IACUC Rodent Survival Surgery Policy: How to Stay Compliant

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Office of Responsible Research Practices
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Session Objectives
1. Understand IACUC policy requirements
2. Know & follow what is in your approved protocol
3. Document what you did
Office of Responsible Research Practices

orpp.osu.edu/iacuc

Animal Care and Use

The Institutional Animal Care and Use Committee (IACUC) oversees the responsible use of animals in university research and instructional activities. The IACUC reviews protocols, reviews the animal care and use program, and monitors university animal facilities to ensure compliance with standards and regulatory requirements.

Policies and Procedures

IACUC policies and procedures regarding the use of animals in research at Ohio State University.
IACUC Policies Associated with Rodent Survival Surgery

- Rodent Survival Surgery
- Inhalation Anesthesia Machine / Vaporizer / Waste Gas Maintenance
- Use of Pharmaceutical and Non-Pharmaceutical Grade Compounds in Animals and Labeling Expectations
- Autoclave Verification and Validation for Survival Surgical Equipment
- Documentation of Husbandry Procedures
- Standard Adverse Effects and Early Removal Criteria
IACUC Rodent Survival Surgery Policy Requirements

Training: Research personnel conducting surgical procedures must have appropriate training prior to conducting surgery

Potential ways that you may receive training:

- PI
- Experienced lab member
- ULAR Training
IACUC Rodent Survival Surgery Policy Requirements

**Anesthesia:** Surgical procedures must be performed under anesthesia

Per IACUC Policy:

1. **Before each use the entire machine must** be visually checked for proper function and integrity
2. **Personnel must** take all measures to avoid breathing in anesthetic gases
3. **Vaporizers must** be verified every three years and calibration based on performance (>20% variation)

Use the: [Anesthesia machine checklist](#) prior to each use
IACUC Rodent Survival Surgery Policy Requirements

**Analgesia:** Analgesia must be provided to animals that are likely to experience post-operative pain; exceptions must be approved by the IACUC

**Per IACUC Policy:**

*Use of Pharmaceutical and Non-Pharmaceutical Grade Compounds in Animals and Labeling Expectations*

1. **Aseptic preparation** (compounding) of the drug to include sterile containers, filtration or autoclaving of compounded drug if original components are not sterile
Use of Pharmaceutical and Non-Pharmaceutical Grade Compounds in Animals and Labeling Expectations

2. **Appropriate storage** of the compounded drug to include the use of a secondary container and methods which maintain sterility yet allow repeat draws
Use of Pharmaceutical and Non-Pharmaceutical Grade Compounds in Animals and Labeling Expectations

3. **Appropriate labeling** of containers for storage of compounded drugs to include:
   A. Name of the compound(s) and diluent (when applicable)
   B. Final concentration (usually mg/ml)
   C. Date of Expiration
      i. Mixtures/Dilutions: The earliest expiration date listed on the stock bottles of agents used
      ii. Experimental (NPG) compounds: The expiration date should be based on performance evaluation of the agent(s) for efficacy as well as consideration of the frequency of use/method of storage
Use of Pharmaceutical and Non-Pharmaceutical Grade Compounds in Animals and Labeling Expectations

4. IACUC approval for the use of Non pharmaceutical grade compounds is based on:
   A. Scientific necessity
   B. Non-availability of an acceptable veterinary or human pharmaceutical-grade compound
   C. **Cost savings is not a justification for using non-pharmaceutical-grade compounds**, although OLAW and USDA have made exceptions in cases of limited access resulting in exorbitant costs
   D. Appropriate process for aseptic preparation of compounded drugs for injection in animals
IACUC Rodent Survival Surgery Policy Requirements

_record Keeping_: These records must document the procedures performed, date, individual performing surgery and postoperative observations. Investigators must maintain accurate records of anesthesia, surgery, and post-operative care, including analgesic administration

- A rodent survival surgery card must be maintained at the cage level when animals are housed in ULAR
Record Keeping

Per IACUC Policy: Documentation of Husbandry Procedures

In most cases, animal care staff record these activities for animals housed in core vivaria or facilities; when animals are cared for by investigator staff within core vivarium or facilities or maintained in investigator housing areas, documentation becomes the responsibility of the individual completing the action.

For example, investigators providing feed or water to their animals (in the case of a special diet or food/water restriction study) or cage changes within a ULAR vivarium must document these activities themselves at the cage or room level as appropriate.
## Documentation of Husbandry Procedures

### Special Husbandry Practice

<table>
<thead>
<tr>
<th>Date/Procedure/Surgeon:</th>
<th>LMS</th>
<th>LMS</th>
<th>LMS</th>
<th>LMS</th>
<th>LMS</th>
<th>LMS</th>
<th>LMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analgesia:</td>
<td>Buprenorphine</td>
<td>Motrin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Score:</td>
<td>1 = normal mouse &amp; incision, 2 = abnormal mouse and/or incision, details on back, 3 = euthanized</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Initials</th>
<th>Analgesia Given</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/23</td>
<td>T</td>
<td>LMS</td>
<td>M</td>
<td>1</td>
</tr>
<tr>
<td>8/24</td>
<td>T</td>
<td>LMS</td>
<td>B/M</td>
<td>1</td>
</tr>
<tr>
<td>8/25</td>
<td>LOP</td>
<td>LMS</td>
<td>B/M</td>
<td>1</td>
</tr>
<tr>
<td>8/25</td>
<td>LOP</td>
<td>LMS</td>
<td>B/M</td>
<td>1</td>
</tr>
<tr>
<td>8/26</td>
<td>LOP</td>
<td>LMS</td>
<td>B/M</td>
<td>1</td>
</tr>
<tr>
<td>8/26</td>
<td>LOP</td>
<td>LMS</td>
<td>B/M</td>
<td>1</td>
</tr>
</tbody>
</table>

Know it

Document it

Follow it
Record Keeping

Cards are used to document all analgesia and post-operative monitoring associated with a survival surgical procedure.

**Motrin water** must be started at least 1 day prior to surgery to ensure that adequate analgesic levels are reached prior to surgery. The date the Motrin is started should be included on the surgery card. Motrin should be noted daily as “Analgesia Given”, as long as the bottle is present. Not including it indicates that the water has been removed.
**Analgesic Administration**

**Buprenorphine** MUST be given at least once every 8-12 hours to ensure adequate analgesic coverage. Lab members can give the second dose of buprenorphine 6-12 hours after the first dose. This can help set up a schedule for once every 12 hour dosing.

![Image of a handwriting note about surgical procedure and pain scores.]
Buprenorphine SR Injection Request Form

Office of Research
ULAR Form
University Laboratory Animal Resources
400 W Twelfth Avenue, Columbus, OH 43210-1016

Instructions
Please submit to BRT 0090 or email to OR-ULARSRbupinou.edu
Requests must be submitted at least 3 business days in advance. An email confirmation for the request should be provided within 24 hours. If you don’t receive confirmation of your request, please contact us again.

Requestor Information
Contact Name | Contact Phone | Contact Email
Principal Investigator Name | Protocol
Charfield: If left blank costs will be charged to the first census sheet in the room binder.

Injection Request
The date, approximate time, room and the number of animals are required at the time of your request. The rack and cage information can be provided closer to the surgery date, if TBD. All cages must be marked with a blue surgery card.

Research Team Information

| Date and Approximate Time | Room | Number of Animals | Rack | Cage | Administered (Initials) | Billed |

ULAR ONLY
## NARCOTICS (OPIOIDS)

<table>
<thead>
<tr>
<th>Drug (Brand name)</th>
<th>Dose</th>
<th>Duration</th>
<th>Route</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buprenorphine (Buprenex® 0.3mg/ml)</td>
<td>Mouse: 0.1 mg/kg</td>
<td>Every 6-12 h</td>
<td>SC</td>
<td>Mice: 0.1 ml buprenorphine + 0.9 ml sterile (injectable) saline to make a 0.03 mg/ml solution</td>
</tr>
<tr>
<td></td>
<td>Rat: 0.05 mg/kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sustained-release Buprenorphine</td>
<td>0.5-1 mg/kg</td>
<td>Every 48-72 h</td>
<td>SC</td>
<td>Compounded formulation (ZooPharm) available by prescription only. ULAR must provide and administer product</td>
</tr>
<tr>
<td>(Buprenorphine SR LAB 0.5mg/ml)</td>
<td>mouse</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sustained-release Buprenorphine</td>
<td>1-1.2 mg/kg</td>
<td>Every 48-72 h</td>
<td>SC</td>
<td></td>
</tr>
<tr>
<td>(Buprenorphine SR LAB 1mg/ml)</td>
<td>rat</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Record Keeping

Protocol approved for withholding analgesia

Even if analgesia is not provided based upon approved IACUC protocol, surgery card should still be maintained at the cage level and post-operative observations need to be documented.
Record Keeping

Post-operative findings
If researcher staff notice an abnormal mouse, it should be noted as a “2” on the scoring system and a note made on the back of the card.
IACUC Rodent Survival Surgery Policy Requirements

**Surgery Location:** It is required that a portion of a room be designated for rodent surgery, be disinfected prior to surgery, and used for no other purpose during the time of surgery.
IACUC Rodent Survival Surgery Policy Requirements

Aseptic Technique: Aseptic techniques must be followed for all survival surgeries. All surgical equipment, instruments, and supplies that will contact the surgical site must be sterilized before use and must be maintained on a sterile surface during surgery.
1. **A chemical control indicator must be used** for verification of all items being sterilized for survival procedures or surgeries. Chemical control indicators provide instant notification of failures to reach the required autoclave cycle temperatures
   a. A chemical control indicator **must be present on the outside package** of all items being autoclaved. Most surgical peel pouches have a built-in chemical control indicator
   b. An additional chemical control indicator **must be present on the inside** of surgical packs prior to autoclaving to ensure adequate steam penetration
Autoclave Verification and Validation for Survival Surgical Equipment

c. The autoclave **date must be present** on the outside package or pouch
d. Unused autoclaved items **must be resterilized within 1 year** from the date of initial sterilization, or if the outer covering is compromised
e. If chemical control indicators fail to reach the required autoclave cycle temperature, items must be resterilized prior to use
2. Autoclave validation must be performed semiannually.
   a. Documentation of semiannual validation must be available and accessible for review
Aseptic Technique

The surgeon must wear a surgical face mask and a clean surgical gown/scrub top/lab coat for all rodent surgeries. Sterile or properly disinfected exam gloves must be used. Patient preparation (fur removal) should take place at a site other than the location in which the surgery will be performed. Hair must be removed and the surgical site must be scrubbed three times with a recommended skin disinfectant, alternating each disinfectant scrub with a swipe of sterile water or 70% isopropyl alcohol.
Aseptic Technique

• If hands contact a non-sterile object, gloves must be changed or properly disinfected
• If whole instruments are placed on a non-sterile surface or dropped on the ground, they must be replaced with an individually sterilized instrument or an instrument from a new surgery pack
• If instrument tips only contact a non-sterile surface, a new sterile pack of instruments must be opened or alternatively, instrument tips must be wiped clean of blood and/or tissue and placed in a hot bead sterilizer for 10-20 seconds (at 240-270° C)
IACUC Rodent Survival Surgery Policy Requirements

**Multiple Rodent Survival Surgeries:** The same set of instruments can be used on multiple animals as long as the sterility of the instruments is maintained. Instrument tips must be wiped clean of blood and/or tissue using sterile supplies (wipes and water/saline must be sterile) and either placed in a hot bead sterilizer or soaked in 70% isopropyl alcohol for 2 minutes between surgeries.
IACUC Rodent Survival Surgery Policy Requirements

Multiple Rodent Survival Surgeries: See Acceptable Disinfectant and Sterilant Methods for specific details regarding required contact time and other options. For multiple surgeries occurring on the same day, instruments may be used for up to five animals only if sterility is maintained. Gloves must be changed or properly disinfected between animals or if torn.
IACUC Rodent Survival Surgery Policy Requirements

**Post-Operative Care:** Animals recovering from anesthesia must be monitored by study personnel and provided supportive care until they are fully mobile within the cage. Hypothermia is a major cause of post-operative death in rodents and can be avoided by providing a heat source during the surgical and post-operative period. Following anesthetic recovery, animals must be monitored by study team members as described in the IACUC protocol. Non-absorbable skin sutures and wound clips must be removed between 10-14 days post-operatively.
How do I know what is approved in my protocol?

https://eprotocol.osu.edu

or

http://orrp.osu.edu/iacuc/e-protocol/

Then click on the image
How do I know what is approved in my protocol?

Once you are logged into e-Protocol you will see a list of all of the protocols that you are listed as personnel. Select the appropriate protocol.

You can sort by “State” to find the approved protocols. You will also see any amendments and annual reviews for the respective protocols.
How do I know what is approved in my protocol?

**Protocol Identification**

- **Protocol Title:** Helping a PI
- **Principal Investigator:** Anthony Yonkura
- **Protocol Type:** Instructional
- **Academic Unit:** College of Med & Pub Health

- It is important to select the most specific academic unit (which could be a division, department, or a college).
- Select Centers only when the PI is not a faculty member (e.g., research scientist).
- Choosing an incorrect unit will delay unit endorsement.
- Select the ⚫ icon to the right of this question to read more before selecting the academic unit from the academic unit dropdown.
How do I know what is approved in my protocol?

Protocol Activities

- Add the activities to be conducted under this protocol.
  - You must identify at least one activity per protocol group.
  - You may apply one activity to multiple groups.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Protocol Group(s)/Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>View</td>
<td>Gene Therapy/ ASO Small Species - Mouse, Standard (Mus Musculus)</td>
</tr>
<tr>
<td>View</td>
<td>Gene Therapy/ ASO Large Species - Pig (Sus Scrofa)</td>
</tr>
<tr>
<td>View</td>
<td>Gene Therapy/ ASO Small Species - Mouse, Standard (Mus Musculus)</td>
</tr>
<tr>
<td>View</td>
<td>Gene Therapy/ ASO Large Species - Pig (Sus Scrofa)</td>
</tr>
<tr>
<td>View</td>
<td>Gene Therapy/ ASO Small Species - Mouse, Standard (Mus Musculus)</td>
</tr>
<tr>
<td>View</td>
<td>Euthanasia for Tissue Harvest Only (and No Other Activities on Live Animals)</td>
</tr>
</tbody>
</table>
How do I know what is approved in my protocol?

Protocol Identification

- **Protocol Title:** Helping a PI
- **Principal Investigator:** Anthony Yonkura
- **Protocol Type:** Instructional
- **Academic Unit:**
  - Select the principal investigator's academic unit.
  - It is important to select the most specific academic unit (which could be a division, department, or a college).
  - Select Centers only when the PI is not a faculty member (e.g. research scientist).
  - Choosing an incorrect unit will delay unit endorsement.
  - Select the icon to the right of the question to read more before selecting the academic unit from the dropdowns.
- **College:** College of Med/ Pub Hlth
How do I know what is approved in my protocol?

Early Removal Criteria

• **Investigators must ensure** humane care of their research animals by checking animals at least weekly to utilize ERC as listed in their protocol.

• Once an animal meets the ERC, the principal investigator is responsible for promptly (< 24 hrs.) removing the animal from the study or initiating treatment as outlined in the protocol.

If you have any unanticipated adverse effects that impact the well-being of your animals; promptly notify the IACUC and the clinical veterinarian.
Ask your clinical veterinarian for assistance/consultation

• Take advantage of the ULAR technical training services

To schedule training for specific techniques complete the Training Request Form and email it to ulartraining@osu.edu
Summary Overview

1. Read and follow your protocol
2. Understand and follow the IACUC policies
3. Document what you did
Questions

Contact Information
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Melinda Bruns - ORRP/IACUC
• bruns.159@osu.edu
Dr. Stacey Meeker - ULAR
• meeker.79@osu.edu
Great question. The timing for administration of buprenorphine is going to depend a little on the procedure you are performing, your animals, and the anesthetics you are using. Some anesthetics also provide some analgesia while others such as isoflurane do not. Often administering buprenorphine prior to surgery helps ensure that appropriate levels of analgesia are reached before an animal recovers from anesthesia. It is definitely important to make sure to review your protocol and follow what is described in that. If you ever have questions, don’t hesitate to contact your clinical veterinarian so that they can help provide guidance based on your specific procedures.
If ULAR is administering the buprenorphine SR, how should the blue card be filled out to be placed at the cage level when housed in ULAR?

Guidelines for ULAR Administered SR Buprenorphine can be found on the ULAR website. [https://ular.osu.edu/files/2019/10/Vet-Guideline-19-017b_ULAR-Administration-of-BUP-SR.pdf](https://ular.osu.edu/files/2019/10/Vet-Guideline-19-017b_ULAR-Administration-of-BUP-SR.pdf). We request that cages have blue surgery cards placed on them prior to ULAR technicians administering the SR buprenorphine. When placing the cards, fill out as much information on the top lines of the card as you can (Name and date of surgical procedure, name of surgeon, analgesics that will be used). ULAR staff will fill in the entry in the table noting the date and time SR buprenorphine was administered and that it was administered by ULAR.
What are some appropriate heat sources for post-op during recovery?

There are a number of different options for providing heat support to rodents during post-operative recovery including electrical, chemical, or circulating water heating pads or heat lamps. Regardless of what device you use, it is important to monitor your animals closely to prevent thermal injuries. You can reach out to ULAR training staff (ulartraining@osu.edu) for additional information about specific products that are available.
If Buprenorphine SR is given by ULAR to rats and there is a concern about the dosage. How can I be sure of dose?

If you ever have questions or concerns, please don’t hesitate to contact your clinical veterinary staff so that they can evaluate the animal together. In general, whether you have concerns about dosing or not, it is important to closely monitor your animal during the post-operative period for evidence of pain or distress. If you have concerns that your animal is painful, reach out to the veterinary staff so that we can discuss other options for providing additional analgesia for your animals if indicated.
How do you indicate when the Motrin water has been changed on the blue surgery card or is that necessary as long as it was noted in the lab notes?

There is not a specific method that must be used for indicating when the Motrin water is changed as the record is available within the housing room and clear to anyone who may need to reference it. Typically this is monitored either by including a notation on the blue surgery card, recording the changes on a purple monitoring card, or using the room level PI care calendar that can be provided in the room binder. If you have questions as to the best method to use for your purposes, don’t hesitate to reach out to your clinical vet staff to discuss the options further.
A surgeon with long hair should they have their hair pulled back during the procedure to help keep it from falling into the surgical area?

Yes, best practice is to ensure that long hair is secured in a manner that would prevent it from potentially contaminating your surgical field.
Can we choose to administer Motrin or buprenorphine, or does this depend on the specific procedure?

The analgesics used and the duration they need to be administered are dependent upon the procedures being performed and what implications specific classes of analgesics may have on research parameters. Analgesics required for a given procedure should be clearly indicated within your approved IACUC protocol so it is important to refer to your protocol when planning your surgeries. If you ever have questions, you can always reach out to your clinical veterinary team.