**Open-Drop Isoflurane Anesthesia**

Last Reviewed: December 14, 2023

**I. Purpose and Scope**

The purpose of this standard operating procedure (SOP) is to outline the use of open-drop Isoflurane anesthesia in rodents and birds in field studies. This anesthetic method will provide approximately 30 seconds of deep anesthesia during which rapid procedures, such as blood collection and tail biopsies may be accomplished in the field.

**II. Policy**

It is LAR policy to meet or exceed all federal, state, and local regulations and guidelines and to comply with all institutional policies and procedures as they apply to the use of animals in research. Personnel must attend any applicable training in animal care and use, occupational health and safety, equipment operation, and SOPs prior to performing activities outlined in this SOP or work under the direct supervision of trained personnel.

**III. Procedures**

**A.  Materials**

1. Isoflurane
2. Cotton gauze pad
3. Tea strainer or conical tube with pre-drilled holes
4. Bell jar or wide-mouth glass container (with known volume). Any type of     
   container with a secure lid may be used, provided it is constructed of non-porous material that may be disinfected and allows for constant visualization of the animal. The jar should be of sufficient size to comfortably accommodate the animal and your hand, but not so large as to require excessive anesthetic.

**B.  Anesthetic Induction**

1. **Caution:** This anesthetic induction method must be performed in an area with good ventilation. If performed in a temporary field station – open two sides of the wall tent for air circulation.
2. Don nitrile gloves and moisten the cotton pad (e.g., nestlet, gauze) with the 0.5 cc  
   of isoflurane per 500 cc volume of the anesthesia jar.
3. Place the cotton pad inside a small container (metal tea strainer). The use of the  
   tea strainer ensures that the animal does not contact the isoflurane-soaked pad,   
   which can cause skin irritation and potential overdosing since isoflurane is also absorbed through the skin.
4. Transfer the animal to anesthesia jar and close lid tightly. Within **approximately 15-  
   30 seconds**the animal will become anesthetized. Initially, the respiratory rate will  
   increase and then decrease. Clinical indications of a deep plane of anesthesia in  
   rodents include the lack of a righting reflex (tip the jar gently) and a 50% reduction  
   in respiratory rate compared to pre- anesthesia levels.
5. Allow the animal to remain at a deep anesthetic plane for **~10 seconds** before  
   proceeding. Quickly, yet carefully, remove the animal from the jar and place it on  
   a clean work surface. **Replace the lid on the jar immediately.**
6. Apply a noxious stimulus (i.e., toe pinch) to ensure adequate plane of anesthesia. If  
   no response is noted, the procedure can be initiated. If the animal responds to  
   noxious stimulus, return it to the jar and monitor respiratory rate as previously  
   performed.
7. The animal will remain deeply anesthetized for approximately 30 seconds following exposure to the isoflurane in the induction chamber.
8. If the animal reaches a lighter plane of anesthesia during the procedure, evidenced by increased respiratory rate, or purposeful movement, stop the procedure and transfer the animal back to the bell jar, until the animal again reaches a deep plane of anesthesia.
9. Allow the animal to recover on a piece of clean paper towel in a bedding-free  
   cage. Monitor the animal closely until it is fully recovered.
10. **Close constant monitoring of animals is essential during induction and anesthesia  
    maintenance**.
11. Re-wet the cotton pad with Isoflurane as needed.