

LAB_006 Handling and Restraint in Mice and Neonates

I. OBJECTIVE

To describe the procedures for handling and restraint of mice 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**

I. COMMENTS / RECOMMENDATIONS

1. Mice are generally easy to restrain, but their small size makes them especially vulnerable to physical injury during handling.
2. In the case of a mouse bite occurring, return the mouse safely to its cage. The welfare of the animal must also be considered at this time, be prepared to avoid unnecessary injury to the mouse (e.g. by dropping the animal).
3. Some mice are very active and may attempt to jump away from the handler.
4. **Consider using new methods of handling mice including tunnel handling, cupping them in hands and positive reinforcement training.** [Mouse handling: Posters | NC3Rs](#)

II. COMPLIANCE

1. The person undertaking this task must ensure all relevant approvals are in place, training has been undertaken and risk assessments have been performed. If unsure, consult your supervisor.
2. Facility protocols should be followed.

III. SAFETY

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

IV. 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*

Conditions:

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V. 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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VI. PROCEDURE

Handling Procedure – Three steps

1. Mice 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 mouse 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 mouse 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.

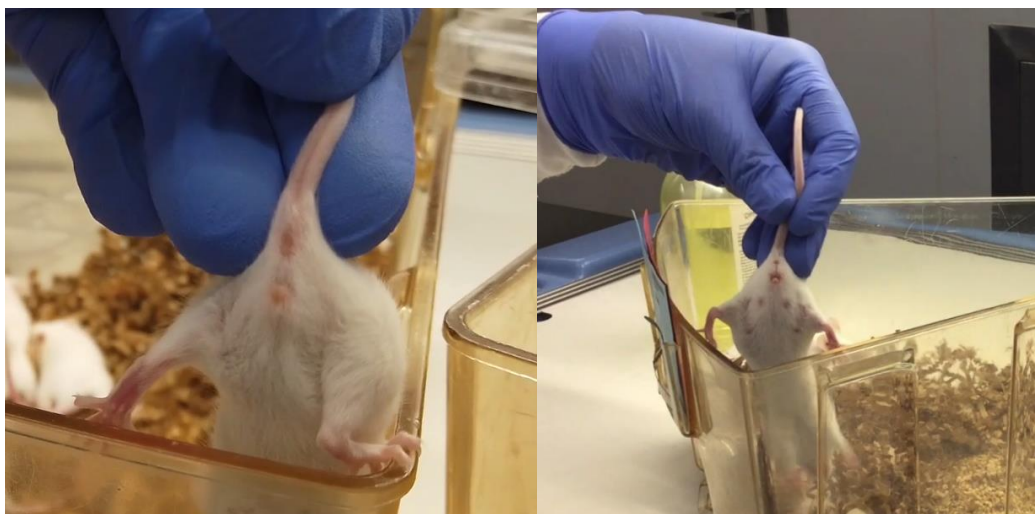


Figure 1 Appropriate handling in rodents (UQBR 2020).

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Restraint Procedure – Physical Restraint

1. Handle the mouse using the 3 steps process above. This should be completed on a surface that the rodent can grasp. *The mouse 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 mouse.
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. Grip as much skin as possible (see figure 2).
When restraining mice ensure the skin across the chest is not too tight. Loosen the skin 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. Place the mouse tail between your fingers to secure restraint (see Figure 2).
If you notice the slowing of movement or consciousness, immediately release the mouse.
7. After procedure release mouse into home cage or holding cage.
Be careful not to drop mouse from any height into the cage, place them gently back into the cage with all feet on the ground before releasing grip.

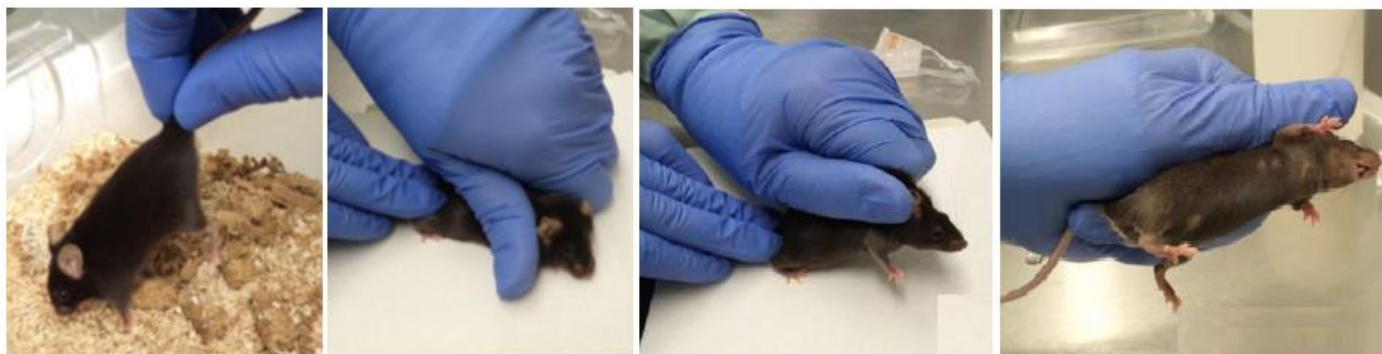


Figure 2 Appropriate restraint in Mice (UQBR 2020).

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Restraint Procedure – Using a device

1. Depending on the restraint device, either physically restrain the mouse to place into the device, or gently encourage the mouse to enter the restraint.

In some procedures a restraint device may need to be used to restrain the mouse. These include tail vein restraint or a platform (Figure 3), transfer tunnels, falcon tubes, rubber tip forceps.

Prolonged use of a restraint should be avoided. Ensure the device is disinfected between cages, mice, and experimental groups to avoid contamination and to maintain hygiene. Mice 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 3 use of a restraint device to collect blood from a conscious mouse

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Figure 4. use of a restraint device. It is critical that the mouse is carefully monitored for breathing and colour while in this device and that time in the device is minimised. The head holder must be the appropriate size for the mouse and allow free breathing.



Figure 5. Mice may also be picked up with rubber-tipped forceps by gently grasping the neck scruff or the base of the tail. *This method can be used for short restraint such as cage transfer.*

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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.

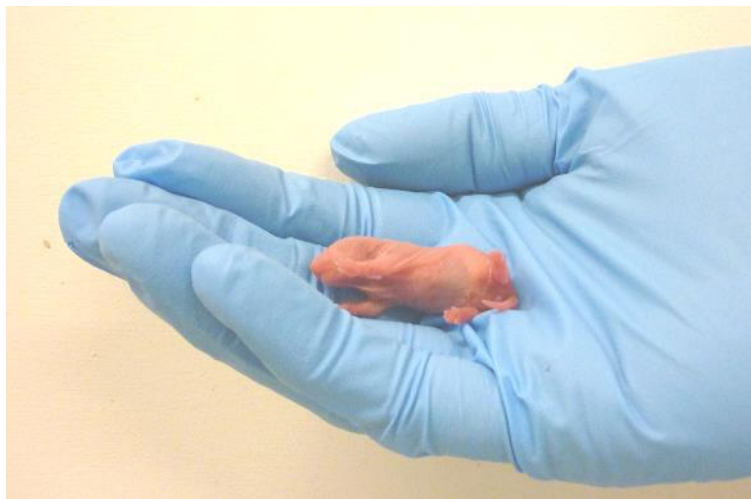


Figure 6. Handling of neonatal mice.

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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.

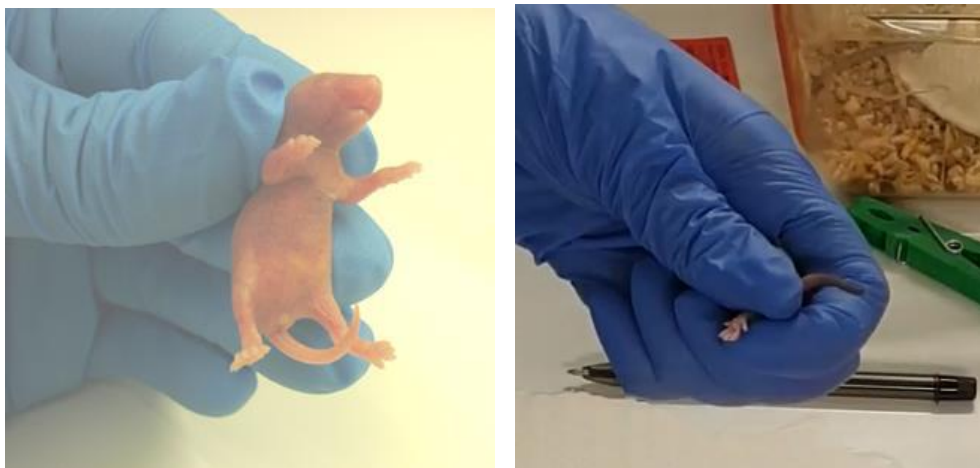


Figure 6. Handling and Restraint of Neonates (UQBR 2020).

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Recapture Procedure – Mice

Any unintentional escape of rodents from allocated holding cages or during procedures must be actioned immediately. If a rodent drops from considerable height e.g. from bench top to floor, there is a small window of opportunity to recapture the rodent as soon as it lands. The rodent will generally be still for a few seconds following an unexpected drop from height.

1. Identify the release of rodent
2. Attempt to catch or contain the escaped rodent
 - a. Immediately cup both hands over the rodent, locate tail to move to holding cage
 - b. Immediately restraining by the tail
 - c. Cornering rodent to a confined space enabling easier recapture
3. If these attempts are unsuccessful ensure the humane rodent trap is setup correctly
4. Notify the person responsible for managing the room
5. Place signage on the door to limit traffic into the area
6. Ensure humane rodent trap has an appropriate food option inside to facilitate capture
7. Notify the closest UQBR facility to assist with recapture if required

Upon Capture

8. Ensure the rodent is examined for injury
9. Place the rodent in holding cage
 - a. Note the escaped rodent will need to be separately housed and quarantined from cage mates to decrease transfer of pathogens
10. Inform the UQBR Facility Manager before returning rodent to a UQBR Facility, the facilities procedures for escaped rodents may be followed
11. Check all facility areas to ensure remaining animals are secure

Note: If a Genetically Modified Animal escapes from the approved holding room contact the UQ Biosafety Advisors immediately on 3365 2365



Figure 5 Example of Humane Mouse Trap (UQBR 2020).

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VII. 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*.
7. [Mouse handling: Posters | NC3Rs](#)

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