**Surgery Description for Trans-Cardial Perfusion**

*This surgical description below may be inserted into the Animal Care and Use Protocol or Animal Use Protocol Amendment.*

***Please remember to fill in the anesthetic details***

|  |  |
| --- | --- |
| **1) Name of surgery: Trans-Cardial Perfusion for Rodents** | Confirm if [ ]  survival or [x]  terminal  |
| 1. **Check the relevant boxes for this surgery:**
 |
| All of the following are required for survival surgery. Please provide scientific justification to omit or change. Terminal surgeries require only the last two boxes.[ ]  Disinfection of the surgical area/table. [ ]  Surgeon is properly prepared for each surgery. This includes, at a minimum, sterile gloves, mask, and disposable (or clean) lab coat.**[ ]** Animal is appropriately prepped for surgery by the following steps:1. Provision of eye lubricant
2. Removal of the fur/hair
3. Wipe site with Disinfectant (Betadine) then alcohol three times sequentially.

**[ ]** Supplemental heat is provided while the animal is under anesthesia. See DLAM website for list of DLAM Approved  Thermoregulatory Devices for Rodents.[x]  All animals are monitored continuously while under anesthesia. |
| 1. **Anesthetic details:**

*Additional rows may be added if necessary* |
| Anesthetic/Sedation Name | Dose | Route | Re-Dose/Maintenance |
|  |  |  |  |
|  |  |  |  |
| Methods used to monitor anesthetic depth/sedation (check all that apply) | [ ]  Responsiveness to stimuli/Toe Pinch |
| [ ]  Respiratory rate/effort. |
| [ ]  Other: |
| Methods used for intraoperative monitoring (USDA species only) |  |
| [ ]  All animals are monitored continuously while under anesthesia.**[ ]** Thermoregulation is provided while the animal is under anesthesia.  |
| **4) How are the surgical instruments sterilized for each animal (for survival surgery)?** |
| N/A |
| **5) Describe the surgery in detail including skin incision, all manipulations, closure, and suture information.** *There is no need to repeat details confirmed in Part 2 and 3 above.* |
| Trans-Cardial Perfusion for Rodents1. All staff will wear a labcoat and gloves.
2. All work with hazardous fixative agents, i.e. aldehyde-based fixatives such as formaldehyde, paraformaldehyde, formalin, and glutaraldehyde (all agents are corrosive, flammable, poisonous and toxic) will be inside of a fume hood.
3. Anesthetize animal with appropriate dose of approved anesthetic (see NU-IACUC Policy *Recommended Doses of Anesthetics and Analgesics of Laboratory Animals*). If needed, give booster at appropriate dose.
4. Once animal is FULLY anesthetized (animal does not respond to toe/tail pinch or palpebral reflex), prepare animal on tray.
5. A midline insicion will be made in the skin of the abdominal region to expose the underlying facia. If the animal responds to the cutting, administer more anesthetic.
6. Then the peritoneal cavity will be surgically exposed by clamping the sternum with a hemostat and cutting through the body wall of the animal with a scalpel. Be careful not to puncture liver lobes.
7. The diaphram will be carefully pierced along it's edges using scissors, followed by cutting up through the top of the rib cage to open the thoracic cavity.
8. Any extraneous membranes holding the heart to the ribcage will be freed by dissection and the thoracic cavity will be fully opened by resting the clamp attached to the sternum back away from the thoracic cavity.
9. The left ventricle of the heart will be identified by gently twisting heart forward.
10. Grasp the exposed ventricle with forceps and inject 0.8cc heparin (1,000 units/ml saline) into left ventricle.
11. Insert perfusion needle into the same place that the heparin injection was made and clamp the needle in place (Note - make sure that the needle does not pierce any of the walls of the heart). Push in needle just so that it enters the ventricle area. Be careful not to insert it too far into the heart.
12. With scalpel or small scissors, cut right atrium. Dark blood should flow from the atrium.
13. Flush circulatory system with 50-100 ml 1x Phosphate-buffered saline (PBS).
14. Afterwards, stop flow, and perfuse system with appropriate fixative solution.
15. Once perfused, the animal’s extremities should be rigid (this can be determined by squeezing the neck and both sets of paws).
16. Properly dispose of all fixative agents:
17. Prior to collecting hazardous waste, ensure a secondary containment bin is available.
18. Carefully transfer waste into a compatible hazardous waste container (I.E. mayo jar for solids and 4-liter glass bottle for liquids).
19. Complete and place a hazardous waste label on the container
20. Secure tops/lids must be kept on containers at all times unless adding or waste. Utilize a funnel only when containers are being filled.
21. Once completed, submit an online hazardous waste request.
22. Place animal carcass in small plastic bag and place animal freezer for disposal.

\*\* Additional anesthetic will be administered if any complications arise. |
| [ ]  Sutures and/or wound clips will be removed 7-14 days postoperatively.  |
| *Provide initial dose prior to making the incision or provide justification below. If post-op analgesics cannot be used at all, provide justification in Section XIII Part 4, Justification for Cat E Procedures.* [ ] Confirm USP grade analgesics will be used. |
| **6) Analgesic regimen:***Multiple analgesics may be added to provide flexibility. When multiple analgesics are selected, indicate and/or below. Additional rows may be added if necessary* |
| Analgesic Name | Dose | Route | Duration of Treatment |
|  |  |  |  | [ ]  and [ ]  or [ ]  +/- |
|  |  |  |  | [ ]  and [ ]  or [ ]  +/- |
| 1. [ ]  Confirm that initial dose will be given prior to making the first incision OR provide justification below if this cannot be done.
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| 1. **[ ]** Confirm that a DLAM Surgical Card will be placed on the animal’s cage and that it is completely filled out..
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