

ANIMAL CARE AND USE STANDARD

The Animal Care & Use Standards are designed to provide guidance regarding good practice to institutional animal users and carers, as well as Animal Ethics Committees (AECs), on the care and use of animals for scientific purposes such as research and teaching. The Standards are evidence-based, reflecting current or accepted good practice, and allow for the flexibility that is required in research and teaching activities using animals.

PERFORMING NECROPSIES

This standard has been developed by the University of Melbourne Animal Care & Use Standards Committee, and approved by the University of Melbourne's Animal Ethics Committees.

V1 Date of Approval:	
----------------------	--

Date of Review:	
-----------------	--

1. ASSOCIATED STANDARDS

This standard should be read in conjunction with the following University of Melbourne Animal Care & Use Standards:

- Humane killing of mice and rats
- Humane killing of reptiles
- Working with Fish
- Training in non-surgical procedures

2. SUMMARY

A necropsy is indicated when an animal has become ill or died unexpectedly or has developed clinical signs that were not expected. The goal of the necropsy is to look for abnormalities and changes to the normal anatomy of the animal and collect fluid or tissue samples as indicated, which may lead to an explanation as to the cause of unexpected clinical signs or cause of death. The Standard for performing necropsies will ensure that any animal welfare concerns in respect to husbandry or management, biosecurity or experiment design that result in unexpected clinical signs, illness or death are identified as soon as possible.

3. BENEFITS & RISKS

- 3.1 A necropsy may help identify causes of unexpected clinical signs or cause of death.
- 3.2 This information may be extremely valuable in respect to the research project via the identification of adverse side effects of a particular treatment or the potential for unrelated factors to confound results.
- 3.3 In addition, the information is useful to help identify husbandry or management concerns that may be contributing to morbidity and/or mortality and must be addressed in the interests of animal welfare.
- 3.4 It is essential that necropsies are performed by trained individuals within the appropriate time period following death to ensure accurate and reliable results.

4. PROCEDURE/PROTOCOL

- 4.1 A necropsy should be performed as determined by a veterinarian or expert opinion, on any animal whose death or illness warranting euthanasia constitutes an unexpected adverse event.
- 4.2 An unexpected adverse event as defined in the *Australian code for the care and use of animals for scientific purposes 8th Edition (2013)* is an event that may have a negative impact on the wellbeing of animals and was not foreshadowed

in the approved project or activity. An unexpected adverse event may result from different causes, including but not limited to:

- 4.2.1 death of an animal, or group of animals, that was not expected (e.g. during surgery or anaesthesia, or after a procedure or treatment)
 - 4.2.2 adverse effects following a procedure or treatment that were not expected
 - 4.2.3 adverse effects in a larger number of animals than predicted during the planning of the project or activity, based on the number of animals actually used, not the number approved for the study
 - 4.2.4 a greater level of pain or distress than was predicted during the planning of the project or activity
 - 4.2.5 power failures, inclement weather, emergency situations or other factors external to the project or activity that have a negative impact on the welfare of the animals.
- 4.3 The necropsy must be performed by a trained individual as soon as possible following the death of the animal. If a suitably trained investigator is not available, arrangements should be made with an appropriate pathology laboratory to perform the necropsy. Where possible, the choice of laboratory should be made before euthanasia of the animal to ensure the necropsy is performed immediately after death for accurate and valid results.
- 4.4 When performing the necropsy, look for abnormalities and changes to the normal anatomy. This may include changes in the size, shape, colour or texture of organs, absence of organs, ulcers, wounds or nodules in the skin, discharges and the presence of fluids in the thorax and abdomen. Any such abnormalities should be documented and photographs taken.
- 4.5 Any abnormalities or changes to the normal anatomy should be correctly sampled for further pathology testing (i.e. swab for microbiology, tissue in formalin for histology) and submitted to a laboratory for analysis, as determined by a veterinarian or expert opinion. The submission sheet should contain detailed information of the necropsy including the strain, sex and age of the animal/s, experimental procedures undertaken, treatments administered, any husbandry changes, the reason for the necropsy, abnormal findings including the organ or region from which the sample was collected and percentage of the organ that was abnormally affected. Where possible, photographs should be taken of any abnormalities found.

5. MONITORING & INTERVENTION

- 5.1 When a necropsy is performed following an unexpected adverse event, the necropsy report as well as any relevant photographs and external Laboratory results should be submitted to the Animal Welfare Officer (AWO) alongside the adverse event report.
- 5.2 The necropsy report is an important document in the investigation and understanding the aetiology of an adverse event for both investigators and the AWO. The necropsy report also assists assessment of the adverse event report by the Animal Ethics Committee and to determine the appropriate response and subsequent action(s). Refer to Appendix I for an example post mortem report template.
- 5.3 The protocol for responding to an unexpected adverse event is outlined on the Animal Ethics website via the following link: <https://staff.unimelb.edu.au/research/ethics-integrity/animal-ethics/managing-approved-projects/adverse-events-involving-animals>.

6. ADDITIONAL INFORMATION

- 6.1 The necropsy should be performed by a trained individual. If requested, the Animal Welfare Officer can provide necropsy training sessions to ensure there are adequately trained personnel prior to commencing a research project.

7. ENFORCEABLE REQUIREMENTS

- 7.1 The requirement to perform a necropsy following any unexpected adverse event is supported by the *Australian code for the care and use of animals for scientific purposes 8th edition (2013)*.

8. EXEMPTIONS

Where adherence to this Standard conflicts with proposed work, the University's AECs may grant exemptions to all or part of the Standard. To seek exemption, applications should clearly outline how the proposed work deviates from the Standard, and justify the need for this. Before seeking exemption, it is recommended that you consult with the AWO.

9. UNEXPECTED ADVERSE INCIDENTS

An unexpected adverse event is any event which impacts negatively on the wellbeing of animals, and which was not anticipated, or has occurred at a frequency or severity in excess of what was anticipated in line with the AEC approval. This can be a single or cumulative event, and will normally involve unexpected mortality, morbidity or injury. Anyone identifying an unexpected adverse event must act to remove and/or minimise any immediate risk to animals. Immediately thereafter, the AWO and relevant Animal Facility Manager must be notified of the event. The AWO will advise researchers of the appropriate response.

In addition, a necropsy must be performed on any animal whose illness or death constitutes an unexpected adverse event. The body of an animal found deceased, or humanely killed as a consequence of an unexpected adverse event, must be refrigerated and the necropsy performed in a timely manner to provide for accurate and reliable results. A full necropsy report as well as any relevant photographs and external laboratory results should be submitted to the AWO alongside the adverse event report.

10. GLOSSARY

Scientific Term	Lay Description
Aetiology	The cause, set of causes, or manner of causation of a disease or condition

11. REFERENCES & RESOURCES

The following source material contributed to the development of this Standard:

- Cerberus Sciences Necropsy Kit instruction manual
- The Australian code for the care and use of animals for scientific purposes 8th edition (2013) accessed Dec 2016 <https://www.nhmrc.gov.au/guidelines-publications/ea28>

The following resources may provide additional or supplementary information:

- A Practical Guide to the Histology of the Mouse, Chapter 1: Necropsy of the Mouse, Scudamore, Cheryl L. C.
- <http://ebookcentral.proquest.com/lib/unimelb/reader.action?docID=1584994&ppg=19>
- JOVE Necropsy of selected tissues and samples from rats and mice: <https://www.jove.com/video/2966/diagnostic-necropsy-selected-tissue-sample-collection-rats>
- Basic rat dissection video: <https://www.youtube.com/watch?v=RaTzR3II10Q>

Pathology laboratory services:

- Cerberus Sciences: <https://www.cerberus.net.au/>

12. APPENDIX I – EXAMPLE POST MORTEM REPORT



THE UNIVERSITY OF
MELBOURNE

Post Mortem Report

Date: _____ **Animal ID/Number :** _____

Researcher: _____ **Research project:** _____

_____ **Animal Ethics #:** _____

Gross Necropsy Findings

Nutritional State :

Preservation state :

Hydration State :

Pregnancy status :

Integumentary System :

Musculoskeletal System :

Cardiovascular System :

Respiratory System :

Alimentary System :

Genital System :

Urinary System :

Hematopoietic and Lymphoid System :

Nervous System :

Endocrine System :

Special Senses (Eye , Ear):

Summary

Further investigation and/or Information:

Histology

Bacteriology

Parasitology

Toxicology

Other