

Subject: Fetal and Neonatal Rodent Euthanasia

Source: Institutional Animal Care and Use Committee (IACUC)
Effective Date: 11/09/2020
Replaces: 06/08/2020
Applies to: Personnel involved in research or teaching studies involving animals
Reference: Animal Welfare Act; PHS Policy on Humane Care & Use of Laboratory Animals; Guide for the Care & Use of Laboratory Animals; AVMA Guidelines of Euthanasia (2020).



Introduction

The Institutional Animal Care and Use Committee (IACUC) maintains oversight review for federally mandated rules and regulations with regard to animal research, ethics, misconduct and biomedical research for the University of Colorado Denver | Anschutz Medical Campus (CU Denver | Anschutz).

Policy Statement

This policy is intended to provide information on the requirements of euthanasia of fetal rodents (mouse and rat) and neonatal rodents not older than 10 days of age and to establish procedures to be followed.

- Fetal and neonatal rodents are unusually resistant to hypoxia and the inhalant anesthetics often used as euthanizing agents in adult rodents.
- Inhalant agents alone should not be used in fetal and neonatal rodents as a form of euthanasia. Inhalants may be used to induce unconsciousness, followed by some other method of euthanasia.
- When fetal rodents are not removed from the uterus for study, euthanasia of the dam is sufficient to euthanize the fetuses, independent of gestational age, if the uterus is not disturbed. Fetal rodents are unconscious in utero and the cerebral anoxia caused by euthanasia of the dam leads to fetal demise without a significant physiologic response. Therefore, it is not necessary to separately euthanize fetuses following euthanasia of the dam.
- If removing fetuses up to 15 - 15.5 days of gestation from the uterus, the act of removal should ensure rapid death of the fetus due to loss of blood supply and non-viability of the fetuses at this stage of development.
- If removing fetuses over 15.5 days of gestation from the uterus, the IACUC recommends the following euthanasia methods:
 - An overdose of injectable anesthetic, given IP.
 - Decapitation with sharp surgical scissors or cervical dislocation.
- The IACUC recommends the following euthanasia methods for neonatal rodents (not older than 10 days of age):
 - An overdose of injectable anesthetic, given IP.
 - Anesthesia is induced by one of the following methods until there is not movement and response to noxious stimuli (e.g., foot pinch). The neonate is then rapidly and humanely euthanized via another recognized method, such as decapitation.
 - Inhalant anesthetics, such as isoflurane.
 - Carbon dioxide (CO₂)
 - Hypothermia (not direct exposure to ice)
 - Anesthetic induction may take longer than isoflurane or carbon dioxide.
- It is imperative that all individuals responsible for administering CO₂ for euthanasia be qualified and trained appropriately on the technique and equipment. Documentation of such training/experience must be provided at the time of protocol submission.
- Any deviation from the policy concerning euthanasia of fetal and neonatal rodents will be considered and reviewed by the IACUC on a case by case basis and only with adequate scientific justification.

Per regulatory requirements, failure to comply with this policy may result in notification of your funding agency (e.g. NIH) and regulatory agencies (e.g. USDA) that your research has violated federal and/or local policies regarding the humane use of animals. This notification may affect continuous funding of your animal-related

research. Further, depending on the violation, you may be required to take additional training and/or your privilege to conduct animal research at CU Denver | Anschutz might be temporarily suspended or even completely revoked.

References:

1. Artwohl J, et al. 2006. Report of the ACLAM Task Force on Rodent Euthanasia. *Journal of the American Association for Laboratory Animal Science*. 45(1): 98-105.
2. Leary S, et al. 2020. AVMA Guidelines for the Euthanasia of Animals: 2020 Edition. American Veterinary Medical Association. <https://www.avma.org/sites/default/files/2020-01/2020-Euthanasia-Final-1-17-20.pdf>