

Name: Rodent Anesthesia
Number: FSU-SOP-510.01
Category: Managing Pain and Discomfort

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Author(s): T. Schoenfeld

1.0 Purpose

This SOP describes the basic procedure for inducing anesthesia in rodents by administration of the inhalant anesthetic isoflurane.

2.0 Policy

- 2.1 Anesthesia is required to eliminate pain and discomfort associated with procedures such as euthanasia by vascular exsanguination (SOP 700) or surgery, whether survival or non-survival (SOPs TBW).
- 2.2 Non-terminal procedures such as survival surgery require additional treatment with analgesics (SOP 500) as part of a comprehensive, pre- and postsurgical regimen of pain management.
- 2.3 Use of an inhalant anesthetic such as isoflurane is the only approved method of anesthesia in rodents at FSU.
- 2.4 Rodents should not be fasted prior to anesthesia, as it leads to dehydration (reference 5.3).
- 2.5 Rodents should be kept warm during anesthesia for a prolonged period, especially survival surgery.
 - 2.5.1 Use RightTemp homeothermic control module (Kent Scientific).
 - 2.5.2 Module delivers warmth via far infrared heating pad, regulated in comparison to body temperature measured via rectal probe.
- 2.6 Animals should never be left unattended when anesthetized.

3.0 Materials

- 3.1 Anesthesia station
 - 3.1.1 SomnoSuite anesthesia system (Kent Scientific)
 - 3.1.2 Isoflurane
 - 3.1.3 Induction chamber
 - 3.1.4 Nose cone

4.0 Procedure

- 4.1 Set up anesthesia station within the exhausted biosafety cabinet (BSC) or on the surgical table in the Procedure room (SCI 101D).
 - 4.1.1 The SomnoSuite does not need to be used in an exhausted fume hood or BSC, because of its low flow mechanism and effective gas scavenging system (reference 5.2).
 - 4.1.2 The BSC is required when working with toxic, volatile chemicals such as during vascular perfusion with fixatives (SOP 700) or during parenteral administration of bromodeoxyuridine (BrdU; SOP 710).
- 4.2 Place the animal into the clear-walled induction chamber, and turn on the airflow to a level of 0.8-1.5 ml/min, at 3-5% isoflurane.

- 4.3 Remove the animal from the induction chamber when it stops moving, save for signs of slow, tidal breathing, and verify achievement of a surgical plane of anesthesia by the loss of toe-pinch (pedal) and eye blink reflexes.
- 4.4 Continue delivery of isoflurane via a nosecone, with reduced airflow (0.4-0.8 ml/min) and isoflurane concentration (2-2.5%), while monitoring for the continued loss of reflexes along with sustained, steady tidal respiration.
- 4.5 Following a completed non-terminal procedure, remove the animal to its home cage and monitor for the return of righting reflexes and accelerated tidal respiration.
 - 4.5.1 Animals should not be returned to group housing until they have achieved full and well-balanced locomotion.
 - 4.5.2 Use of a small heating device in the home cage may be necessary to sustain body temperature until the animal regains normal activity.
- 4.6 For a terminal procedure leading to euthanasia, anesthesia achieving the loss of reflexes should be followed by a physical procedure such as exsanguination or double pneumothorax (lung puncture).

5.0 References

- 5.1 Mouse anesthesia (McGill University)
https://www.mcgill.ca/research/files/research/110-mouse_anesthesia_0.pdf
- 5.2 SomnoSuite Low-Flow Anesthesia System (Kent Scientific)
https://www.kentscientific.com/products/productView.asp?productID=6449&Mouse_Rat=SomnoSuite%26reg%3B&products=SomnoSuite%26reg%3B+Low%2DFlow+Anesthesia+System
- 5.3 Rodent anesthesia SOP (University of British Columbia)
<https://animalcare.ubc.ca/sites/default/files/documents/SOP%20ACC-01-2015%20Rodent%20anesthesia%20SOP.pdf>

SOP REVISION HISTORY

| VERSION # | APPROVED | DETAILS |
|-----------|----------|---------------------------|
| 510.01 | m/d/yy | Authored by T. Schoenfeld |
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