

 <p>THE UNIVERSITY OF QUEENSLAND AUSTRALIA CREATE CHANGE</p>	<p>UQ Animal Ethics Committee - Standard Operating Procedure LAB_009 Euthanasia - Decapitation in Mice and Rats Institutional author: UQ Biological Resources AEC Reviewed & Approved: 18/02/2021</p>	<p>Version #3</p> <hr/> <p>Page 1 of 3</p>
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LAB_009 Euthanasia - Decapitation in Mice and Rats

I. OBJECTIVE

To promote safe and humane euthanasia on mice and rats via decapitation, as per Clause 3.3.45 of the Australian Code for the care and use of animals for scientific purposes.

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

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II. COMMENTS / RECOMMENDATIONS

- Consideration must be taken as to the potential for stressful auditory, visual or olfactory stimuli that may be perceived by other animals. Efforts must be made to isolate these potential stressors:
 - Euthanasia or laboratory rodents should only occur in “terminal procedure rooms”(*),
 - Biosafety cabinets or fume hoods should be used for the procedure wherever possible,
 - Ensure the area is cleaned prior to use, and between animals,
 - Different species (i.e. rats and mice) should not be euthanised in the same area at the same time.
- In pups, this procedure is generally considered the most reliable (and thus humane) means of euthanasia.
- In adults, although decapitation is often considered aesthetically unpleasant, when performed correctly, this procedure should be considered comparable to cervical dislocation in terms of welfare impact to the animal.
- The procedure varies depending on the animals age, therefore this document is divided into 2 parts:
 - Part A: Neonatal Mice and Rats (P0 – P10) – for animals less than 10 days old
 - Part B: Mice and Rats (>P10) – for all animals greater than 10 days old

Part A: Neonatal Mice and Rats (P0 – P10)

III. EQUIPMENT

- PPE*
Although PPE is facility dependent, minimum expectations include: disposable gloves, clean log-sleeved laboratory gown, hair bonnet, eye protection, face mask, closed in shoes.
- Scissors – sharp, appropriate brand and model
- Cadaver bag

IV. PREPARATION OF EQUIPMENT

1. Scissors must have sharp blades and must have recently proven that they are fit for purpose (by prior use on cadavers). Scissors must be cleaned of debris between animals – this helps to reduce stress in rodents being handled, and helps to maintain good working order of the scissors.

V. PROCEDURE

1. Place neonate on the prepared surface
2. Immobilise the neonate using the least dominant hand
3. Gently position the opened scissors around the neck, behind the head
4. In one swift and controlled action cut through the neck, separating the body from the head
5. Place the remains into the cadaver bag, and dispose of the bag*
6. Clean the surface and scissors

<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).

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Part B: Mice and Rats (>P10)

VI. EQUIPMENT

- PPE*
Although PPE is facility dependent, minimum expectations include: disposable gloves, clean log-sleeved laboratory gown, hair bonnet, eye protection, face mask, closed in shoes.
- Guillotine
- Guillotine restraint device (e.g. Decapicone©) – appropriately sized for the animal
- Cadaver bag

VII. PREPARATION OF EQUIPMENT

1. Guillotines must have sharp blades and must have recently proven that they are fit for purpose (by prior use on cadavers). Guillotines must be cleaned of debris between animals – this helps to reduce stress in rodents being handled, and helps to maintain good working order of the guillotine.

VIII. PROCEDURE

1. Gently but securely restrain the rodent within the guillotine restraint device.
2. Place the head of the animal through the diamond shaped blade opening, with the path of the blade directed at the animal's neck.
Ensure you maintain a secure grip of the animal (by the base of the tail) and ensure that your fingers are not within the path of the blade.
3. Firmly and swiftly depress the guillotine lever, ensuring the complete decapitation occurs in a quick single cut.
4. Place the remains into the cadaver bag, and dispose of the bag*
5. Clean the surfaces and guillotine.

IX. REFERENCE INFORMATION

Training reference

As indicated within the conditions of all UQ SOPs, personnel are required to be competent in any procedure they perform with animals for scientific purposes (or under the direct supervision of a person who is competent). In this procedure it is particularly important when establishing a person's competency that their training commences with cadavers and identifies that the trainee is a) able to repeatedly achieve complete decapitation, as well as b) appropriately prepare equipment (e.g. performing the technique in a biosafety cabinet of fume hood to isolate other animals from the procedure and thoroughly cleaning of equipment between animals).

X. BIBLIOGRAPHY

AVMA. (2020). AVMA guidelines for the euthanasia of animals: 2020 Edition. American Veterinary Medical Association (AVMA) Retrieved from <https://www.avma.org/sites/default/files/2020-02/Guidelines-on-Euthanasia-2020.pdf>

Charbonneau, R., Niel, L., Olfert, E., von Keyserlingk, M., & Griffin, G. (2010). CCAC guidelines on: euthanasia of animals used in science. Canadian Council on Animal Care (CCAC). Retrieved from <https://www.ccac.ca/Documents/Standards/Guidelines/Euthanasia.pdf>

Donovan, J., & Brown, P. (2006). Euthanasia. Current protocols in immunology, Chapter 1, Unit 1.8. doi:10.1002/0471142735.im0108s73

NHMRC. (2008). Guidelines to Promote the Wellbeing of Animals Used for Scientific Purposes: The Assessment and Alleviation of Pain and Distress in Research Animals. National Health and Medical Research Council (NHMRC).

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NHMRC. (2013). Australian code for the care and use of animals for scientific purposes, 8th edition. National Health and Medical Research Council (NHMRC).

Pierozan, P., Jernerén, F., Ransome, Y., & Karlsson, O. (2017). The Choice of Euthanasia Method Affects Metabolic Serum Biomarkers. *Basic Clin Pharmacol Toxicol*, 121(2), 113-118. doi:10.1111/bcpt.12774

Shomer, N. H., Allen-Worthington, K. H., Hickman, D. L., Jonnalagadda, M., Newsome, J. T., Slate, A. R., . . . Wilkinson, M. (2020). Review of Rodent Euthanasia Methods. *Journal of the American Association for Laboratory Animal Science : JAALAS*, 59(3), 242-253. doi:10.30802/aalas-jaalas-19-000084

Uni. Cal. (2019). Euthanasia of Research Animals. University of California (Uni. Cal.) Retrieved from <https://research.uci.edu/compliance/animalcare-use/research-policies-and-guidance/euthanasia.html>

Uni. Melb. Animal Care & Use Standards Committee (2019). Humane Killing of Mice and Rats. University of Melbourne (Uni. Melb.) Retrieved from https://staff.unimelb.edu.au/_data/assets/pdf_file/0011/1974341/STANDARD-Humane-killing-of-mice-and-rats-FINAL.pdf

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