

Anesthesia Guidelines – Rodents
IACUC Guidelines
Effective Date: February 2026

Applicability: All anesthesia including non-surgical anesthesia for restraint

1. **Acclimation period and health observation:** To avoid stress following vehicle transportation, animals should be acclimated for at least 2 days before general anesthesia and 4 days before major survival surgery. A pre-anesthetic health observation should be performed prior to the procedure. This involves reviewing the animal's general appearance, activity, respiration, and bodyweight or body condition score.
2. **Fasting:** If rodents must be fasted prior to anesthesia, the rationale for fasting must be approved in the protocol.
3. **Provide heat:** Rodents can quickly become hypothermic under anesthesia that is longer than 5 minutes and during recovery from anesthesia. A heat source should be provided if the animal will be anesthetized for longer than 5 minutes. Preferred heat sources, for use during and after procedures, include chemical heat packs and circulating warm water blankets, and electric heating pads with precise temperature setting capability and digital readout. All require careful monitoring, as rodents can easily overheat. Always place an insulating layer, such as a towel, between the animal and the heat source. Depending upon the species and procedure, monitoring of body temperature may be indicated.
 - Use of heat lamps is discouraged as they may cause animals to overheat and/or other thermal injuries
 - Use of electric (low/med/hi) heating pads is discouraged in surgery as they can cause the animal to overheat and may cause thermal burns. However, heating pads may be acceptable during anesthesia recovery by placing them partially under the cages, with approximately 50% of the cage on the heating pad. This allows the animal to move away from the heat while recovering from anesthesia.
4. **Procedure location:** All anesthetic and surgery procedures should be performed outside of the housing room or under a hood. The location should be tidy, organized, and dedicated to surgical use when surgery is being performed.
5. **Administering the Anesthetic:** Anesthetics must be approved on the IACUC protocol before administration. Rodents may be anesthetized with injectable or inhalant agents, or with a combination of the two. An adequate, even depth of anesthesia should be maintained throughout the procedure. For inhalants, this can be accomplished by adjusting the vaporizer as necessary. For injectables, supplemental doses of the agent can be administered as needed: Refer to the LARC Veterinarians' Anesthesia and Analgesia Recommendations for UCSF Laboratory Animals and [Preparation of Ketamine Anesthesia](#)

[Cocktail Guidelines](#). For appropriate inhalant anesthetic usage and safety refer to the [EH&S Isoflurane Procedure for Safe Use Guidance](#).

6. **Apply eye ointment:** Eye ointment (not drops) is strongly recommended for all animals undergoing any length of anesthesia. For anesthesia/sedation longer than five minutes, eye ointment is required to prevent corneal damage due to loss of blink reflex.
7. **Monitoring Anesthesia:** Before surgery begins, ensure the animal is adequately anesthetized by testing the pedal withdrawal reflex (pinching the foot pads on both hind feet). If the foot pad pinch causes a response, supply additional anesthesia and re-test before starting the procedure. During anesthesia, monitor respiratory rate and depth, which should be visualized by the chest moving up and down in a slow, and regular rhythm (approximately 80-90 breaths per minute). Adequate oxygenation should be observed by pink mucous membrane color. Anesthetic depth must be rechecked regularly for the duration of the procedure. Adjust anesthetic depth accordingly if the animal is responsive to painful stimuli, demonstrates an increase in respiration rate, or, conversely, has a labored or irregular respiration pattern and/or a lack of color of the ears, tail, gums, and/or foot pads.
8. **Stay in the room to monitor** anesthetized animals until they are fully recovered from anesthesia (e.g., awake and ambulating normally). Do not immediately return recovering animals to a cage containing un-anesthetized animals. Animals should be placed in a separate, heated recovery cage and observed every 10-15 minutes until awake and ambulatory. Animals may then be returned to standard housing with un-anesthetized animals.
9. **Post-procedure monitoring:** Monitor animals for signs of distress or discomfort during and after recovery, and administer analgesics per the approved IACUC protocol. Animals experiencing post-procedural complications that cannot be alleviated should be euthanized per the approved IACUC protocol. Record any complications, and contact LARC if problems recur.
10. **Fluid administration:** Administration of warmed (i.e., body temperature) fluids can help animals maintain blood pressure and speed up recovery from anesthesia or surgery. Fluids may be given IP, intravenously, or subcutaneously. Contact LARC staff for questions about fluid administration.
11. **Recordkeeping:** Documentation is required for anesthesia/sedation procedures lasting longer than 15 minutes from the administration of the anesthetic/ sedative agent(s), and for any survival surgery. Refer to [IACUC Policy Surgery and Anesthesia Recordkeeping](#), [Mouse Surgical Record Template](#), [Rat Surgical Record Template](#), [Sample Mouse Surgical Record](#), and [Sample Rat Surgical Record](#).
12. **Neonatal rodent anesthesia:** Refer to the IACUC Standard Procedure, [Hypothermia/Cryoanesthesia In Neonatal Rodents](#)
13. **In case of emergency:** the LARC on-call veterinarian can be reached at 415-502-8687.