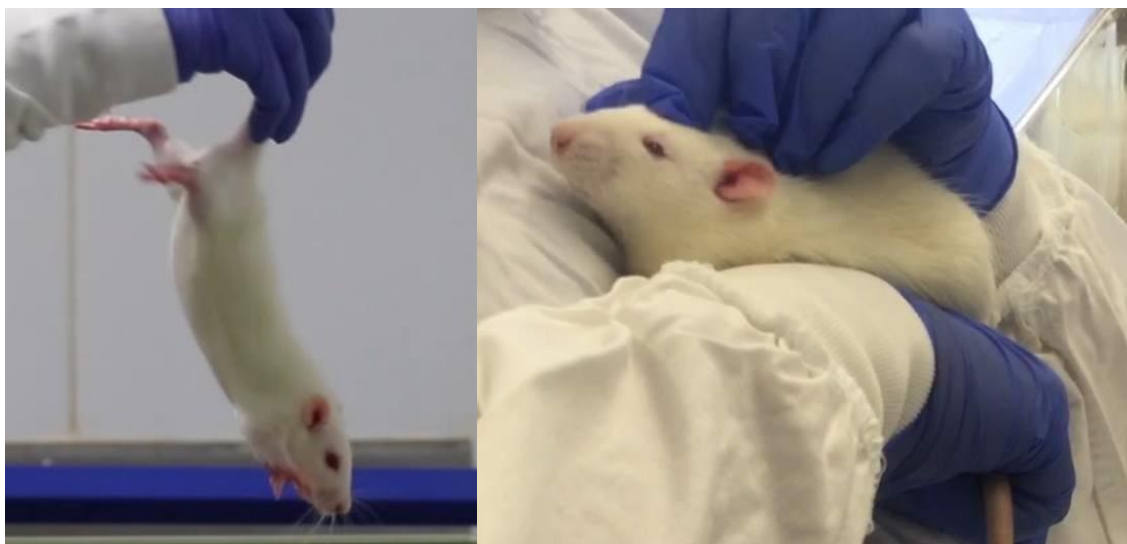


Figure 1 Appropriate handling in rodents (UQBR 2020).

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 <p>THE UNIVERSITY OF QUEENSLAND AUSTRALIA CREATE CHANGE</p>	<p>UQ Animal Ethics Committee - Standard Operating Procedure LAB_039 Handling and Restraint in Rats and Neonates Institutional author: UQ Biological Resources AEC Reviewed & Approved: 10/06/2020</p>	<p>Version 3</p> <hr/> <p>Page 3 of 7</p>
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Restraint Procedure – Physical Restraint Claw Grip and Crossover Methods

1. Handle the rat using the 3 steps process above. This should be completed on a surface that the rodent can grasp. *The rat can be placed on a cage lid, wire or bench space.*

2. With the dominant hand, hold by the base of the tail.
If the middle or the tip of the tail is used the rodent will struggle or circle in the air and the tail may be injured. Incorrect handling at the tail can result in de-gloving - when the skin around the tail becomes separated from the subcutaneous attachments.

3. With the same hand use 2 fingers to apply pressure (firm but not constrictive) along the hipbone at the base of the spine (lumbosacral area).
The amount of pressure applied should only be enough to slightly immobilise the rat.

4. With the opposite hand apply downward pressure with appropriate grasp (see figure 2). Approach up the spine towards the base of the skull.
If restrained on a cage lid or cage wire, ensure the head or any extremities are not pushed through the bars causing injury to the animal.

5. Hold the rat's head between the index and middle finger (see figure 2 and 3).
This is a gentle approach to position fingers and avoid startling the rat.
 - a. Claw Grip - Place remaining fingers firmly under the elbows straightening fingers towards the head
 - b. Crossover Grip - Place remaining fingers firmly on the arms and gently apply pressure to create the crossover grip.

These different restraint methods are used to complete various procedures. Fingers can be placed over the shoulders or under the neck to prevent crushing the chest and to allow the rat to continue breathing. Ensure the restraint around the neck and chest is not too tight. Loosen the grip held to provide relief. Ensure the tongue or eyes of the rodent do not stick out. If this occurs the restraint is too tight and the animal should be immediately released.

6. With your free hand hold the rear feet and tail if further support is necessary
This will help distribute the weight of the animal evenly.

7. After the procedure release rat into home cage or holding cage.
Be careful not to drop rats from any height into the cage, place them gently back in the box with all feet on the ground before releasing grip.

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Figure 2 Appropriate physical restraint - Claw grip method (UQBR 2020).



Figure 3 Appropriate physical restraint - Crossover grip method (UQBR 2020).

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Restraint Procedure – Two Person Method

1. One person will restrain the rat using the steps above. The second person will complete the procedure (see figure 4).

This method is commonly used for some procedures to assist the handler. In some instances the second person may need to help straighten the limbs, provide a visual inspection, remove fur, or perform injections. Prolonged use of restraint should be avoided. Ensure the restraint around the neck and chest is not too tight. Loosen the grip held to provide relief. Ensure the tongue or eyes of the rodent do not stick out. If this occurs the restraint is too tight and the animal should be immediately released.



Figure 4 Appropriate physical restraint – Two person method (UQBR 2020).

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Restraint Procedure – Using a Device

1. Depending on the restraint device, either physically restrain the rat to place into the device, or gently encourage the mouse to enter the restraint (see figure 5).

In some procedures a restraint device may need to be used to restrain the rat. These include tail vein restraints or a platform, and, transfer tunnels.

Prolonged use of a restraint should be avoided. Ensure the device is disinfected between cages, rodents and experimental groups to avoid contamination, and to maintain hygiene. Rodents will commonly urinate or defecate in these devices. If the rodent appears to slow, lose consciousness or has difficulty breathing immediately release from the restraint device.

2. If using a tail vein restraint device continue to hold the rodent by the base of the tail

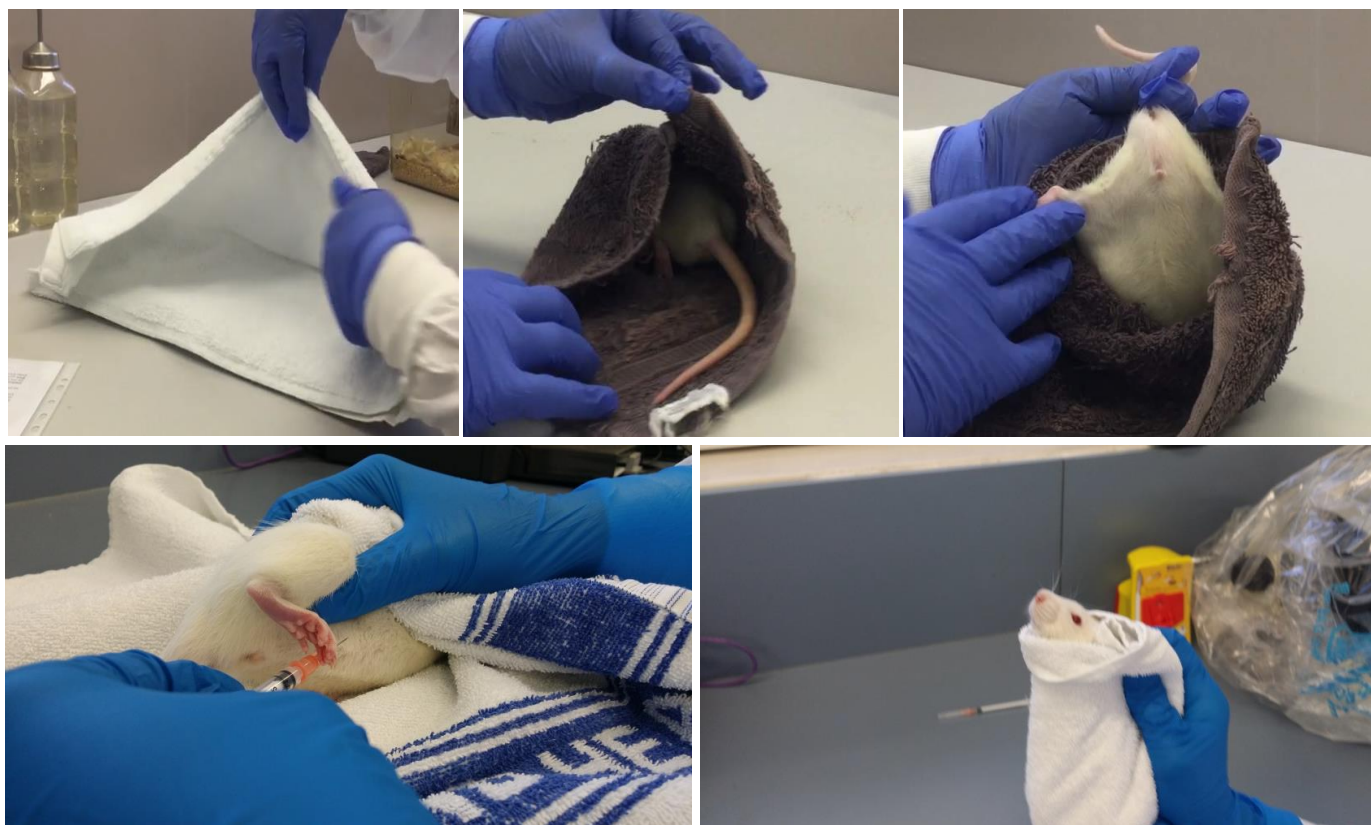


Figure 5 Appropriate use of a rat sock or towel (UQBR 2020).

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Handling Procedure - Neonates

1. Neonates can be gently picked up and held in your gloved hand.

Be wary of odour transfer. Ensure gloves are clean and dry when handling multiple litters. Ensure gloved hands are not wet with disinfectant when handling hairless neonates.

Restraint Procedure - Neonates

1. Grasp the loose skin behind the neck. The skin along the back may also be grasped when the neonate is large enough.

This should be enough skin to gently immobilise the neonate. When restraining pups ensure the skin across the chest is not too tight. Loosen the skin held to provide relief. If you notice the slowing of movement or consciousness, immediately release the pup.

2. Alternatively cup the neonate in your hand to support the body with the extremity exposed for a procedure, e.g. a foot or tail.

3. Ensure the neonate's body is supported wherever possible during handling to minimise stress.

Be wary of odour transfer. Ensure gloves are clean and dry when handling hairless litters.

V. REFERENCES

1. National Health and Medical Research Council (NHMRC) 2008, *Guidelines to promote the wellbeing of animals used for scientific purpose*, viewed 11 April 2019, <https://www.nhmrc.gov.au/about-us/publications/guidelines-promote-wellbeing-animals-usedscientific-purposes>
2. Office of the Gene Technology Regulator (OGTR) n.d., viewed 11 April 2019, <http://www.ogtr.gov.au/>
3. University of Queensland n.d., *Health, safety and wellbeing*, viewed 11 April 2019, <https://staff.uq.edu.au/information-and-services/health-safety-wellbeing>
4. University of Queensland n.d., *Incidents, injuries and hazard*, viewed 11 April 2019, <https://staff.uq.edu.au/information-and-services/health-safety-wellbeing/health-safetyworkplace/incidents-injuries-hazards>
5. UQ Biological Resources n.d., *UQBR SOP's*, viewed 11 April 2019, <https://biologicalresources.uq.edu.au/secure/reference-information#SOP's>
6. UQ Biological Resources, 2020 *UQBR Photo Library*.

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