

Rodent Anesthesia Protocol

Recommended Vaporizer & Flowmeter Settings

Excerpts from Cornell Institutional Animal Care and Use Committee

Mouse anesthesia - Induction chamber

Isoflurane

- ° Place the animal in the induction chamber.
- ° Adjust the oxygen flowmeter to 0.8-1.5 L/min.
- ° Adjust the isoflurane vaporizer to 2%-3%.
- ° For maintenance, use a mask connected to a Bain circuit and then adjust the flowmeter to 0.4-0.8 L/min. Please see Appendix, Part I for adverse effects and precautions for the use of isoflurane.

Rat anesthesia - Induction chamber

k. Isoflurane

- ° Place the animal in the induction chamber.
- ° Adjust the flowmeter to 0.8-1.5 L/min.
- ° Adjust the isoflurane vaporizer to 2%-3%.
- ° For maintenance, use a mask connected to a Bain circuit, and adjust the flow meter to 0.4-0.8 L/min.

General considerations

- a. Heat loss is rapid in anesthetized rodents. Keep animals warm by wrapping/covering them (e.g., drape or towel), and/or providing a heat source (e.g., heat pad, Grabber® hand warmer) until they have fully recovered from anesthesia. Ensure that all heat sources are thermostatically controlled and/or carefully monitored, so to prevent burns while maintaining thermal support.
- b. Apply sterile ophthalmic lubricant (e.g., Puralube) to eyes once animal is anesthetized.
- c. Ensure adequate depth of anesthesia prior to performing procedures (e.g., monitor pedal withdrawal and palpebral reflexes).
- d. Ensure animal safety:
 - ° Minimally, monitor respiration, and skin/mucous membrane color.
 - ° For long procedures, or procedures that restrict direct observation (e.g., CT scan) utilize a heart rate monitor or respiratory and/or oxygen saturation monitor.
- e. Anesthetized rodents must not be placed in contact with loose bedding or similar materials. Recover animals in a bare cage or on top of a paper towel (or similar barrier) to prevent aspiration of bedding.
- f. Monitor until fully recovered from anesthesia.
- g. Clearly document all procedures (including anesthesia) with specific procedure cards or detailed notes on cage cards, see ACUP 542: Maintaining Clinical Records for Animal Research Models.

<http://www.research.cornell.edu/care/documents/ACUPs/ACUP101.pdf>

Excerpts from Univ. of Pennsylvania

Since Isoflurane is extremely potent and fast acting (due to its high volatility and low tissue solubility with highly calibrated precision vaporizers), it is essential that the animals be closely observed by the researchers while induction of anesthesia occurs, to allow for appropriate removal of the animals following induction to prevent overanesthetization and death.

Begin by attaching the anesthesia supply, and return lines to the induction chamber using the appropriate fittings. Tape is not an appropriate fitting. The scavenger canister should then be attached to the return line. The animal is then placed in the induction chamber and the gas turned on at 2-3% with a flow rate of 0.8-1.0 liter/min.

Once the animal is under, the gas supply to the induction chamber should be turned off. The supply and return lines should be moved to the nose cone. The animal should then be removed from the induction chamber and mounted with the nose cone. The gas flow should be restored when the animal is fully mounted with the nose cone. Once under, Isoflurane levels of 1-1.5 % at a flow rate of 0.4-0.8 liter/min is an appropriate level of anesthesia for rats and mice. Larger flow rates may be necessary for larger animals.

http://www.uphs.upenn.edu/radiology/research/labs/saif/docs/SOP-2.04_isoflurane.pdf

* NOTE: To avoid waste gas contamination in the environment, always use the oxygen flush valve for approximately 90 seconds to purge the induction chamber with oxygen before opening the lid.