

LAB_007 Cervical Dislocation in Mice and Rats

I. OBJECTIVE

To describe cervical dislocation as a humane procedure for euthanasia within UQBR facilities.

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

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II. SAFETY

1. Facility appropriate PPE use is essential when handling laboratory rodents
2. All accidents, injury or near misses are to be reported immediately to the Facility Manager and recorded on a UQ OHS Incident Report Form
 - This procedure has the risk of needle stick or mouse bite injury – take appropriate care.
 - This procedure has a risk of causing musculoskeletal injury when performed regularly – consider suitable ergonomic design wherever possible
3. In the event of a spill (most likely blood or anticoagulant) follow the facility emergency spill procedures.

III. EQUIPMENT

- PPE *
- Cadaver Bag*
- Bench Coat
- CO2 or Anaesthesia Equipment **

IV. PREPARATION OF EQUIPMENT

- Check AEC approvals to ensure that the correct procedure and personnel are approved for the planned work

V. PROCEDURE

Note * Inexperienced trainees must receive training in this technique using cadavers

* Training in cervical dislocation under deep anaesthesia should include additional methods for confirming death such as the use of a stethoscope or direct observation of the heart

Handling of Rodents

Refer to LAB_006 Handling and Restraint of Mice and Rats

Cervical Dislocation of Mice

1. Prepare the work space

Conditions:

- Investigators named in an animal ethics application, relative to this SOP, must be competent to implement the SOP
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Use clean bench coat or a wiped area. Select the appropriate sized cadaver bag.

2. Select the correct animal from the cage and place onto your work area
Check the corresponding identification, remove the mouse onto your working space
3. Place the animal on a flat firm surface, ventral (belly) side down.
The head should be facing away from your body.
4. Immobilise the mouse by using your hand, grasp the base of the tail with your forefinger and thumb. Place your remaining fingers on the hind quarters of the animal to immobilise the mouse.
5. Use the thumb and forefinger of your alternate hand against the base of the skull with the flat part of your thumb and forefinger facing towards your body.
Hold firmly in place. See Figure 1 for example.
6. To produce the dislocation, quickly push forward and down with your thumb and forefingers, with your restraining hand stabilising the mouse's body by the tail upwards (approximately 30° angle).
It is important that you do not pull on the tail but simply hold it for restraint. This action should be fast and applied with enough force to cause separation of the vertebrae from the skull. This will cause a separation of the spinal cord from the skull resulting in immediate death. The skin may be intact but there should be an obvious visual and palpable separation of the skull from spinal column and separation of the cervical tissues.
7. Verify death by confirming separation of the spinal cord from the skull
During training in methods performed under deep anaesthesia, the thorax may be opened after the relevant humane killing technique to directly observe cessation of a heart beat and assist in confirming death.

Considerations

- This procedure may be more difficult in small or fragile animals
- This procedure may not be appropriate for all strains
- Limb movements may be observed due to involuntary contractions
- This procedure should only be performed by confident individuals

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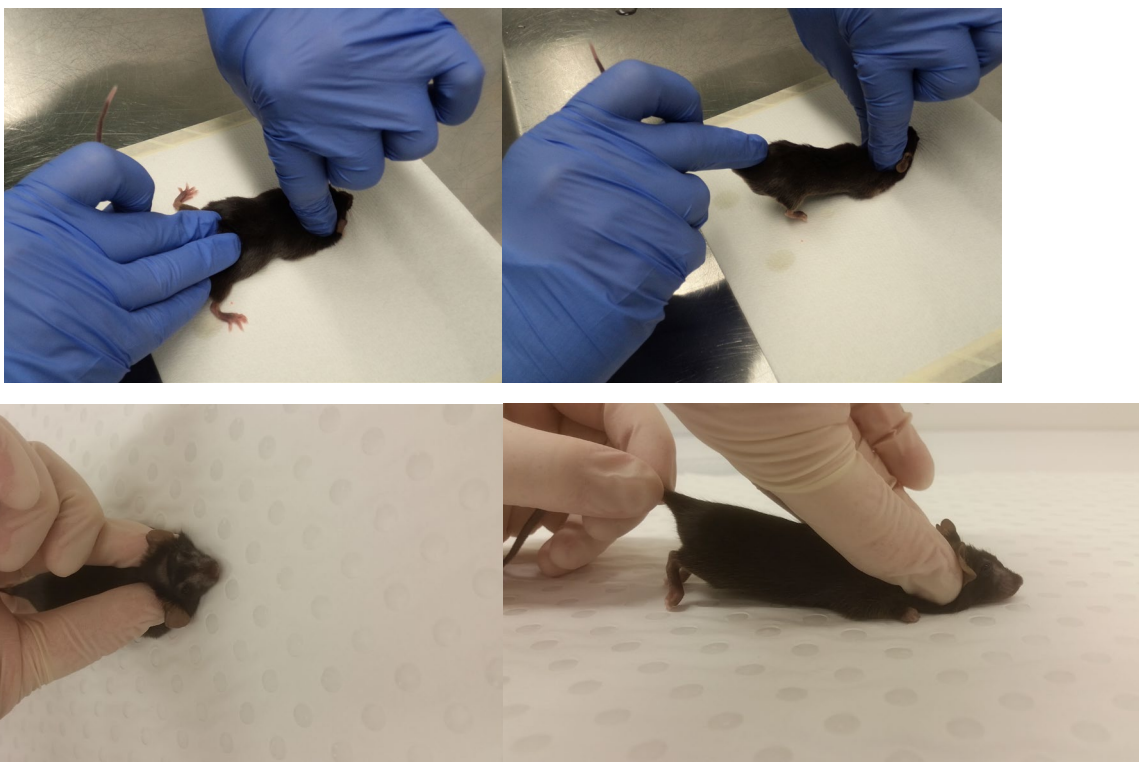


Figure 1 Example method of hand placement

Cervical Dislocation of Rats < 150 g with AEC approval

1. Anaesthetise the rat, ensuring conscious responses have been ablated
Rats must be anaesthetised using an AEC approved anaesthesia protocol when performing this technique, refer to below considerations
2. Grasp the tail with the dominant hand
3. Place the opposite hand over the top of the rat's head and firmly grasp around the neck with your thumb and forefinger
4. With a quick motion forcefully push/pull to dislocate the neck from the spinal column
 - This will cause a separation of the spinal cord from the skull resulting in immediate death.
 - The skin may be intact but there should be an obvious visual and palpable separation of the skull from spinal column.
5. Repeat this motion 2-3 times to ensure successful dislocation
6. Confirm successful dislocation by feeling for complete separation on the sides of the neck and the ability to extend the head backwards with ease

Considerations

<p>Conditions:</p> <ul style="list-style-type: none"> • Investigators named in an animal ethics application, relative to this SOP, must be competent to implement the SOP • Any variation to this SOP must be described in the relevant animal ethics application • If this SOP has not been reviewed and approved by a UQ AEC within the last three years it is no longer valid and cannot be used in animal ethics applications until reapproved (see "AEC Reviewed/Approved" date in this document's header).

- This procedure may only be performed in animals <150 g following specific justification that has been accepted by a UQ AEC (in which even the relevant AEC is likely to direct that the Office of Research Ethics Veterinarian observe performance of this technique as a proviso to the approval)
- This procedure may only be performed in conscious animals by individuals that have been assessed as competent in the technique by a UQBR or Office of Research Ethics (ORE) Veterinarian
- Cervical dislocation in rats may be used within UQBR as a secondary confirmation of death (assuming the above conditions are satisfied)
- Adverse events should be referred to UQBR SOP 22 UQBR Veterinary Care Protocol

VI. 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, 2019 *Cervical Dislocation*.

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