1. PURPOSE

This Standard Operating Procedure (SOP) describes methods for anesthetizing guinea pigs.

2. RESPONSIBILITY

Principal investigator (PI) and their research staff.

3. GENERAL CONSIDERATIONS

3.1. Guinea pigs do not feast before anesthesia due to their inability to vomit.
3.2. Guinea pigs can be anesthetized with either inhalant gas or injectable drugs. The use of inhalant gas is the preferred method of anesthesia whenever possible.
3.3. Heat loss is rapid during the anesthesia. Keep the animals warm by providing a heat source until the animal has recovered from anesthesia.
3.4. Never leave an anesthetized animal unattended. Monitor anesthetized animals until they fully recover, are sternal, and ambulate.

4. MATERIALS

4.1. Material or equipment to provide or conserve body heat: heating pack, warming pad. Do not use electric heating pads unless specifically designed for use with laboratory animals.
4.2. Ophthalmic ointment (natural tears)
4.3. Gas anesthesia machine
4.4. The induction chamber is constructed of a see-through material (glass, polycarbonate, etc.)
4.5. Anesthesia nosecone or mask.
4.6. 14" venflon for orotracheal intubation
4.7. Veterinary otoscope with a long narrow adaptor for a light source and guide for intubation
4.8. Isoflurane
4.9. Ketamine (100 mg/mL) *Controlled Drug
4.10. Xylazine (20 mg/mL)

5. PROCEDURE
5.1. Isoflurane anesthesia:

5.1.1 Induction:

5.1.1.1. Give an injectable anesthetic cocktail IM or IP (see section 5.2 below) and wait 5 minutes.

5.1.1.2. Adjust the oxygen flowmeter to 0.8 to 1.5 L/min.

5.1.1.3. Place the orotracheal tube or face mask.

5.1.1.4. Adjust the isoflurane vaporizer to 1.5%

5.1.2 Maintenance:

5.1.2.1. Use the mask connected to the Bain circuit.

5.1.2.2. Adjust the flowmeter to 0.4 to 0.8 L/min.

5.1.2.3. Adjust the isoflurane vaporizer to 1.5 to 2.5%.

5.1.2.4. Apply ophthalmic ointment (natural tears) to both eyes to prevent dryness and damage to the cornea. Reapply as needed.

5.1.2.5. Continuously monitor the animal during anesthesia and adjust the level of isoflurane as needed according to monitored parameters:

5.1.2.5.1. Presence of reflexes/response to stimuli (pedal withdrawal reflex).

5.1.2.5.2. Respiratory rate and breathing pattern.

5.1.2.5.3. Mucous membrane color surrounding the nose and mouth (should remain pink).

5.1.3 Recovery:

5.1.3.1. Turn off the isoflurane vaporizer, flush the system, and keep the animal on oxygen.

5.1.3.2. Transfer the animal to its cage once it begins to move and allow it to recover fully (sternal position).

5.1.3.3. Provide supplemental heat during the recovery period.

5.2. Ketamine/Xylazine anesthesia:

5.2.1. The injectable anesthetic dose can vary with the sex, age, strain, and body condition of the animal.

5.2.2. Recommended anesthetic dose: ketamine 35 mg/kg, xylazine 5 mg/kg.

5.2.9. The duration of injectable anesthesia is approximately 30 minutes.

5.2.10. After 30 minutes, a half dose may be administered as needed.

5.2.11. Provide supplemental heat and monitor until recovery (sternal position).