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Parabiosis

Version: 1

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## Summary:

This is a mouse model of parabiosis, a technique in which two living organisms are joined together surgically and develop single, shared physiological systems, such as a shared circulatory system. Surgically connecting two animals, can prove that the feedback system in one animal is circulated and affects the second animal via blood and plasma exchange.

Reagents and Materials:

|  |  |  |
| --- | --- | --- |
| Reagent/Material | Vendor | Stock Number |
| Ketamine | Patterson veterinary | 07-803-6637 |
| Xylazine | Patterson veterinary | 07-869-6707 |
| Isoflurane 1-3% | Patterson veterinary | 07-893-1389 |
| Buprenorphine | Patterson veterinary | 07-891-9756 |
| Meloxicam | Patterson veterinary | 07-893-1368 |
| 6-0 Proline suture | Patterson veterinary | 07-824-3204 |
| 4-0 Silk suture | Patterson veterinary | 07-807-1278 |

Protocol:

***WARNING HAZARDOUS CONDITION WARNED AGAINST. This comment describes a hazardous condition to which the technician may be exposed in the performance of this protocol. It also contains directions on how to avoid or minimize the danger. Warnings are always and only used for personnel safety, and precedes the first step that will expose the technician to the hazard.***

Expected procedure duration:

60 minutes

Adequacy or depth of anesthesia is monitored by:

Respiratory Rate and Toe Pinch

Frequency of anesthesia depth assessment:

At the start of surgical procedure, a toe or ear pinch can be used to assess the depth of anesthesia. Visual monitoring should be performed thought-out the procedures, as well as toe/ear pinches.

Deviations from expected behavior Should be noted.

Anesthesia Regimen:

Ketamine (80-100mg/kg), Xylazine (5-20mg/kg) or Isoflurane 1-3%

Pre-surgical Analgesics:

Approximately 30 minutes prior to undergoing the surgical procedure, mice receive an S.C. injection of Buprenorphine (0.05mg/kg) and Meloxicam (5mg/kg).

Surgical prep:

Aseptic technique will be maintained by:

Clipping/shaving fur around incision site, Sterile Instruments.

Isoflurane, heating pad, forceps, scissors, needle driver, eye ointment, 6-0 Proline, 4-0 silk suture, 1 ml-syringes, 0.9% NaCl, Sterile gloves, Povidone-idoine, 70% ETOH

Parabiosis Procedure:

1. Anesthetize the mice and ensure depth of anesthesia with a toe pinch.

2. Remove the hair from 0.5 cm above the elbow to 0.5 cm below the knee joint of surfaces to be

joined.

3. Place the mice back to back on the heating pad.

4. Prep the surgical field with 70% isopropanol as well as Betadine solution and drape the mice.

5. Apply ointment to animal’s eyes.

6. Confirm depth of anesthesia with a toe pinch.

7. Make an incision in the skin of both animals ~0.5 cm above the elbow to 0.5 cm below the knee.

8. Blunt dissect around incision to detach the skin.

9. Use 4.0 silk suture to suture the knees and elbows between the mice using caution to not secure to tightly.

10. Suture the skin of the two mice continuously with 6-0 proline suture.

11. Injection 0.5 ml of 0.9% NaCl subcutaneously to each mouse to prevent dehydration.

Post-procedure Analgesics:

Buprenorphine (0.05mg/kg) every 12 hours, for 72 hours post-op.

Meloxicam (5mg/kg) every 24 hours, for 72 hours post-op

Post-procedure Monitoring:

Mice are monitored 2x daily for the first 5 days post the surgery. Thereafter, mice are monitored at least 3x per week.