Spring 2022 Semiannual Program Review
April 19, 2022

Voting Member Attendees:
Richard Bianco, Lynn Impelluso, Ilana Cohen, Henry Wong, Jen Hubbard, Dezhi Liao, [redacted] Keith Barker, Beverly Norris, George Wilcox, Geoffrey Ghose, Laura Stone, Kristin Pilon, Yuzhi Li, Christin Wright, William Sullivan, [redacted]

Alternate Member Attendees and Guests:
Erin Dickerson, Nathan Koewler, Whitney McGee, Jessica Felgenhauer, Michelle Reichert, Kat Coda, Samantha Boyle, Brenda Kick, Paul Lindstrom, Jennifer Borgert, Megan McCoy, Nima Estharabadi, Kathryn Trautman, Georgiy Aslanidi, Giuseppe Dell'Anna, [redacted], Craig Flory, [redacted], Frances Lawrenz, Erica Nystrom Santacruz

1. Agenda

- Inspection Summary (pg. 2)
- IMHA Summary (pg. 3)
- IACUC Office Administrative Summary and Approval Times (pg.4)
- Program Discussion Summary (from FCR Meetings) (pg. 6)
- Discussion Topics (p. 16)
- OLAW Groups and Checklist (pg. 19)
    - Group 1: Nima
    - Group 2: Ilana
    - Group 3: Paul
    - Group 4: Megan
    - Group 5: Jennifer
- Appendices
    a. Complete Inspection Report Summary (pg. 30)
    b. Repeat Significant Findings (pg. 62)
    c. IMHA List and Justifications (pg. 63)
    d. Reduced PAM (pg. 83)
    e. Facility Inspection Dates (pg. 84)
    f. Approved Protocol Exceptions (pg. 88)
    g. Administrative Summary and Graphs (pg. 228)
    h. Holding Protocol (pg. 238)

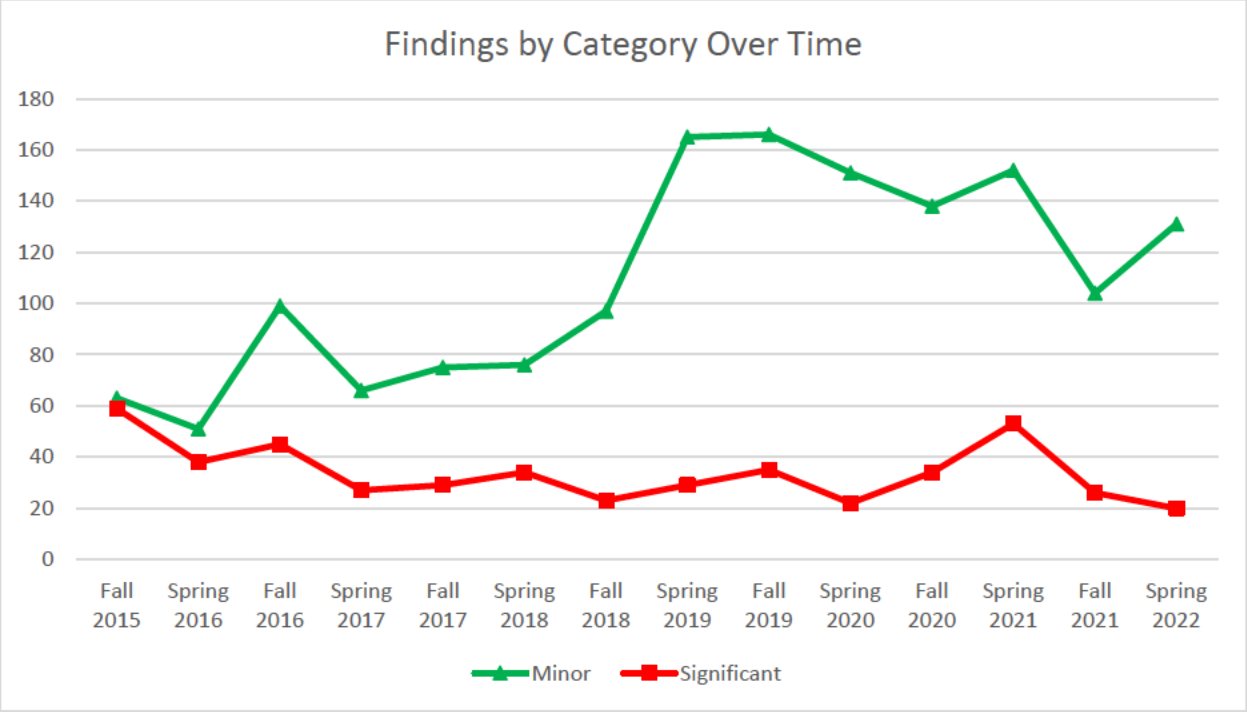
2. Spring 2022 Inspection Summary

During the Spring 2022 six-month cycle, there were 282 inspections with 151 findings (131 Minor Findings, 20 Significant Findings). Eight of the Significant Findings were welfare related. At this time, all significant and minor findings have been corrected and the reports closed.

Over the last six months, we had the following:

- 5 reports sent to OLAW
- 0 reports to USDA
- 187 areas that had no findings
- 2 repeat findings (repeat minor)
- 9 notes to file
- 7 veterinary recommendations

	Fall 2021 April 2021—September 2021	**Spring 2022 October 2021—March 2022**
Significant	26	20
Minor	104	131
Total	130	151



NOTE:

- *Additional data and graphs located in appendices*

3. Investigator Managed Housing Area (IMHA) Summary

Spring 2022

# of PIs that have approved areas: 112

# of IMHA areas: 50

Fall 2021

# of PIs that have approved areas: 113

# of IMHA areas: 52

Spring 2021

# of PIs that have approved areas: 120

# of IMHA areas: 61

Fall 2020

# of PIs that have approved areas: 126

# of IMHA areas: 67

Spring 2020

# of PIs that have approved areas: 128

# of IMHA areas: 68

Fall 2019

# of PIs that have approved areas: 120

# of IMHA areas: 65

Spring 2019

# of PIs that have approved areas: 115

# of IMHA areas: 68

Fall 2018

# of PIs that have approved areas: 118

# of IMHA areas: 71

4. Administrative Statistics for Spring Program Review 2022

- Total FCR submissions October 1, 2021 - March 31, 2022: 100
- Total DMR submissions October 1, 2021 - March 31, 2022: 435
- Review Outcomes:

  FCR
  Number of new protocols: 74

  Number of amendments:26

  DMR
  Number of new protocols: 133

  Number of amendments: 302

  Vet Panel
  Total Number of New protocols and Amendments on Vet Panel: 204

- Median Approval Times for submission from October 1, 2021 - March 31, 2022

  FCR*
  New Protocols:
  Total days from initial submission to approval: 49

  Amendments:
  Total days from initial submission to approval: 35

  DMR*
  New Protocols:
  Total days from initial submission to approval: 34

  Amendments:
  Total days from initial submission to approval: 23

  Vet Panel:
  Total days from initial submission to approval to move on: 17

  *Total time for FCR and DMR includes vet review (either via vet panel or concurrent with committee review)

Compared to the last semi-annual period, there has been a slight increase in the number of submissions and a general increase in total time to approval.

The committee discussed the increase in time to approval of protocols. A number of factors contribute, including time spent with the committee or veterinary reviewer, time spent awaiting investigator response, and clarity of the submission, and no one factor can fully account for the timing. The committee will continue to work to review protocols in a reasonable amount of time without sacrificing the quality of review. The IACUC office will continue to assist investigators to promote clear and complete protocol submissions. Timelines will continue to be evaluated to determine if they continue to increase or if they stabilize around the current level and will be compared to peer institutions if they are willing to share this information.

The committee discussed the relative balance of review via FCR vs DMR. The members will be sent the current criteria for FCR vs DMR review in advance of the next meeting, for further discussion. Members were reminded that they may request any DMR protocol be moved to FCR.

See appendix for additional data

5. Compilation of IACUC Discussion Notes October 2021—March 2022

- **INSTITUTIONAL PRACTICES, POLICIES, AND RESPONSIBILITIES**

OCT A representative from the Veterinary School faculty presented a proposal for adjustments to the way in which veterinary teaching activities using client owned animals are managed by the IACUC. The request includes exempting teaching activities with client-owned animals from the normal IACUC review process. The committee discussed the proposal and noted that the IACUC needs to retain jurisdiction over these activities. The committee will reach out to peer institutions to examine their policies for veterinary teaching and will work with the vet school to determine a way to streamline the approval process and provide flexibility for clinical and staffing situations in teaching protocols, while retaining jurisdiction.

OCT The committee was informed of the current Chair's plan to step down starting in the new year. A new Chair will be needed. It should be someone familiar with animal work at the University, the regulations surrounding such work and the operation of the IACUC committee.

OCT The committee was updated on the 2021 September inspection summary.

NOV The committee voted unanimously to approve the Fall 2021 Semiannual Program Review document and send it to the Institutional Official.

NOV The committee discussed a lab's plan to address a suggestion for improvement identified in the last AAALAC site visit. The lab had behavioral equipment that was not sanitizable. They have replaced non-sanitizable maze components with vinyl flooring and acrylic surfaces, and a sample maze has been observed by committee representatives. The committee endorses the plan to update all mazes with the new materials and requests an estimated timeframe for completion.

NOV The committee discussed a subcommittee's recommendations on defining "wildlife" for purposes of reporting to USDA. More information will be gathered by the subcommittee on how to define "handling" for purposes of determining whether animals should be considered USDA-covered.

NOV RAR notified the committee of recent difficulties obtaining standard buprenorphine and will update the committee if there is a need to change to a compounded formulation due to availability.

NOV The committee was updated on the October 2021 inspection summary.

NOV The committee discussed a request by a PI for a modification to an existing laboratory supervision plan. The committee is comfortable with current staff member running anesthetic events and voted to allow her to run anesthesia independent of supervision by an RAR veterinarian. The PI was notified that the existing supervision plan remains in effect unless additional changes are requested and approved by the committee.

DEC The committee discussed a new protocol submitted by a lab whose previous protocol had been closed by committee vote. The new protocol does not appear to have taken veterinary and

expert anesthesiologist advice into account and is not ready for review. Therefore, the committee voted to return the protocol with guidance to address the recommendations before resubmitting.

DEC The committee discussed a request by an investigator to modify the lab's supervision plan. The committee approves the proposed change to anesthesia management but requests more information about the training of the proposed lab managers. The committee voted to approve the changes to lab supervision, pending IACUC leadership approval of the lab staff's training.

DEC The committee discussed potential updates to the IACUC adoption policy, guidelines, and form. The current documents exclude use of the adopted animals for business, food or production, but there are cases in which such uses may be acceptable. It was also noted that there are additional items that should be updated in the policy. IACUC and RAR staff will update the documents and bring them back to the committee for approval.

DEC The committee discussed the results of a recent member survey on preferences for continuing education. Based on the survey, meetings separate from full committee review will be scheduled for continuing education. Topics requested include conducting inspections and best practices for protocol review.

JAN The committee was updated on the November 2021 inspection summary. There were no significant findings and no reports to OLAW for the month of November.

JAN The committee discussed a question from an investigator regarding the suitability for adoption of a specific research dog. The RAR area veterinarian's professional opinion was that the dog is not in good health and is therefore not a candidate for adoption. The committee concurred with the veterinarian and voted that the investigator should euthanize the dog according to the previously agreed upon timeline of January 31, 2022.

JAN The committee discussed the procedure for animal procedure training sessions. Under current IACUC policy trainees do not need to be added to the protocol, but this does not yet apply to outside trainers. Specific steps for adding an external person to eProtocol and obtaining a visitor waiver for UMN occupational health requirements were discussed.

FEB The committee discussed allowing exemptions for staff listed on a protocol who will only work with a subset of the approved species on that protocol. The committee approved exempting these staff from IACUC mandated species- specific training when requested; these exemptions will be tracked.

FEB The committee was updated on the December 2021 inspection findings.

FEB The committee was updated on RAR's implantation of IACUC mandated training, including number of staff trained and average waiting time to enroll. The committee voted to approve two modifications to the training requirements:

a. Rodent Anesthesia will be required for all new surgeons using mice or rats. Those previously approved as a surgeon (prior to 1/1/21) are exempt.

b. Since there are not specific RAR courses for anesthesia in USDA-covered species, new surgeons using these species will be directed to contact RAR for an assessment of their anesthetic management skills by veterinary staff or their designee, in lieu of a course. Those previously approved as a surgeon (prior to 1/1/21) are exempt.

c. These requirements are in addition to the existing training requirements.

MAR The committee was updated on the January 2022 inspection summary. There were 3 significant and 21 minor findings; one finding was reported to OLAW.

MAR The committee discussed the possibility of discontinuing the requirement for annual continuing reviews now that they are no longer required by USDA. The matter was tabled for further consideration and discussion at semi-annual Program Review.

- **SELF-REPORTS and OUTSIDE REPORTS**

OCT The committee was updated on a PI whose use of cats has been suspended. The committee will be in touch with the PI regarding next steps following a scheduled leadership meeting with anesthesiology consultants from the Veterinary Medical Center. The suspension of the PI's use of cats remains in place until further notice.

OCT The committee was updated on ongoing health issues with hamsters and overall animal care in [redacted] IACUC leadership met with the Associate Dean there and have planned for regular meetings and additional training for Duluth animal care staff.

OCT The committee discussed a self-report in which rats died in a hypoxia chamber due to potentially faulty equipment. The lab has contacted the manufacturer and taken steps to fix the chamber. The committee was satisfied with the corrective action plan and considers the matter closed.

OCT The committee discussed a lab's history of adverse events, self-reports, and cooperation with RAR and the IACUC committee. The committee unanimously agreed and approved to close the current cat protocol and require the lab to submit a new cat protocol with limits on number of cats, procedures, and potentially age. The committee will also require the lab to have VMC anesthesiologists supervise anesthetic events until the anesthesiologists and the committee are ready to allow the lab to be independent.

OCT The committee was updated on a PI whose use of cats has been suspended and cat protocol has been closed. The PI will work with veterinary anesthesiologists to develop best anesthesia practices and will submit a limited scope protocol for committee review. No work with cats will be able to resume until the new protocol has been approved.

OCT The committee discussed a self-report in which a study using cows housed on an Agricultural SOP was initiated prior to having an approved research protocol in place. Project work has ceased until IACUC protocol approval is granted. The committee feels that the PI now understands the importance of receiving approval before beginning a study. The committee considers the matter closed.

NOV The committee discussed a self-report in which a rabbit received an injection via the intramuscular route, which was not approved on the protocol. Moving forward, the lab and RAR will both ensure that the procedures are checked against the approved protocol before being conducted. The committee considers the matter closed.

NOV The committee discussed a self-report in which a daily check of mice was missed in an investigator managed housing space. No animal welfare concerns were identified, and lab staff have been retrained on required daily check procedures. The committee considers the matter closed.

NOV The committee discussed a self-report in which a surgical procedure was performed on mice under the wrong protocol. The procedure was performed in accordance with the protocol on

which it is approved. Going forward, lab staff will check cage cards carefully before performing surgery. The committee considers the matter closed.

NOV The committee discussed a self-report in which an anti-coagulation therapy different from the one approved on the protocol was used in sheep. No animal welfare concerns were identified. The lab has obtained a veterinary recommendation and subsequently submitted a protocol amendment. The committee considers the matter closed.

NOV The committee discussed a report of an adverse event in which dogs developed unexpected medial patellar luxation following experimental arthrotomy surgery. The PI has worked with RAR veterinary staff to manage this complication while supporting the welfare of the animals, including provision of analgesics as needed. The committee considers the matter closed.

NOV The committee discussed a report of an adverse event in which mouse pups were found alive in a garbage receptacle and subsequently euthanized. It was not possible to assign responsibility for this event, but lab staff in the area have been reminded not to remove nesting material from cages, in case animals become inadvertently entangled. The committee considers the matter closed.

NOV The committee discussed a report of an adverse event in which rat pups were found alive in a bedding recycling receptacle and subsequently euthanized. It was noted that there have not been recent changes in nesting materials that might account for this event, or the event listed above. RAR husbandry staff are being retrained on cage change out procedures to ensure all animals are accounted for. The committee considers the matter closed.

DEC The committee discussed a self-report in which mice were ordered on the wrong protocol, resulting in surgery being conducted on a protocol for which it was not approved. The surgery and post-operative care were performed as outlined on the other protocol. Going forward, the lab has outlined a multi-step process for checking protocol numbers. The committee appreciates the detailed corrective action plan and considers the matter closed.

JAN The committee discussed two self-reports in which daily checks or husbandry tasks were missed in [redacted] areas. No animal health or welfare issues were identified as a result of these incidents. The committee endorsed the corrective action plans and considers the matter closed.

FEB The committee discussed a recent issue at an agricultural unit. An outside welfare concern was received, and an immediate investigation was initiated by IACUC leadership. Several issues were identified related to animal health, recordkeeping, and staff training and the site was sent an inspection report detailing these issues and responses needed. In addition, the previous site PI has left the University and the SOP and research protocols for the site had lapsed. A new SOP has been submitted and will be reviewed by the committee. The IACUC will perform increased monitoring of the site until substantial improvement in animal health and records is seen and the committee will be kept updated on their progress.

FEB The committee discussed an adverse event report in which expired anesthetic was found and is believed to have been used in a shared vaporizer. A lab using this vaporizer experienced complications including animal deaths. The expired anesthetic has been disposed of. IACUC policy and guidelines for anesthetic equipment will be updated to include a requirement that a filling log be kept, to include person filling, date, expiration date and lot of anesthetic. This information will be distributed to animal users after language is finalized by the committee.

FEB The committee discussed a self-report in which animals were tail snipped for genotyping after 21 days of age but IACUC policy and guidelines on anesthesia for this procedure were not followed. The lab states that local anesthetic will be used going forward and staff will be retrained on the guidelines. The committee requested personnel training records to confirm this retraining.

FEB The committee discussed a self-report in which a local anesthetic was not used for a surgical procedure. This was consistent with one section of the protocol but not another. The lab will update the protocol to ensure consistency between sections and will follow the updated protocol going forward. The committee considers the matter closed.

FEB The committee discussed a self-report in which two cages of animals were found without access to water, with one animal death. The facility has changed their practices related to changing water bottles and conducting room checks. The committee requested clarification as to whether the changes will apply to all facilities or only to the building in which the recent incidents occurred.

FEB The committee was updated on the ongoing investigation of an agricultural site at which animal health and management issues had been previously identified. The initial necropsy report on one animal was inconclusive and further diagnostics are pending. IACUC leadership and a consulting veterinary expert will be visiting the site in the immediate future. The site will need to identify a primary veterinarian for their current and future needs. IACUC visits will take place monthly until the committee is satisfied with the status of the site; these will be a combination of announced and unannounced in nature. The committee will continue to be updated on this matter.

FEB The committee discussed a self-report in which anesthetic records were not available for a non-surgical anesthetic procedure in rats. The lab initially identified missing information within a record, and in follow up found that other records were missing. The lab will ensure that records are kept going forward by assigning a dedicated team member to keep documentation during procedures, retraining staff, and performing periodic checks to ensure that records have been filed appropriately. The committee requests that the lab receive training from IACUC office staff on recordkeeping and that the next set of records be submitted for committee review.

FEB The committee was updated on a previous self-report regarding mouse genotyping that did not follow IACUC guidelines. The lab has submitted the requested records documenting training of lab staff on the guidelines. The committee now considers the matter closed.

FEB The committee was updated on a previous self-report involving mice found without water bottles. RAR answered the committee's question regarding applying the proposed corrective actions throughout campus; these are limited to the affected building initially, but broader implementation will be considered if they are successful there. The committee now considers the matter closed.

MAR The committee was updated on an agricultural site at which animal health and management issues had been previously identified. A follow-up visit by IACUC representatives and a University Extension veterinarian raised additional, serious concerns regarding animal health and veterinary practices. Because of the immediate concern for animal welfare, the Institutional Official used his authority to suspend animal activities at the site, effective 2/24/22. All research activities were ordered to cease immediately and all animals to be sold as quickly as can be arranged. The committee will be kept updated on the sale of the animals and their care in the interim.

MAR The committee was updated on a procedure in hamsters that had raised questions at a previous meeting. An RAR veterinarian observed the approved tick feeding procedure and found no signs of irritation or other concerns. The committee considers this matter closed.

MAR The committee discussed a self-report of an adverse event in which a pig experienced complications in the immediate post-operative period. Lab staff took several actions to treat the animal but did not contact RAR veterinary staff. The pig recovered and has not had further health issues. The committee requested that the corrective action plan be updated to include adding emergency drugs to the protocol and providing RAR with medical records when transferring an animal.

MAR The committee discussed a self-report in which a viral vector different from the one approved on the protocol was given to rats. No health concerns were associated with the alternative vector and the investigator has submitted a protocol amendment adding it as an option. The committee considers the matter closed.

MAR The committee discussed a self-report in which two ferrets were found out of their cage but within their housing room. RAR veterinary staff examined the animals and verified that there were no veterinary or animal welfare concerns. Staff have been reminded to verify that cage doors are securely latched, reminder signs will be posted in the room, and cages are being examined and repaired to ensure they are easy to close. The committee considers the matter closed.

MAR The committee discussed a self-report in which mice with large amounts of dehiscense were discovered and subsequently euthanized. The committee requested further information about the training and experience of the surgeon to assess the need for additional training.

MAR The committee discussed a self-report where a pig experienced severe respiratory depression during which the lab did not contact their RAR veterinarian. Moving forward the lab will add refinements to the procedure, ensure RAR is notified of any procedural complications,

and provide records to post-op personnel immediately after procedures. The committee endorses the lab's corrective actions and considers the matter closed.

MAR The committee discussed a self-report where a PI administered a hazardous chemical to a rat which was not outlined on their protocol and did not notify RAR prior to administration. The committee also reviewed anesthetic records for a previous self-report submitted by the lab. Given the repeated and serious nature of findings, the committee voted to suspend all animal work until a full investigation can be conducted.

- **SUBCOMMITEE UPDATES**

Analgesic Use in Rodents subcommittee:

JAN The committee was updated on the work of the subcommittee on SR-buprenorphine. The subcommittee recommends updating the posted dosing recommendation for the ZooPharm product from 2 mg/kg to 0.5-1 mg/kg for mice, consistent with the manufacturer's recommendation. The new recommendation will be rolled out gradually via new protocol submissions, continuing reviews, and inspections. Further study and discussion are needed regarding a newer, FDA-indexed product, Ethiqa.

FEB The SR-Buprenorphine subcommittee reported that the dosing recommendation for ZooPharm in mice has been updated and this is being communicated to users via the RAR website, IACUC email newsletter, and in an ongoing manner via inspections. A recommendation for Ethiqa (FDA-indexed version) will be developed after further study.

Teaching with Client Owned Animals subcommittee:

OCT A request to change the committee's management of veterinary teaching protocols using client-owned animals was tabled to wait for an update on how these policies are managed at a peer institution.

NOV The committee Chair has requested information from a peer institution on their management of teaching using client- owned animals. In the absence of a response, the committee will proceed with developing their own policy.

JAN The committee was updated on the work of the subcommittee on teaching using client owned animals. USDA has indicated that client animals receiving standard of care that would be covered under the MN Veterinary Practice Act are not USDA/AWA-R covered, but the committee does not want to relinquish all oversight of these activities. Further discussion is needed on how the IACUC can improve and streamline the process while retaining oversight.

FEB The subcommittee on teaching with client owned animals reported that it has been confirmed that client owned animals used in teaching are not USDA covered. The subcommittee will continue to work on a streamlined process for IACUC review of these activities.

MAR The committee was updated on the progress of the subcommittee on teaching with client owned animals. The subcommittee recommended that protocols describing these activities still be submitted for review and approval by the IACUC. Regarding flexibility in instructional personnel, two options were proposed: creation of a roster protocol, or allowing any staff defined by the CVM as qualified to participate. Regarding veterinary care, the subcommittee proposed that CVM clinicians be allowed to make clinical decisions without consulting RAR, consistent with the MN Veterinary Practice Act, but that self-reporting to the IACUC be required in cases where animal welfare might have been impacted due to unexpected circumstances. The subcommittee's recommendations will be formalized for further committee review.

MAR The committee finalized the policy for teaching with client owned animals. The policy will now be sent to investigators for any questions, comments, or concerns regarding the ongoing changes made to this policy.

Policy and Guidelines subcommittee:

JAN The committee discussed the need for ongoing work to review and update IACUC Policies and Guidelines. Several members volunteered to assist with this work.

FEB The committee discussed updated Policies and Guidelines for (1) Participants in Animal Procedure Training Sessions and (2) Hypothermia as Anesthesia for Neonatal Rodents. The committee approved the updated documents, which will be distributed to animal users via email and posted on the IACUC website.

FEB The committee discussed updated IACUC Policy and Guidelines on the Use and Calibration of Anesthetic Machines and Monitoring Equipment. The committee voted to remove specific language regarding monitoring equipment and instead default to the manufacturer's recommendation for this equipment. The Policy and Guidelines were approved and will be shared with investigators.

MAR The committee discussed updated IACUC Policy and Guidelines on Social Housing of Research Animals. The committee voted to approve the updated documents, and these will be shared with investigators.

MAR The committee discussed the Veterinary Verification and Consultation process (VVC) and approved the policy, guidelines, and internal process SOP provided by the policy subcommittee.

6. Topics for Discussion

Continuing Reviews

IACUC currently requires annual continuing reviews for all protocols. This has served to fulfil requirements of the USDA and Department of Defense. OLAW only requires a 3-year renewal, but not annual continuing review: "the IACUC shall conduct continuing review of activities covered by this policy at appropriate intervals as determined by the IACUC but not less than once every three years (3)".

USDA's policy on continuing reviews recently (12/27/21) changed: "We are also removing a redundant requirement for the Institutional Animal Care and Use Committee at each facility to conduct a continuing review of research activities involving animals and instead requiring a complete resubmission and review of such activities at least every 3 years."

Of the 13 other schools in the Big 10, 9 have eliminated annual continuing reviews for all but DoD funded studies (and plan to eliminate those as soon as DoD updates their policy), 2 have retained continuing reviews for all protocols, and no information is available for 2.

Our Continuing Review process:

Via eProtocol automated notice sent to lab

Questions:

1. Please summarize the status of this study.
2. Have there been any changes to the Protocol? Y/N
   Complete the change request by clicking on that section in the left navigation bar and completing the change in the Protocol Form.
   - Adding, removing, or Updating Personnel - Personnel Section
   - Species - Species Section
   - Animal Housing Location - Species Section
   - Funding Source - Funding
   - Protocol rationale - Protocol Information Section
   - Protocol rationale - Protocol Information Section
   - Other changes - see relevant section at left
3. If this protocol involves the creation of new transgenic lines or the cross-breeding of transgenic lines, complete the following questions:
   a. Were there any deleterious phenotypic or genotypic characteristics? Y/N
   b. If yes, respond to the following items:
      i. Describe the associated problems or health conditions:
      ii. Describe the steps taken to ensure the well-being of the animals:
4. Have you exceeded the allotted number of animals to be bred or used?
   a. Provide an updated estimate to the number of animals needed here and update the species table and breeding procedures accordingly.
5. If you have any additional comments for IACUC consideration, please note here:

Submitted CRs are listed on the weekly DMR agenda. They are reviewed by one member (IACUC Director) unless changes, other than personnel and funding, are made in response to Q2, in which case they are treated as an amendment with reviewers assigned.

Any newly added staff must complete all requirements (as if they were added via amendment).

Occupational Health/ROHP status is checked for all current staff. The CR is not approved unless all are compliant.

Other opportunities to check ROHP:

- Inspection (PAM or surgical—frequency ranges from every 6 months to every 2 years)
    - Wildlife and client owned protocols are not inspected
- OHS sends automated emails to staff and PI for any delinquent requirements (i.e. AEQ, tetanus) but does not have an enforcement mechanism

The IACUC voted to eliminate the requirement for annual continuing review, with the exception of protocols for which the funding agency retains their own requirement, such as Department of Defense. The committee will be kept updated on whether there is any increase in noncompliance that can be linked to this change.

Who Can Be a PI for an IACUC protocol?

The committee's preference is a University of Minnesota faculty member or professional and administrative (P&A) staff. Those with other appointments must submit a CV for committee consideration, but have been approved on a case by case basis.

The committee is concerned about situations where the listed principal investigator may not have a full time or otherwise substantial appointment at UMN. The committee discussed the need for an updated IACUC policy on this issue. IACUC leadership will schedule a meeting with the Office of General Counsel to solicit their advice on what should be included in the updated policy.

Subcommittee Updates

Analgesia in Rodents

The subcommittee recommended changing the guidance for dosing ZooPharm SR-Buprenorphine in mice to the manufacturer's suggested range of 0.5-1mg/kg. This was approved by the committee and has been updated on the RAR website, sent to investigators via IACUC email, and is being communicated at inspection. A recommendation on the FDA-indexed sustained release buprenorphine product, Ethiqa, can be made after it has been assessed. The subcommittee has also discussed a potential for broader changes to the IACUC policy requiring 72 hours of analgesia for all surgical procedures, to take into account differences between procedures. This will require further consideration. The subcommittee will continue to work on these issues and will keep the broader committee updated.

Teaching with Client Owned Animals

The subcommittee developed a proposal in which the IACUC retains oversight of teaching activities using non-university owned animals, but allows the Veterinary Medical school flexibility in personnel and in provision of standard clinical care. The proposal was approved by the committee and has been communicated to the VMC, which is considering it. The committee will await response from the VMC, including any potential requests for changes to Regents' policy.

Policies and Guidelines

So far, the subcommittee has updated the policies and guidelines on Anesthetic Machines, Hypothermia as Anesthesia, Participants in Training Sessions, Social Housing, and Veterinary Verification and Consultation. The subcommittee continues to work on updating additional documents and will bring them to the committee as they are ready to be voted on.

7. Sub-groups for Evaluation of the OLAW Checklist:

Prior to the meeting IACUC members met in small groups (see below) to discuss assigned sections of the OLAW checklist. Groups summarized their assessment with the rest of the committee during a group discussion at the meeting. Discussion items for each section are listed below followed by the completed OLAW Checklist.

Group 1:
Institutional Policies and Responsibilities, Sections 1-4 ("Animal Care and Use Program", "Disaster Planning and Emergency Preparedness", "IACUC", and "IACUC Protocol Review - Special Considerations") (on pages 1-2)

Nima Estharabadi, Marilyn Bennett, Carolyn Fairbanks, Anthony Gray, Brenda Kick, Margaret Luesse, Whitney McGee, Markus Meyer, Beverly Norris, [redacted], Henry Wong

Nima Estharabadi summarized Group 1's evaluation and identified the following topics for discussion with the rest of the committee:

Minor deficiency:

- "Non-pharmaceutical grade chemicals are described, justified, and approved by the IACUC." Although the protocol form specifically prompts a response regarding this for anesthetics, analgesics, and euthanasia drugs, experimental non-pharmaceutical grade chemicals are not always identified in the protocol for justification and approval. Protocol form updates or other mechanisms that would capture this will be explored over the next 6 month period.

Acceptable with room for improvement:

- "Law enforcement and emergency personnel are provided a copy and integration with overall plan is in place". The Chair will follow up to ensure that all satellite campuses have been integrated into disaster planning.
- "Major vs minor surgical procedures are evaluated on a case-by-case basis." Although all surgical procedures are indeed evaluated on a case-by-case basis, the protocol form does not distinguish between major and minor procedures. A subcommittee had been formed to discuss this in the past and will be re-established.

Acceptable, general discussion:

- "IACUC evaluates the effectiveness of training programs." It was discussed that effectiveness is assessed by the number and type of inspection or self-reported findings related to areas on which training is provided.
- "Humane endpoints are established for studies…". It was discussed that all IACUC protocols must identify humane endpoints, regardless of the model, and that this is evaluated by both veterinary and committee reviewers.

Group 2:
Institutional Policies and Responsibilities Sections 5-8 ("IACUC Membership and Functions", "IACUC Training", " IACUC Records and Reporting Requirements", and "Veterinary Care") (on pages 2-3)

Ilana Cohen, Georgiy Aslanidi, Sam Baidoo, Keith Barker, Dick Bianco, [redacted] Nathan Koewler, Michelle Reichert, Bill Sullivan, George Wilcox, Christin Wright

Ilana Cohen summarized Group 2's evaluation and identified the following topics for discussion with the rest of the committee:

Minor deficiencies:

- "Training on how to review protocols as well as evaluate the program". It was felt members would benefit from more training in this area, and this will be a focus of continuing education this year.
- "If part time/consulting veterinarian, visits meet programmatic needs". Consulting veterinarians for some agricultural sites do not appear to meet the program's needs and expectations for veterinary care of university-owned animals. The committee is currently working to improve this and create clearer written standards and policies around agricultural sites.

Acceptable, general discussion:

- It was noted that training for members on how to inspect facilities was provided in a recent continuing education section (this had been identified as a Minor deficiency at the previous Program Review), and a written help aid is available. A suggestion was made to add a tour of various facilities to new member orientation, and this will be attempted as much as is feasible.

Group 3:
Institutional Policies and Responsibilities Sections 9-12 (, "Personnel Qualifications and Training", "Occupational Health and Safety of Personnel", "Personnel Security", and "Investigating & Reporting Animal Welfare Concerns") (on pages 3-5)

Paul Lindstrom, Julia Davydova, Craig Flory, Jen Hubbard, Lynn Impelluso, Frances Lawrenz, Cynthia Lee, Kristin Pilon, Liz Pluhar, Ferenc Toth

Paul Lindstrom summarized Group 3's evaluation and identified the following topics for discussion with the rest of the committee:

Acceptable with room for improvement:

- There may be gaps in how researchers are trained in safe chemical use in animals and in hazard communication training for RAR staff regarding chemical use in animals. This could fall under "Training program content includes use of hazardous agents…" or "Procedures for use, storage, and disposal of hazardous biologic, chemical, and physical agents are in place". The IACUC will continue to monitor to determine if this is a widespread problem.
- "Pre-employment verification including health history". A representative from the Occupational Health program pointed out that the current Animal Exposure Questionnaire is considered cleared once submitted. This should likely be changed to wait for the Occupational Health physician to clear the responses to the questionnaire prior to clearing the requirement.
- There was also discussion about opportunities for improvement in how animal allergies are identified and managed. The IACUC will work with UHS on this.

Not applicable:

- "If serum samples are collected, the purpose is consistent with federal and state laws". Serum samples are not collected.

Group 4:
Veterinary Care sections 1-3 ("Clinical Care and Management", "Animal Procurement and Transportation/Preventive Medicine", and "Surgery") (on pages 6-7)

Megan McCoy, Giuseppe Dell'Anna, Geoffrey Ghose, Yuzhi Li, Dezhi Liao, Sally Noll, [redacted] Julia Smachlo, Laura Stone, Walt Tollison

Megan McCoy summarized Group 4's evaluation and identified the following topics for discussion with the rest of the committee:

Minor deficiencies:

- "Animal vendors are evaluated to meet program needs and quality". It was noted that some IMHAs may source animals outside of RAR. A question will be added to the IMHA form as soon as editing is available, to address animal sourcing and allow for evaluation of its appropriateness.
- "Procedures in place for stabilization/acclimation". Although recommendations are in place in RAR, the committee will move to formalize this as an IACUC policy, which would apply to IMHAs as well, via the Policy and Guidelines subcommittee during the next 6 month period.

Voted as Acceptable following discussion:

- "Researchers have appropriate training to ensure good technique" under Surgery. Some members were concerned about the ability to schedule this training in a timely manner. It was noted that scheduling availability has recently improved. After discussion, the committee felt that timeliness of training availability did not fall under the definition of "appropriate" for this item. A vote of the members present was taken and was unanimous for Acceptable.

Not applicable:

- "Random source dogs and cats are inspected for identification". Random source dogs and cats are not used.

Acceptable, general discussion:

- "Veterinarians are familiar with species and use of animals and have access to medical and experimental treatment records". The committee discussed whether current veterinary staff have experience with cephalopods.

Group 5:
Veterinary Care sections 4-6, ("Pain, Distress, Anesthesia and Analgesia", "Euthanasia", and "Drug Storage and Control") (on page 7)

Jennifer Borgert, Sammy Boyle, Kat Coda, Erin Dickerson, [redacted], Jessica Felgenhauer, Tim Goldsmith, Wensheng Lin, Jodi Ogilvie, [redacted] Kate Trautman

Jennifer Borgert summarized Group 5's evaluation and identified the following topics for discussion with the rest of the committee:

Acceptable with room for improvement:

- "Nonpharmacologic control of pain is considered as an element of postprocedural care". Although this is addressed during protocol review, the IACUC office will place more emphasis on this during post-approval monitoring to confirm that the nonpharmacologic steps listed in the protocol are being taken.

Acceptable, general discussion:

- "Guidelines for assessment and categorization of pain, distress and animal wellbeing are provided during training." There was discussion of training for non-rodent species. Assessing pain and distress, including pain or distress specific to the experimental model, is required in lab-specific training to be provided by the principal investigator and is checked during inspection.
- "Guidelines for selection and use of analgesics and anesthetics are in place and regularly reviewed and updated". It was pointed out that updates have been made this year and communicated to researchers.
- "Training is provided on appropriate methods for each species and considers psychological stress to personnel" under Euthanasia. Although this is included in training required for new staff, it is possible that some staff may not have received formal training on this. However, euthanasia is required in lab-specific training to be provided by the principal investigator and checked during inspection.

I. Semiannual Program Review Checklist [i]

Institutional Policies and Responsibilities

Date:

1. Animal Care and Use Program	A*	M	S	C	NA
• Responsibility for animal well-being is assumed by all members of the program (*Guide*, p 1) [must]	✓				
• IO has authority to allocate needed resources (*Guide*, p 13)	✓				
• Resources necessary to manage program of veterinary care are provided (*Guide*, p 14) [must]	✓				
• Sufficient resources are available to manage the program, including training of personnel in accord with regulations and the *Guide* (*Guide*, pp 11, 15)	✓				
• Program needs are regularly communicated to IO by AV and/or IACUC (*Guide*, p 13)	✓				
• Responsibilities for daily animal care and facility management are assigned to specific individual(s) when a full-time veterinarian is not available on site (*Guide*, p 14) [must]	✓				
• Inter-institutional collaborations are described in formal written agreements (*Guide*, p 15)	✓				
• Written agreements address responsibilities, animal ownership, and IACUC oversight (*Guide*, p 15)	✓				

2. Disaster Planning and Emergency Preparedness	A*	M	S	C	NA
• Disaster plans for each facility to include satellite locations are in place (*Guide*, p 35, p 75) [must]	✓				
• Plans include provisions for euthanasia (*Guide*, p 35) [must]	✓				
• Plans include triage plans to meet institutional and investigators' needs (*Guide*, p 35)	✓				
• Plans define actions to prevent animal injury or death due to HVAC or other failures (*Guide*, p 35)	✓				
• Plans describe preservation of critical or irreplaceable animals (*Guide*, p 35)	✓				
• Plans include essential personnel and their training (*Guide*, p 35)	✓				
• Animal facility plans are approved by the institution and incorporated into overall response plan (*Guide*, p 35)	✓				
• Law enforcement and emergency personnel are provided a copy and integration with overall plan is in place (*Guide*, p 35)	✓				

3. IACUC	A*	M	S	C	NA
• Meets as necessary to fulfill responsibilities (*Guide*, p 25) [must]	✓				
• IACUC Members named in protocols or with conflicts recuse themselves from protocol decisions (*Guide*, p 26) [must]	✓				
• Continuing IACUC oversight after initial protocol approval is in place (*Guide*, p 33)	✓				
• IACUC evaluates the effectiveness of training programs (*Guide*, p 15)	✓				

4. IACUC Protocol Review - Special Considerations	A*	M	S	C	NA
• Humane endpoints are established for studies that involve tumor models, infectious diseases, vaccine challenge, pain modeling, trauma, production of monoclonal antibodies, assessment of toxicologic effects, organ or system failure, and models of cardiovascular shock (*Guide*, p 27)	✓				
• For pilot studies, a system to communicate with the IACUC is in place (*Guide*, p 28)	✓				
• For genetically modified animals, enhanced monitoring and reporting is in place (*Guide*, p 28)	✓				
• Restraint devices are justified in the animal use protocols (*Guide*, p 29) [must]	✓				

• Alternatives to physical restraint are considered (*Guide*, p 29)	✓				
• Period of restraint is the minimum to meet scientific objectives (*Guide*, p 29)	✓				
• Training of animals to adapt to restraint is provided (*Guide*, p 29)	✓				
• Animals that fail to adapt are removed from study (*Guide*, p 29)	✓				
• Appropriate observation intervals of restrained animals are provided (*Guide*, p 29)	✓				
• Veterinary care is provided if lesions or illness result from restraint (*Guide*, p 30) [must]	✓				
• Explanations of purpose and duration of restraint are provided to study personnel (*Guide*, p 30)	✓				
• Multiple surgical procedures on a single animal are justified and outcomes evaluated (*Guide*, p 30)	✓				
• Major versus minor surgical procedures are evaluated on a case-by-case basis (*Guide*, p 30)	✓				
• Multiple survival procedure justifications in non-regulated species conform to regulated species standards (*Guide*, p 30)	✓				
• Animals on food/fluid restriction are monitored to ensure nutritional needs are met (*Guide*, p 31)	✓				
• Body weights for food/fluid restricted animals are recorded at least weekly (*Guide*, p 31)	✓				
• Daily written records are maintained for food/fluid restricted animals (*Guide*, p 31)	✓				
• Pharmaceutical grade chemicals are used , when available, for animal-related procedures (*Guide*, p 31)	✓				
• Non-pharmaceutical grade chemicals are described, justified, and approved by IACUC (*Guide*, p 31)		✓			
• Investigators conducting field studies know zoonotic diseases, safety issues, laws and regulations applicable in study area (*Guide*, p 32)	✓				
• Disposition plans are considered for species removed from the wild (*Guide*, p 32)	✓				
• Toe-clipping only used when no alternative, performed aseptically and with pain relief (*Guide*, p 75)	✓				

5. IACUC Membership and Functions	**A***	**M**	**S**	**C**	**NA**
• IACUC is comprised of at least 5 members, appointed by CEO (PHS Policy, IV.A.3.)	✓				
• Members include a veterinarian, a scientist, a nonscientist, and a nonaffiliated non-lab animal user (*Guide*, p 24)[ii]	✓				
• IACUC authority and resources for oversight and evaluation of institution's program are provided (*Guide*, p 14)	✓				
• IACUC conducts semiannual evaluations of institutional animal care and use program (PHS Policy, IV.B.)	✓				
• Conducts semiannual inspections of institutional animal facilities (PHS Policy, IV.B.)	✓				
• IACUC organizationally reports to the Institutional Official (PHS Policy, IV.A.1.b.)	✓				
• Methods for reporting and investigating animal welfare concerns are in place (*Guide*, p 23) [must]	✓				
• Reviews and investigates concerns about animal care and use at institution[iii] (PHS Policy, IV.B.)	✓				
• Procedures are in place for review, approval, and suspension of animal activities[iv] (PHS Policy, IV.B.)	✓				
• Procedures are in place for review and approval of significant changes to approved activities (PHS Policy, IV.B.)	✓				
• Policies are in place for special procedures (e.g., genetically modified animals, restraint, multiple survival surgery, food and fluid regulation, field investigations, agricultural animals) (*Guide*, p 27-32)	✓				
• Requests for exemptions from major survival surgical procedure restrictions are made to USDA/APHIS[v] (*Guide*, p 30) [must]	✓				

6. IACUC Training	**A***	**M**	**S**	**C**	**NA**
• All IACUC members should receive:					

○ Formal orientation to institution's program (*Guide*, p 17)	✓					
○ Training on legislation, regulations, guidelines, and policies (*Guide*, p 17)	✓					
○ Training on how to inspect facilities and labs where animal use or housing occurs (*Guide*, p 17)	✓					
○ Training on how to review protocols as well as evaluate the program (*Guide*, p 17)		✓				
○ Ongoing training/education (*Guide*, p 17)	✓					

7. IACUC Records and Reporting Requirements[vi]	**A***	**M**	**S**	**C**	**NA**
• Semiannual report to the IO (PHS Policy, IV.B.)					
○ Submitted to IO every 6 months	✓				
○ Compiles program review and facility inspection(s) results (includes all program and facility deficiencies)	✓				
○ Includes minority IACUC views	✓				
○ Describes IACUC-approved departures from the *Guide* or PHS Policy and the reasons for each departure[vii]	✓				
○ Distinguishes significant from minor deficiencies	✓				
○ Includes a plan and schedule for correction for each deficiency identified[viii]	✓				
• Reports to OLAW (PHS Policy, IV.F.)					
○ Annual report to OLAW documents program changes, dates of the semiannual program reviews and facility inspections and includes any minority views	✓				
○ Promptly advises OLAW of serious/ongoing *Guide* deviations or PHS Policy noncompliance (NOT-OD-05-034)	✓				
○ Institute must promptly advise OLAW of any suspension of an animal activity by the IACUC (NOT-OD-05-034)	✓				
• Reports to U.S. Department of Agriculture (USDA) or Federal funding agency[ix]					
○ Annual report to USDA contains required information including all exceptions/exemptions	✓				
○ Reporting mechanism to USDA is in place for IACUC-approved exceptions to the regulations and standards	✓				
○ Reports are filed within 15 days for failures to adhere to timetable for correction of significant deficiencies	✓				
○ Promptly reports suspensions of activities by the IACUC to USDA and any Federal funding agency	✓				
• Records (PHS Policy, IV.E.)					
○ IACUC meeting minutes and semiannual reports to the IO are maintained for 3 years	✓				
○ Records of IACUC reviews of animal activities include all required information[x]	✓				
○ Records of IACUC reviews are maintained for 3 years after the completion of the study	✓				

8. Veterinary Care (See also next section - Veterinary Care)	**A***	**M**	**S**	**C**	**NA**
• An arrangement for veterinarian(s) with training or experience in lab animal medicine is in place including backup veterinary care[xi]	✓				
• Veterinary access to all animals is provided (*Guide*, p 14) [must]	✓				
• Direct or delegated authority is given to the veterinarian to oversee all aspects of animal care and use (*Guide*, p 14) [must]	✓				
• Veterinarian provides consultation when pain and distress exceeds anticipated level in protocol (*Guide*, p 5) [must]	✓				
• Veterinarian provides consultation when interventional control is not possible (*Guide*, p 5) [must]	✓				
• If part time /consulting veterinarian, visits meet programmatic needs (*Guide*, p 14)		✓			
• Regular communication occurs between veterinarian and IACUC (*Guide*, p 14)	✓				
• Veterinarian(s) have experience and training in species used (*Guide*, p 15) [must]	✓				
• Veterinarian(s) have experience in facility administration/management (*Guide*, p 15)	✓				

9. Personnel Qualifications and Training	A*	M	S	C	NA
• All personnel are adequately educated, trained, and/or qualified in basic principles of laboratory animal science. Personnel included: [must]					
○ Veterinary/other professional staff (*Guide*, p 15-16)	✓				
○ IACUC members (*Guide*, p 17)	✓				
○ Animal care personnel (*Guide*, p 16)	✓				
○ Research investigators, instructors, technicians, trainees, and students (*Guide*, pp 16-17)	✓				
• Continuing education for program and research staff provided to ensure high quality care and reinforce training (*Guide*, pp 16-17)	✓				
• Training is available prior to starting animal activity (*Guide*, p 17)	✓				
• Training is documented (*Guide*, p 15)	✓				
• Training program content includes: (*Guide*, p 17)					
○ Methods for reporting concerns (*Guide*, p 17)	✓				
○ Humane practices of animal care (e.g., housing, husbandry, handling) [xii]	✓				
○ Humane practices of animal use (e.g., research procedures, use of anesthesia, pre- and post-operative care, aseptic surgical techniques, and euthanasia (*Guide*, p 17)[xiii]	✓				
○ Research/testing methods that minimize numbers necessary to obtain valid results (PHS Policy, IV.A.1.g.)	✓				
○ Research/testing methods that minimize animal pain or distress (PHS Policy, IV.A.1.g.)	✓				
○ Use of hazardous agents, including access to OSHA chemical hazard notices where applicable (*Guide*, p 20)	✓				
○ Animal care and use legislation (*Guide*, p 17)	✓				
○ IACUC function (*Guide*, p 17)	✓				
○ Ethics of animal use and Three Rs (*Guide*, p 17)	✓				

10. Occupational Health and Safety of Personnel	A*	M	S	C	NA
• Program is in place and is consistent with federal, state, and local regulations (*Guide*, p 17) [must]	✓				
• Program covers *all* personnel who work in laboratory animal facilities (*Guide*, p 18)	✓				
• Changing, washing, and showering facilities are available as appropriate (*Guide*, p 19)	✓				
• Hazardous facilities are separated from other areas and identified as limited access (*Guide*, p 19)	✓				
• Personnel training is provided based on risk (e.g., zoonoses, hazards, personal hygiene, special precautions, animal allergies) (*Guide*, p 20)	✓				
• Personal hygiene procedures are in place (e.g., work clothing, eating/drinking/smoking policies) (*Guide*, p 20)	✓				
• Procedures for use, storage, and disposal of hazardous biologic, chemical, and physical agents are in place (*Guide*, p 21)	✓				
• Personal Protective Equipment for the work area is appropriate and available (*Guide*, p 21)	✓				
• Program for medical evaluation and preventive medicine for personnel includes:					
○ Pre-employment evaluation including health history (*Guide*, p 22)	✓				
○ Immunizations as appropriate (e.g., rabies, tetanus) and tests as appropriate (*Guide*, p 22)	✓				
○ Zoonosis surveillance as appropriate (e.g., Q-fever, tularemia, Hantavirus, plague) (*Guide*, p 23)	✓				
○ Procedures for reporting and treating injuries, including accidents, bites, allergies, etc. (*Guide*, p 23)	✓				
○ Promotes early diagnosis of allergies including preexisting conditions (*Guide*, p 22)	✓				
○ Considers confidentiality and other legal factors as required by federal, state and local regulations (*Guide*, p 22) [must]	✓				
○ If serum samples are collected, the purpose is consistent with federal and state					✓

laws (*Guide*, p 22) [must]	✓				
• Waste anesthetic gases are scavenged (*Guide*, p 21)	✓				
• Hearing protection is provided in high noise areas (*Guide*, p 22)	✓				
• Respiratory protection is available when performing airborne particulate work (*Guide*, p 22)	✓				
• Special precautions for personnel who work with nonhuman primates, their tissues or body fluids include:					
○ Tuberculosis screening provided for all exposed personnel (*Guide*, p 23)	✓				
○ Training and implementation of procedures for bites, scratches, or injuries associated with macaques (*Guide*, p 23)	✓				
○ PPE is provided including gloves, arm protection, face masks, face shields, or goggles (*Guide*, p 21)	✓				
○ Injuries associated with macaques are carefully evaluated and treatment implemented (*Guide*, p 23)	✓				
• Occupational safety and health of field studies is reviewed by OSH committee or office (*Guide*, p 32)	✓				

11. Personnel Security	**A***	**M**	**S**	**C**	**NA**
• Preventive measures in place include pre-employment screening, and physical and IT security (*Guide*, p 23)	✓				

12. Investigating & Reporting Animal Welfare Concerns	**A***	**M**	**S**	**C**	**NA**
• Methods for investigating and reporting animal welfare concerns are established (*Guide*, p 23) [must]	✓				
• Reported concerns and corrective actions are documented (*Guide*, p 24)	✓				
• Mechanisms for reporting concerns are posted in facility and at applicable website with instructions (*Guide*, p 24)	✓				
○ Includes multiple contacts (*Guide*, p 24)	✓				
○ Includes anonymity, whistle blower policy, nondiscrimination and reprisal protection (*Guide*, p 24)	✓				

* **A** = acceptable
M = minor deficiency
S = significant deficiency (is or may be a threat to animal health or safety)
C = change in program (PHS Policy IV.A.1.a.-i.) (include in semiannual report to IO and in annual report to OLAW)
NA = not applicable

NOTES:

Veterinary Care

Date:

1. Clinical Care and Management	A*	M	S	C	NA
• Veterinary program offers high quality of care and ethical standards (*Guide*, p 105) [must]	✓				
• Veterinarian provides guidance to all personnel to ensure appropriate husbandry, handling, treatment, anesthesia, analgesia, and euthanasia (*Guide*, p 106)	✓				
• Veterinarian provides oversight to surgery and perioperative care (*Guide*, p 106)	✓				
• Veterinary care program is appropriate for program requirements (*Guide*, pp 113-114)	✓				
• Veterinarian(s) is familiar with species and use of animals and has access to medical and experimental treatment records (*Guide*, p 114)	✓				
• Procedures to triage and prioritize incident reports are in place (*Guide*, p 114)	✓				
• Procedures are in place to address:					
○ Problems with experiments to determine course of treatment in consultation with investigator (*Guide*, p 114)	✓				
○ Recurrent or significant health problems with the IACUC and documentation of treatments and outcomes (*Guide*, p 114)	✓				
○ Veterinary review and oversight of medical and animal use records (*Guide*, p 115)	✓				
• Procedures established for timely reporting of animal injury, illness, or disease (*Guide*, p 114) [must]	✓				
• Procedures established for veterinary assessment, treatment, or euthanasia (*Guide*, p 114) [must]	✓				
• Veterinarian is authorized to treat, relieve pain, and/or euthanize (*Guide*, p 114) [must]	✓				

2. Animal Procurement and Transportation/Preventive Medicine	A*	M	S	C	NA
• Procedures for lawful animal procurement are in place (*Guide*, p 106) [must]	✓				
• Sufficient facilities and expertise are confirmed prior to procurement (*Guide*, p 106)	✓				
• Procurement is linked to IACUC review and approval (*Guide*, p 106)	✓				
• Random source dogs and cats are inspected for identification (*Guide*, p 106)					✓
• Population status of wildlife species is considered prior to procurement (*Guide*, p 106)	✓				
• Appropriate records are maintained on animal acquisition (*Guide*, p 106)	✓				
• Animal vendors are evaluated to meet program needs and quality (*Guide*, p 106)		✓			
• Breeding colonies are based on need and managed to minimize numbers (*Guide*, p 107)	✓				
• Procedures for compliance with animal transportation regulations, including international requirements, are in place (*Guide*, p 107) [must]	✓				
• Transportation is planned to ensure safety, security and minimize risk (*Guide*, p 107)	✓				
• Movement of animals is planned to minimize transit time and deliveries are planned to ensure receiving personnel are available (*Guide*, pp 107- 108)	✓				
• Appropriate loading and unloading facilities are available (*Guide*, p 109)	✓				
• Environment at receiving site is appropriate (*Guide*, p 109)	✓				
• Policies in place on separation by species, source, and health status (*Guide*, pp 109, 111-112)	✓				
• Procedures in place for quarantine to include zoonoses prevention (*Guide*, p 110)	✓				
• Quarantined animals from different shipments are handled separately or physically separated (*Guide*, p 110)	✓				
• Procedures in place for stabilization/acclimation (*Guide*, pp 110-111)		✓			
• Policies in place for isolation of sick animals (*Guide*, p 112)	✓				
• Program is in place for surveillance, diagnosis, treatment, and control of disease to include daily observation (*Guide*, p 112)	✓				

• Diagnostic resources are available for preventive health program (*Guide*, p 112)	✓				

3. Surgery	A*	M	S	C	NA
• Surgical outcomes are assessed, and corrective changes instituted (*Guide*, p 115)	✓				
• Researchers have appropriate training to ensure good technique (*Guide*, p 115) [must]	✓				
• Pre-surgical plans are developed and include veterinary input (e.g., location, supplies, anesthetic and analgesic use, peri-operative care, recordkeeping) (*Guide*, p 116)	✓				
• Aseptic surgery is conducted in dedicated facilities or spaces, unless exception justified and IACUC approved (*Guide*, p 116)	✓				
• Surgical procedures including laparoscopic procedures are categorized as major or minor (*Guide*, pp 117-118)	✓				
• For nonsurvival surgery, the site is clipped, gloves are worn and instruments and area are clean (*Guide*, p 118)	✓				
• Aseptic technique is followed for survival surgical procedures (*Guide*, pp 118-119)	✓				
• Effective procedures for sterilizing instruments and monitoring expiration dates on sterile packs are in place (*Guide*, p 119)	✓				
• Procedures for monitoring surgical anesthesia and analgesia are in place (*Guide*, p 119)	✓				
• For aquatic species, skin surfaces are kept moist during surgical procedures (*Guide*, p 119)	✓				
• Post-operative monitoring and care are provided by trained personnel and documented (e.g., thermoregulation, physiologic function, analgesia, infection, removal of skin closures) (*Guide*, pp 119-120)	✓				

4. Pain, Distress, Anesthesia, and Analgesia	A*	M	S	C	NA
• Guidelines for assessment and categorization of pain, distress and animal wellbeing are provided during training (*Guide*, p 121)	✓				
• Selection of analgesics and anesthetics is based on professional veterinary judgment (*Guide*, p 121)	✓				
• Painful procedures are monitored to ensure appropriate analgesic management (*Guide*, p 122)	✓				
• Nonpharmacologic control of pain is considered as an element of postprocedural care (*Guide*, p 122)	✓				
• Procedures are in place to assure antinociception before surgery begins (*Guide*, p 122) [must]	✓				
• Guidelines for selection and use of analgesics and anesthetics are in place and regularly reviewed and updated (*Guide*, p 122)	✓				
• Special precautions for the use of paralytics are in place to ensure anesthesia[xiv] (*Guide*, p 123)	✓				

5. Euthanasia	A*	M	S	C	NA
• Methods are consistent with AVMA Guidelines on Euthanasia unless approved by the IACUC (*Guide*, p 123)	✓				
• Standardized methods are developed and approved by the veterinarian and IACUC that avoid distress and consider animal age and species (*Guide*, pp 123-124)	✓				
• Training is provided on appropriate methods for each species and considers psychological stress to personnel (*Guide*, p 124)	✓				
• Procedures and training are in place to ensure death is confirmed (*Guide*, p 124) [must]	✓				

6. Drug Storage and Control	A*	M	S	C	NA
• Program complies with federal regulations for human and veterinary drugs (*Guide*, p 115) [must]	✓				
• Drug records and storage procedures are reviewed during facility inspections (*Guide*, p	✓				

	115)					
•	Procedures are in place to ensure analgesics and anesthetics are used within expiration date (*Guide*, p 122) [must]	✓				
•	Anesthetics and analgesics are acquired, stored, and their use and disposal are recorded legally and safely (*Guide*, p 122)	✓				

* **A** = acceptable
M = minor deficiency
S = significant deficiency (is or may be a threat to animal health or safety)
C = change in program (PHS Policy IV.A.1.a.-i.) (include in semiannual report to IO and in annual report to OLAW)
NA = not applicable

NOTES:

Spring 2022 IACUC Inspection Report Summary

Inspection Type	Number	Percentage
# of PAM Inspections	139	49%
# Second Surgery Inspections	33	12%
#PAM/Semi-Annual	12	4%
#Second Surgery/Semi-annual	11	4%
#Initial Surgery Inspections	6	2%
#Initial Surgery/Semi-annual	1	2%
# of Semi-Annual Inspections	66	23%
# of Ag Inspections	14	5%
Total # of Inspections	**282**	**100%**
Total # of Findings	**151**	

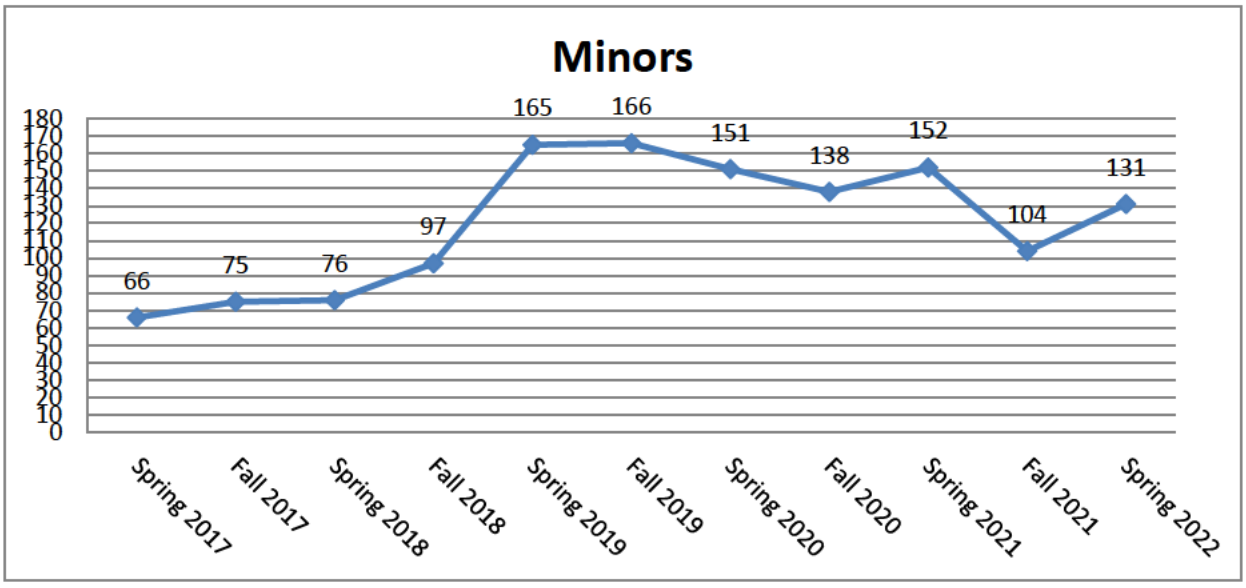
Buildings/Areas Inspected
[redacted]

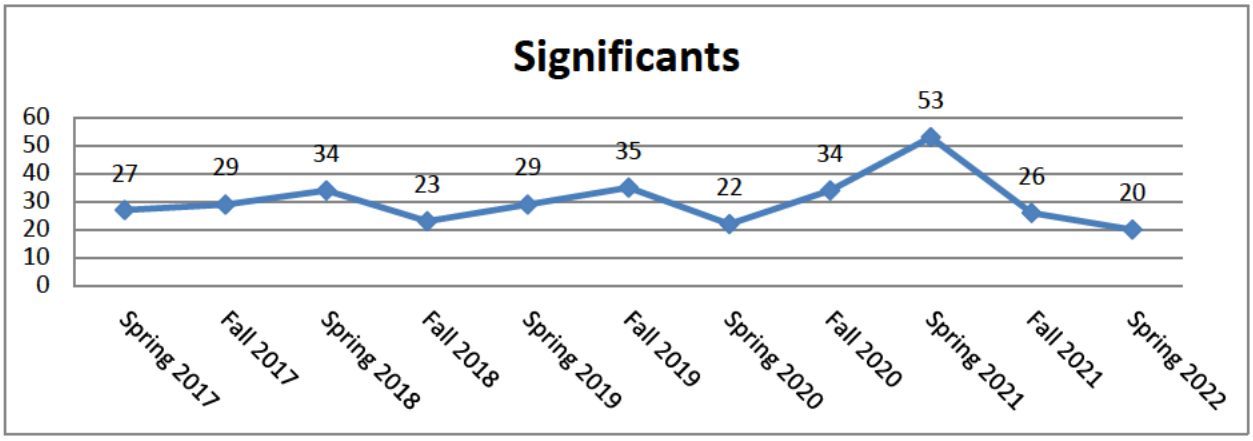
*AAALAC accredited units

Type of Finding		
Minor (% of total findings)--Standard	120	79%
Minor (% of total findings)--Other	11	7%
Significant (% of total findings)--Standard	13	9%
Significant (% of total findings)--Other	7	5%

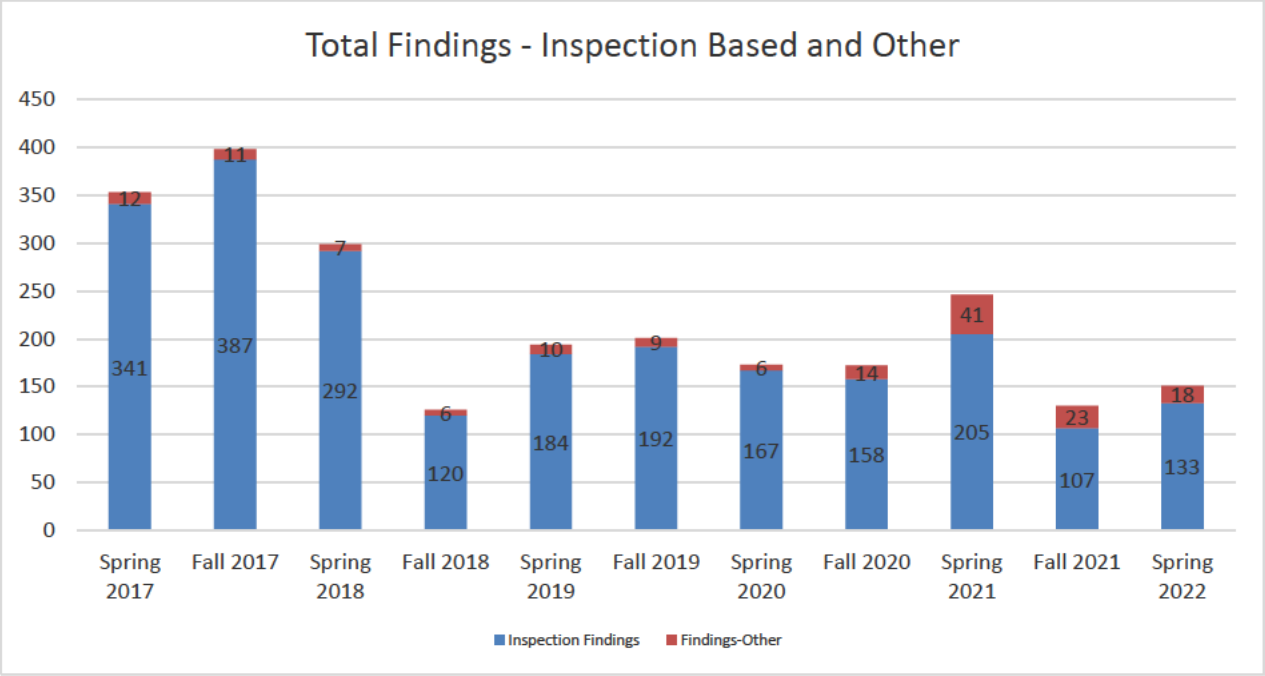
Repeat Findings		
	Fall 2021	**Spring 2022**
Minor ------> Minor:	0	2
Significant -----> Significant:	1	0
Total # of repeat findings	**1**	**2**

	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020	Spring 2021	Fall 2021	Spring 2022
Minors	66	75	76	97	165	166	151	138	152	104	131
Significants	27	29	34	23	29	35	22	34	53	26	20





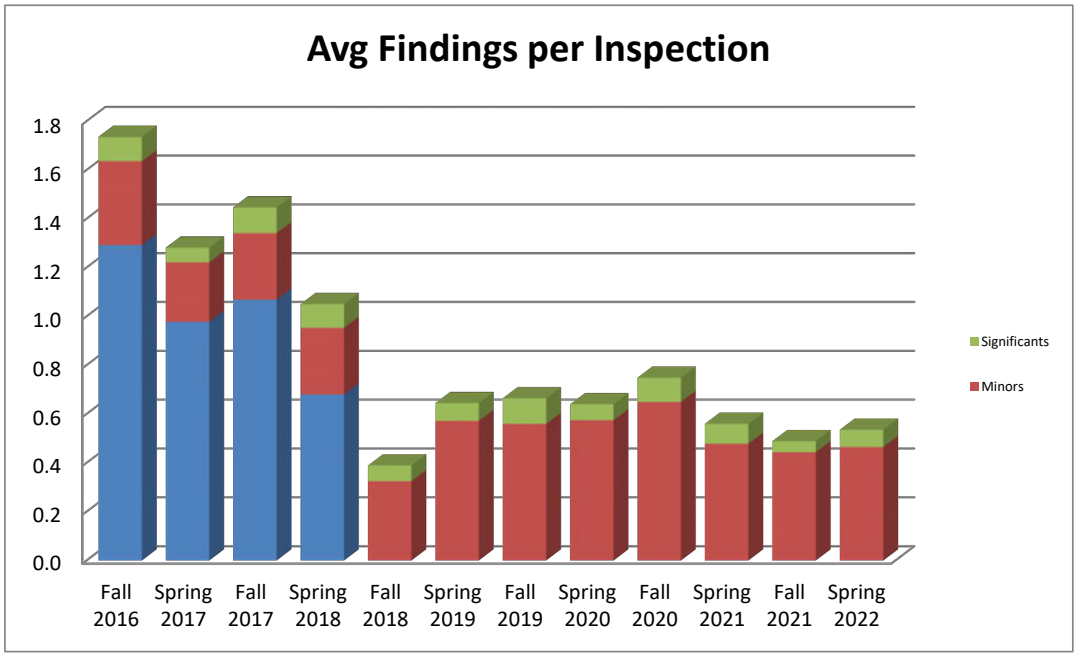
	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020	Spring 2021	Fall 2021	Spring 2022
Inspection Findings	341	387	292	120	184	192	167	158	205	107	133
Findings-Other	12	11	7	6	10	9	6	14	41	23	18

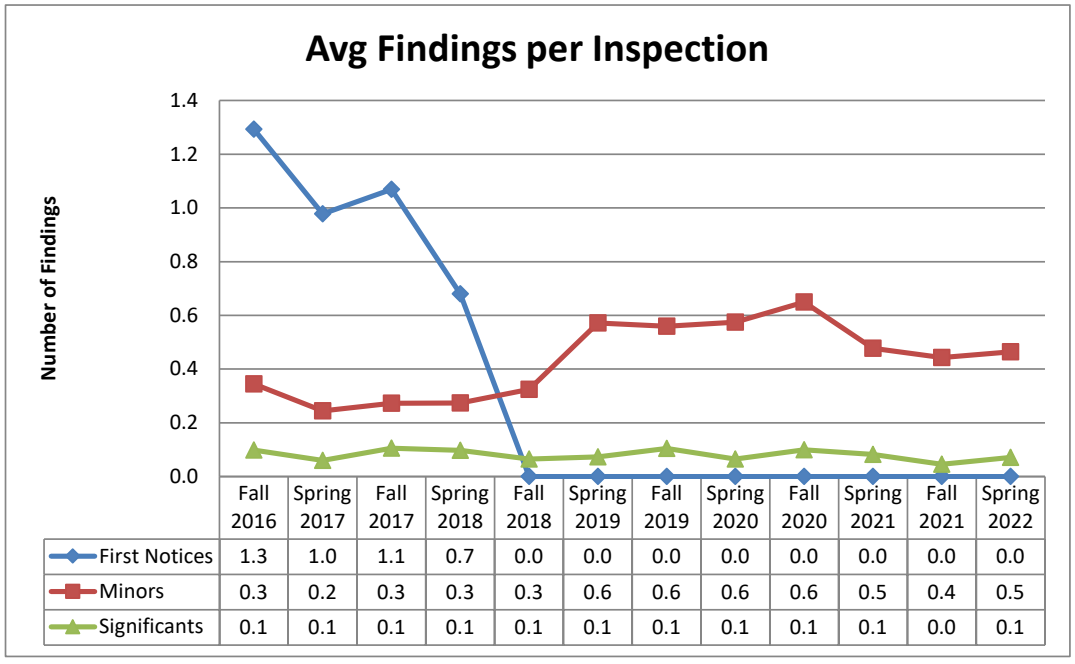


	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020	Spring 2021	Fall 2021	Spring 2022
Total Findings-Standard	341	387	292	114	184	201	167	158	164	107	133
Total Inspections	266	275	278	293	287	286	261	211	293	219	282
No Findings	119	121	143	213	190	192	164	120	195	190	187
At least one finding	147	154	135	80	97	94	97	91	98	29	95

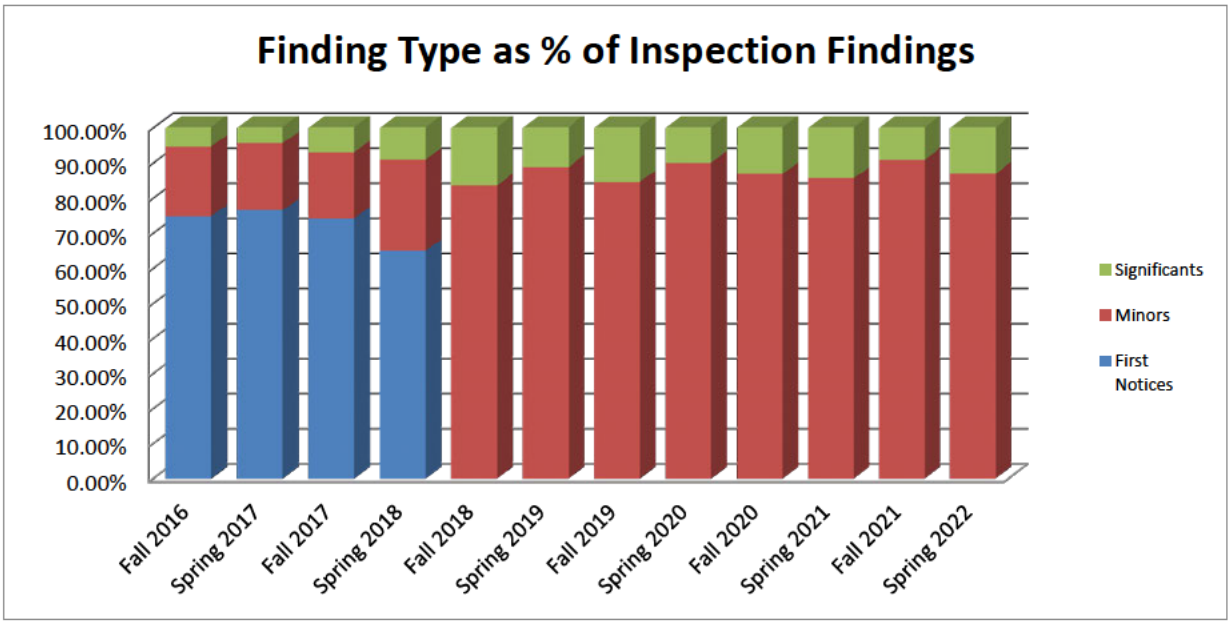
	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020	Spring 2021	Fall 2021	Spring 2022
Total Inspections	273	266	275	278	293	287	286	261	211	293	219	282
First Notices	353	260	294	189	0	0	0	0	0	0	0	0
Minors	94	65	75	76	95	164	160	150	137	140	97	131
Significants	27	16	29	27	19	21	30	17	21	24	10	20

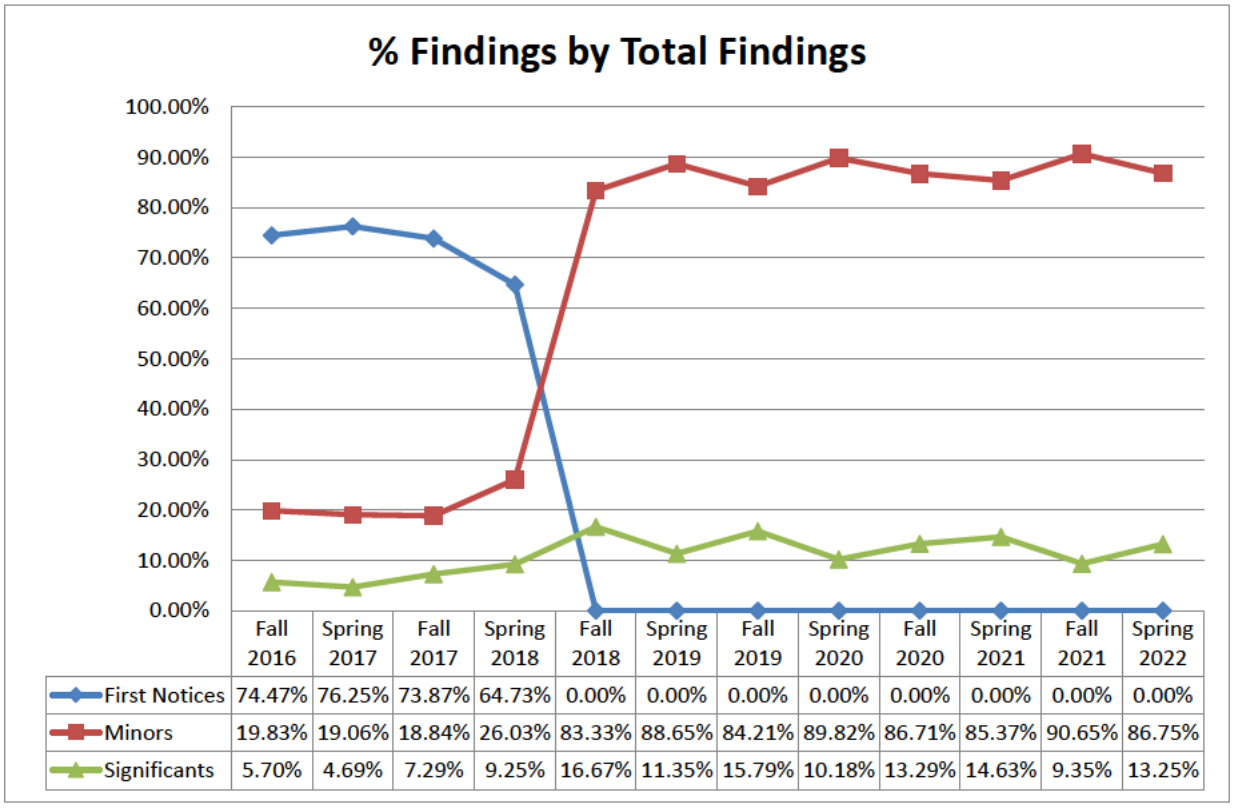
	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020	Spring 2021	Fall 2021	Spring 2022
First Notices	1.3	1.0	1.1	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minors	0.3	0.2	0.3	0.3	0.3	0.6	0.6	0.6	0.6	0.5	0.4	0.5
Significants	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1





	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020	Spring 2021	Fall 2021	Spring 2022
First Notices	74.47%	76.25%	73.87%	64.73%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Minors	19.83%	19.06%	18.84%	26.03%	83.33%	88.65%	84.21%	89.82%	86.71%	85.37%	90.65%	86.75%
Significants	5.70%	4.69%	7.29%	9.25%	16.67%	11.35%	15.79%	10.18%	13.29%	14.63%	9.35%	13.25%





	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020	Spring 2021	Fall 2021	Spring 2022
First Notices	74.47%	76.25%	73.87%	64.73%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Minors	19.83%	19.06%	18.84%	26.03%	83.33%	88.65%	84.21%	89.82%	86.71%	85.37%	90.65%	86.75%
Significants	5.70%	4.69%	7.29%	9.25%	16.67%	11.35%	15.79%	10.18%	13.29%	14.63%	9.35%	13.25%

Spring 2022 Significant Findings Report									
Type of Inspection	**Building**	**Room #**	**Responsible Party**	**Date of Inspection**	**Deficiency Type-DEHS, OHS, etc.**	**Deficiency * = reported to OLAW ** = repeat finding**	**Corrective Action**	**Completion Date**	**Inspectors**
PAM	[redacted]			10/28/2021	IACUC	zebrafish embryos 0-5 dpi housed in [redacted] but housing not approved	Zebrafish embryos will be housed in [redacted] facility	10/29/2021	Ilana Cohen
PAM				10/28/2021	IACUC	toe clipping performed on neonatal mice, but procedure not outlined in protocol*	amendment submitted to add toe clipping	10/29/2021	Ilana Cohen
PAM				10/28/2021	IACUC	toe clipping performed on neonatal mice, but procedure not outlined in protocol*	amendment submitted to add toe clipping	10/29/2021	Ilana Cohen
Self Report				10/7/2021	IACUC	Project started that was not yet approved by the Committee	Project has ceased until IACUC approval	10/19/21 FCR Meeting, closed	Self-Report
Self report				12/9/2021	N/A self report	Mice were ordered on the wrong protocol and surgery was done that was not approved on that protocol. Surgery done per the approved protocol/no issues	Multi-step plan to double check orders, cards and retrain lab	to FCR 12/14/21, closed	Self report
Second Surgery				12/20/2021	IACUC	Avertin should have been labeled as expird on 12/14/21, but an incorrect expiraton date had been written on the vial and subsequently administered for surgeries on 12/17/21.	Expiration dates corrected	12/21/2021	Megan McCoy
Semi-annual				1/21/2022	OHS-CS	Storing Euthasol in an unlocked cabinet in an RAR procedure room	Euthasol will be stored in a locked cabinet, staff will be retrained	1/25/2022	Megan McCoy and Craig Flory
Semi-annual				1/21/2022	OHS-CS	Expired ketamine and xylazine were found in an unlocked drawer in the housing room. Were not used in animals	Controlled substances will be stored in a safe	2/3/2022	Megan McCoy and Craig Flory
Self Report				Self Report 1/28/22	IACUC	Tail snip was performed for mouse genotyping after p21 without anesthesia*	local analgesic will be used, staff reviewed guidelines, more corrective action requested and was submitted	2/21/2022	Self report

Spring 2022 Significant Findings Report									
Type of Inspection	**Building**	**Room #**	**Responsible Party**	**Date of Inspection**	**Deficiency Type-DEHS, OHS, etc.**	**Deficiency * = reported to OLAW ** = repeat finding**	**Corrective Action**	**Completion Date**	**Inspectors**
Ag	[redacted]			2/3/2022	IACUC	Animals observed with health conditions including alopecia, skin and eye lesions and lameness	animals evaluated and treated by local veterinarian, IACUC leadership has requested a more detailed veterinary response (2/14/2022). Animal activity suspended and site to be shut down (2/24/22)	all animals have been sold, no animals present when site checked on 4/4/2022	Ilana Cohen and Giusepe Dell'Anna
Outside Report				2/2/22 via outside report	IACUC	Animals housed and research conducted without an approved Ag SOP or research protocol	New SOP submitted 2/4	2/4/2022	N/A
PAM				2/18/2022	IACUC	Mice are anesthetized with Isoflurane for tamoxifen injections and imaging. These procedures are not approved for the use of anesthesia.	these anesthetic procedures will not be conducted until new protocol is approved	2/28/2022	Megan McCoy
Semi-annual				3/11/2022	3/15/2022	Expired tricaine has been used to anesthetize fish	expired tricaine disposed, new pharmaceutical grade ordered	3/16/2022	Ilana Cohen and Whitney McGee
Second Surgery				3/16/2022	3/18/2022	Facial Vein blood collection in mice was conducted under ketamine/xylazine but the protocol is not approved for anesthesia for this procedure	facial vein blood collection will be done without anesthesia until protocol is amended and approved to add anesthesia	3/31/2022	Paul Lindstrom
Second Surgery				3/16/2022	3/18/2022	Moribundity is used as a study endpoint for mice receiving intracranial injection of tumor cells	study endpoints will be followed per protocol until amendment is submitted and approved for moribundity as an endpoint	3/31/2022	Paul Lindstrom
Self Report				3/17/22 Self Report	N/A Self Report	EdU given without approval, RAR not notified of chemical hazard use*	Will amend protocol to add EdU, will notifiy RAR in advance	Suspended 3/22/22	Self Report
Self Report				3/23/22 Self Report	N/A Self Report	Separated rats and failed to provide a water bottle for the new cage. RAR found rat and provided water the next morning*	Will meet with RAR for training	Suspended 3/22/22	Self Report

Spring 2022 Significant Findings Report									
Type of Inspection	**Building**	**Room #**	**Responsible Party**	**Date of Inspection**	**Deficiency Type-DEHS, OHS, etc.**	**Deficiency * = reported to OLAW ** = repeat finding**	**Corrective Action**	**Completion Date**	**Inspectors**
Self Report	[redacted]			3/24/22 Self Report	N/A Self Report	3/3 NHP escaped and got in fight with two other NHPs in room, one required vet care. 3/7 NHP escaped and injured self	Changes to cage banks, looking into lift and tunnel to help with jumping process	To FCR 4/5. closed	Self Report
PAM				3/30/2022	4/5/2022	Surgeon not listed as personnel on protocol; analgesic not administered as outlined in protocol; no post-op records available	Surgeon will be added to protocol and as surgeon, analgesic will be administered per protocol and post-op records will be available	4/8/2022	Megan McCoy
PAM				3/30/2022	4/6/2022	Analgesic not administered as outlined in protocol	analgesics will be administered per protocol	4/12/2022	Megan McCoy

Spring 2022 Minor Findings Report									
Type of Inspection	Building	Room #	Responsible Party	Date of Inspection	Deficiency Type-DEHS, OHS, etc.	Minor Deficiency * = Repeat Finding	Corrective Action	Completion Date	Inspectors
PAM	[redacted]			10/8/2021	OHS	ROHP requirements not met by all staff listed on protocols	ROHP requirements met	10/25/2021	Nima Estharabadi
Second Surgery				10/12/2021	IACUC	Vaporizer overdue for calibration	vaporizer calibrated	10/25/2021	Paul Lindstrom
PAM				10/11/2021	OHS	ROHP requirements not met by all staff listed on protocols	staff removed from protocol	10/20/2021	Nima Estharabadi
PAM				10/26/2021	IACUC	needs to keep decapitation log	decapitation log will be kept	10/27/2021	Nima Estharabadi
Semi-annual				10/25/2021	IACUC	various expired drugs noted in procedure [redacted]	expired items disposed	10/28/2021	Nima Estharabadi and Beverly Norris
PAM				10/28/2021	IACUC	anesthetic record not kept for oculuar imaging	anesthetic log will be kept	10/29/2021	Ilana Cohen
PAM				10/27/2021	IACUC	expired surgical gloves and scrub	new in-date items obtained	11/11/2021	Ilana Cohen
PAM				10/27/2021	IACUC	non-pharmaceutical grade ketoprofen is being used	pharmaceutical grade ketoprofen has been obtained	11/11/2021	Ilana Cohen
PAM				10/27/2021	IACUC	no animal procedure training records available in the lab	completed training records are now in the lab	11/11/2021	Ilana Cohen
PAM				10/27/2021	OHS	ROHP requirements not met by all staff listed on protocols	ROHP requirements met	11/11/2021	Ilana Cohen
PAM				10/28/2021	IACUC	Y-Maze procedure being done in lab, but not outlined in protocols	amendment submitted to add y-maze procedure	11/5/2021	Megan McCoy
Self Report				10/25/2021	IACUC	Performed surgery on mice under a protocol that did not have approved surgery	In future, will check cages to confirm mice used are from appropriate protocol	11/30 FCR Meeting, closed	Self-Report
PAM				11/10/2021	OHS	ROHP requirements not met by all staff listed on protocols	ROHP requirements met	11/12/2021	Paul Lindstrom
PAM				11/15/2021	IACUC	person performing surgery not listed as a surgeon	amendment to add surgeon has been submitted and approved	11/30/2021	Nima Estharabadi

Spring 2022 Minor Findings Report									
Type of Inspection	Building	Room #	Responsible Party	Date of Inspection	Deficiency Type-DEHS, OHS, etc.	Minor Deficiency * = Repeat Finding	Corrective Action	Completion Date	Inspectors
PAM	[redacted]			11/19/2021	IACUC	one cage of mice that had undergone genotyping procedures had a amoderate amount of blood in the cage -- animal put back in cage prior to hemostasis	staff reminded to use appropriate measures to ensure there is no bleeding prior to putting back into the cage	12/8/2021	Jennifer Borgert
PAM/Semi-annual				11/18/2021	IACUC	Need to either give 72 hours of analgesic or submit an amendement requesting exemption	will give analgesic per protocol until renewal is approved	12/1/2021	Paul Lindstrom
Self report				11/19/2021	IACUC	One daily check missed. Mice were in good health with sufficient food/water when checked the next day	Lab staff were reminded of the importance of following protocols and SOPs	to committee 11/30, closed	Self report
Self report				11/23/2021	IACUC	Anti-coagulant therapy administred that was different than approved in protocol	Vet rec obtained and amendment submitted 11/22	11/22/2021, to commmittee 11/30, closed	Self report
PAM				11/22/2021	OHS	ROHP requirements not met by all staff listed on protocols	ROHP requirements met	11/29/2021	Nima Estharabadi
PAM				11/16/2021	IACUC	Adequate training records not kept	training records updated and placed in the lab	12/9/2021	Megan McCoy
PAM				11/16/2021	IACUC	Adequate training records not kept	training records submitted	11/30/2021	Megan McCoy
PAM				11/22/2021	IACUC	Anesthetic records not kept for intranasal administrations to mice	anesthetic records will be kept	12/9/2021	Jennifer Borgert
PAM				11/22/2021	IACUC	Euthanasia method not followed	amendment submitted to add additional euthanasia method	12/10/2021	Jennifer Borgert
PAM				11/29/2021	IACUC	Need to confirm 3 days post-op records will be kept going forward	3 days post op records will be kept	12/16/2021	Ilana Cohen
PAM				11/29/2021	IACUC	Surgical records missing required items	surgical records will be updated	12/16/2021	Ilana Cohen
Second Surgery				11/29/2021	OHS	ROHP requirements not met by all staff listed on protocols	ROHP requirements met	12/16/2021	Ilana Cohen
PAM				12/2/2021	IACUC	Adequate training records not kept	training records have been updated	12/20/2021	Nima Estharabadi
PAM				12/2/2021	IACUC	need to add 7 breeding strains to protocol	amendment to add strains submitted	12/20/2021	Nima Estharabadi

Spring 2022 Minor Findings Report

Type of Inspection	Building	Room #	Responsible Party	Date of Inspection	Deficiency Type-DEHS, OHS, etc.	Minor Deficiency * = Repeat Finding	Corrective Action	Completion Date	Inspectors
PAM	[redacted]			12/2/2021	OHS	ROHP requirements not met by all staff listed on protocols	ROHP requirements met	2/14/2022	Jennifer Borgert
PAM				12/3/2021	IACUC	needs to add alternate euthanasia method to protocol	no studies will be initiated until amendment submitted	12/26/2021	Jennifer Borgert
PAM				12/7/2021	OHS	ROHP requirements not met by all staff listed on protocols	ROHP requirements met	12/15/2021	Paul Lindstrom
PAM				12/8/2021	OHS	ROHP requirements not met by all staff listed on protocols	ROHP requirements met	12/22/2021	Nima Estharabadi
PAM				12/9/2021	IACUC	Adequate training records not kept	training records are now being kept	12/13/2021	Nima Estharabadi
Second Surgery				12/14/2021	IACUC	Anesthetic vaporizer overdue for calibration	vaporizer scheduled for calibration 12/21/2021	12/16/2021	Nima Estharabadi
PAM				12/13/2021	IACUC	needs to add alternate euthanasia method to protocol	No CO_2 euthanasia will be performed until amendment has been approved	12/20/2021	Paul Lindstrom
PAM				12/15/2021	IACUC	Anesthetic vaporizer overdue for calibration	vaporizer scheduled for calibration	12/17/2021	Paul Lindstrom
Self Report				12/21/21 self report	IACUC	Sheep in rooms [redacted] were not fed (water was still available) and the pens were not cleaned on 12/9/21. No adverse clinical health effects were noted	Backup will be assignged and facility supervisor will perform an end of day check	to FCR 12/28/21, moved to 1/11/22 due to quorum issues. Closed	Self Report
Second Surgery				12/22/2021	IACUC	sterile saline in use that is beyond 30 days from opening	stock saline bottles will be disposed of 30 days after first puncture; bottle will be labeled with puncture date	1/3/2022	Ilana Cohen
Semi-annual/Initial Surgery				12/21/2021	IACUC	person performing surgery not listed as a surgeon	amendment approved to add surgeons to protocol	12/27/2022	Paul Lindstrom and Jen Hubbard
PAM				12/13/2021	IACUC	Confirm CO_2 is used according to new flow rates	Rodent euthanasia reference sheet now posted at euthanasia chamber ensuring the proper flow rate will be used	12/30/2021	Jennifer Borgert
PAM				12/10/2021	OHS	ROHP requirements not met by all staff listed on protocols	ROHP requirements met (because of change in PI)	2/2/2022	Jennifer Borgert
PAM				12/10/2021	IACUC	Adequate training records not kept	training records will be kept	2/15/2022	Jennifer Borgert

Spring 2022 Minor Findings Report

Type of Inspection	Building	Room #	Responsible Party	Date of Inspection	Deficiency Type-DEHS, OHS, etc.	Minor Deficiency * = Repeat Finding	Corrective Action	Completion Date	Inspectors
PAM	[redacted]			12/10/2021	IACUC	Anesthetic records not kept for MRI procedures	anesthetic records will be kept	2/15/2022	Jennifer Borgert
Second Surgery				12/13/2021	IACUC	person performing surgery not listed as a surgeon	surgeon added to protocol	1/4/2022	Jennifer Borgert
PAM				12/15/2021	IACUC	systolic blood pressure not monitored during the surgical procedures	bp will be monitored with a cuff during surgery, but due to the difficulty of obtaining an accurate measurement with this method the depth of anesthesia will be monitored primarily with heart rate, absence of palpebral reflex, and lack of jaw tone; protocol updated to reflect this	12/27/2021	Jennifer Borgert
Semi-annual/Second Surgery				12/16/2021	IACUC	hair covering not worn during surgical procedures	hair coverings will be worn during surgery	12/22/2021	Jennifer Borgert and Henry Wong
PAM				12/15/2021	IACUC	Adequate training records not kept	Training records completed	1/4/2022	Megan McCoy
PAM				12/15/2021	OHS	ROHP requirements not met by all staff listed on protocols	ROHP requirements met	1/4/2022	Megan McCoy
PAM				12/15/2021	IACUC	Habituation to handling not carried out for the cold exposure procedure	amendment will be submitted	1/4/2022	Megan McCoy
Semi-annual				12/16/2021	IACUC	Emergency plan overdue for review	emegency plan updated	12/22/2021	Jennifer Borgert and Jessica Felgenhauer
Semi-annual/PAM				12/17/2021	OHS	ROHP requirements not met by all staff listed on protocols	ROHP requirements met	1/4/2021	Jennifer Borgert and [redacted]
Semi-annual/Second Surgery				12/17/2021	IACUC	Some expired items noted during the inspection	expired items disposed	12/17/2021	Paul Lindstrom and Whitney McGee
PAM				12/29/2021	OHS	ROHP requirements not met by all staff listed on protocols	ROHP requirements met	1/5/2022	Jennifer Borgert
PAM				12/29/2021	IACUC	endpoints of study not followed	amendment submitted extending endpoints	1/5/2022	Jennifer Borgert
Self Report				1/11/22 self report	IACUC	daily health check was missed on one day, no welfare issues identified	staff coached; additional communication re: schedule changes; supervisors to verify daily tasks via walkthrough	to FCR 1/11/22. closed	Self Report
PAM				1/4/2022	IACUC	Adequate training records not kept	training records updated	1/10/2022	Nima Estharabadi

Spring 2022 Minor Findings Report									
Type of Inspection	Building	Room #	Responsible Party	Date of Inspection	Deficiency Type-DEHS, OHS, etc.	Minor Deficiency * = Repeat Finding	Corrective Action	Completion Date	Inspectors
PAM	[redacted]			1/4/2022	IACUC	Anesthetic records not kept for the echo and perfusion procedures	anesthetic records are being kept	1/10/2022	Nima Estharabadi
PAM				1/4/2022	IACUC	animals not shaved prior to perfusion procedure	animals don't need to be shaved, will remove shaving from protocol	1/10/2022	Nima Estharabadi
PAM				1/6/2022	OHS	ROHP requirements not met by all staff listed on protocols	ROHP requirements met	1/26/2022	Nima Estharabadi
PAM				1/6/2022	IACUC	animals not properly covered or draped when in transport to the lab	animal transportation SOP updated	1/26/2022	Nima Estharabadi
PAM				1/7/2022	OHS	ROHP requirements not met by all staff listed on protocols	Tetanus scheduled for 1/25/2022	1/11/2022	Nima Estharabadi
Second Surgery				1/11/2022	IACUC	person performing surgery not listed as a surgeon	surgeon added to protocol	1/12/2022	Nima Estharabadi
PAM				1/12/2022	IACUC	Need to either give 72 hours of analgesic or submit an amendment requesting exemption (repeat finding)*	analgesics will be administered for 72 hours post surgery	1/17/2022	Nima Estharabadi
Semi-annual				1/7/2022	IACUC	Daily animal health checks were not documeneted in the husing area	daily checks will be documented	2/1/2022	Jennifer Borgert
Semi-annual				1/7/2022	IACUC	rodent control not present in housing area	tin cat rodent trap has been ordered	2/1/2022	Jennifer Borgert
Semi-annual				1/7/2022	IACUC	needs to post current version of disaster plan	disaster plan has been posted	2/1/2022	Jennifer Borgert
Semi-annual/PAM				1/11/2022	OHS	ROHP requirements not met by all staff listed on protocols	ROHP requirements met	1/17/2022	Jennifer Borgert
PAM				1/20/2022	IACUC	Anesthetic records not kept for the echo procedure	anesthetic records will be kept	1/20/2022	Nima Estharabadi
Semi-annual/Second Surgery				1/21/2022	IACUC	sterile gloves expired	new, in date surgeon gloves obtained	2/10/2022	Nima Estharabadi and Giusepe Dell'Anna

Spring 2022 Minor Findings Report

Type of Inspection	Building	Room #	Responsible Party	Date of Inspection	Deficiency Type-DEHS, OHS, etc.	Minor Deficiency * = Repeat Finding	Corrective Action	Completion Date	Inspectors
PAM	[redacted]			1/27/2022	IACUC	Although most of your protocols include a statement that analgesics will not be used if the surgery is planned as non-survival, this statement is missing from protocol 2006-38199A on which non-survival surgeies were conducted.	amendment submitted	2/16/2022	Ilana Cohen
PAM				1/25/2022	OHS	ROHP requirements not met by all staff listed on protocols	staff member removed from protocol	2/10/2011	Jennifer Borgert
PAM				1/25/2022	IACUC	Required information missing from Surgical and Post-op Records	records will be updated to include missing required information	2/7/2022	Jennifer Borgert
Semi-annual				1/31/2022	IACUC	Anesthetic vaporizers overdue for calibration	vaporizers scheduled for calibration	2/11/2022	Jennifer Borgert and Ferenc Toth
Semi-annual				1/21/2022	IACUC	various expired drugs noted in the housing room*	expired items disposed	2/3/2022	Megan McCoy and Craig Flory
Semi-annual/Second Surgery				1/31/2022	IACUC	Anesthetic vaporizer overdue for calibration	vaporizer scheduled for calibration	2/10/2022	Ilana Cohen and Jenn Hubbard
Semi-annual				1/31/2022	IACUC	Expired items noted in [redacted]	expired items disposed	2/16/2022	Nima Estharabadi and [redacted]
Ag				2/3/2022	IACUC	Daily animal health checks and husbandry procedures were not documeneted in the housing area	appropriate records will be kept	2/10/2022	Ilana Cohen and Giusepe Dell'Anna
Ag				2/3/2022	IACUC	lack of personnel training on the unit SOP procedures	staff will be trained and documented in a training log	2/10/2022	Ilana Cohen and Giusepe Dell'Anna
Ag				2/3/2022	IACUC	several expired drugs noted in the office	expired drugs disposed	2/10/2022	Ilana Cohen and Giusepe Dell'Anna
Ag				2/3/2022	IACUC	unacceptable method of pest control appeared to have been in use at the facility	unit SOP for pest control will be followed	2/10/2022	Ilana Cohen and Giusepe Dell'Anna
Ag				2/3/2022	IACUC	There was evidence of mold in the stored feed	mold will be removed prior to feeding, personnel will be retrained in proper storage procedurds	2/10/2022	Ilana Cohen and Giusepe Dell'Anna
Self Report				2/2/22 self report	IACUC	Lidocaine-bupivicaine not given per procedure tab, but was not described in surgical attachment	Editing protocol for consistency, staff reviewing protocol	To FCR 2/8, closed	Self report

Spring 2022 Minor Findings Report

Type of Inspection	Building	Room #	Responsible Party	Date of Inspection	Deficiency Type-DEHS, OHS, etc.	Minor Deficiency * = Repeat Finding	Corrective Action	Completion Date	Inspectors
Self Report	[redacted]			2/2/22 self report	IACUC	Sentinal cage and PI cage found without water bottles	Changes to RAR procedures on room checks	To FCR 2/8--more info requested. Closed at 2/22 FCR	Self report
Semi-annual				2/11/2022	IACUC	The door to [redacted] has a malfunctioning keycode and cannot be locked	door lock has been repaired	2/24/2022	Megan McCoy and Kat Coda
Ag				2/3/2022	IACUC	disaster plan for the beef barn needs updating	disaster plan updated and posted	3/17/2022	Jennifer Borgert
Ag				2/10/2022	IACUC	disaster plans for both [redacted] need updating	disaster plans updated and posted	2/20/2022	Jennifer Borgert
PAM				2/16/2022	OHS	ROHP requirements not met by all staff listed on protocols	ROHP requirements met	2/25/2022	Nima Estharabadi
PAM				2/16/2022	IACUC	Need to document toe pinch prior to perfusion	anesthetic depth will be documented	2/25/2022	Nima Estharabadi
Initial Surgery				2/17/2022	IACUC	Study end points not followed	amendment submitted to extend study endpoints	3/7/2022	Paul Lindstrom
Initial Surgery				2/17/2022	IACUC	The required dose of Meloxicam was given but not documented in the drug admin record	all drug administrations will be properly documented	3/7/2022	Paul Lindstrom
PAM				2/18/2022	OHS	ROHP requirements not met by all staff listed on protocols	ROHP requirements met	2/22/2022	Nima Estharabadi
Second Surgery				2/22/2022	IACUC	person performing surgery not listed as a surgeon	ammendment to add surgeon submitted	2/23/2022	Paul Lindstrom
Second Surgery				2/22/2022	IACUC	Although urethane is approved for non-survival brain stimulation surgery, it is not listed for the non-survival magnetic microcoil recording surgery	ammendment to add urethane submitted	2/23/2022	Paul Lindstrom
PAM				2/18/2022	IACUC	The transportation unit is mostly fabric that cannot be properly sanitized and thus cannot be used to transport animals.	a new sanitizable cart will be obtained	2/28/2022	Megan McCoy
Self Report				2/11/22 self report	IACUC	Temp and RR not recorded during MRI; 5 MRIs w/no anesthetic record	requested training completed and anesthetic records sent	3/18/2022	Self report
Semi-annual/Second Surgery				2/25/2022	IACUC	Ophthalmic ointment expired	ophthalmic ointment will be replaced prior to next surgery	2/25/2022	Nima Estharabadi and George Wilcox
PAM				2/24/2022	IACUC	Study end points not followed	amendment submitted to increase tumor size endpoint	3/15/20222	Megan McCoy

Spring 2022 Minor Findings Report

Type of Inspection	Building	Room #	Responsible Party	Date of Inspection	Deficiency Type-DEHS, OHS, etc.	Minor Deficiency * = Repeat Finding	Corrective Action	Completion Date	Inspectors
PAM	[redacted]			2/24/2022	IACUC	need to add the new methods of tumor induction	amendment submitted for injection of tumor cells	3/15/20222	Megan McCoy
Second Surgery				2/9/2022 and 2/22/2022	IACUC	ophthalmic ointment not used prior to the surgery in sheep	ophthalmic ointment will be used prior to all anesthetic procedures	3/8/2022	Jennifer Borgert
Self Report				2/24/22 Self Report	IACUC	Lentiviral vector used instead of approved AAV vector	Amendment submitted to add lentivirus to protocol	to FCR 3/8/22, closed	Self report
Second Surgery				2/16/2022	IACUC	Surgical tools are not always autoclaved prior to each surgical session	surgical instruments will be fully autoclaved prior to surgery	3/2/2022	Jennifer Borgert
Second Surgery				2/16/2022	IACUC	staff do not wear a hair covering during survival surgical procedures	hair covering will be worn for survival surgery	3/2/2022	Jennifer Borgert
PAM				2/16/2022	IACUC	staff do not wear a hair covering during survival surgical procedures	hair covering will be worn for survival surgery	3/15/2022	Jennifer Borgert
PAM				2/16/2022	IACUC	person performing surgery not listed as a surgeon	amendment will be submitted to add surgeon to protocol	3/15/2022	Jennifer Borgert

Spring 2022 No Findings Report					
Type of Inspection	**Building**	**Room #**	**Responsible Party**	**Date of Inspection**	**Inspectors**
PAM	[redacted]	[redacted]	Yuying Liang	10/4/2021	Jennifer Borgert
PAM	[redacted]	[redacted]	Fekadu Kassie	10/4/2021	Nima Estharabadi
PAM	[redacted]	[redacted]	Daniel Mueller	10/6/2021	Paul Lindstrom
PAM	[redacted]	[redacted]	Manish Patel	10/13/2021	Nima Estharabadi
PAM	[redacted]	[redacted]	Carol Cardona	10/15/2021	Jennifer Borgert
PAM	[redacted]	[redacted]	Nate Koewler	10/14/2021	Megan McCoy
PAM	[redacted]	[redacted]	Rocio Gomez-Pastor	10/15/2021	Nima Estharabadi
Initial Surgery	[redacted]	[redacted]	Jen Hubbard	10/15/2021	Megan McCoy
Semi-annual	[redacted]	[redacted]	Job Ubbink	10/18/2021	Megan McCoy
Semi-annual	[redacted]	[redacted]	Jordan Juckel	10/15/2021	Megan McCoy and Sam Baidoo
Semi-annual	[redacted]	[redacted]	Carrie Haskell-Luevano	10/19/2021	Paul Lindstrom
Semi-annual	[redacted]	[redacted]	RAR (Eric Shoen)	10/13/2021	Ilana Cohen and Dick Bianco
PAM	[redacted]	[redacted]	Daniel Saltzman	10/20/2021	Nima Estharabadi
PAM	[redacted]	[redacted]	Mark Herzberg	10/22/2021	Nima Estharabadi
PAM	[redacted]	[redacted]	Stephen Hecht	10/20/2021	Megan McCoy

Spring 2022 No Findings Report					
Type of Inspection	**Building**	**Room #**	**Responsible Party**	**Date of Inspection**	**Inspectors**
PAM	[redacted]		Nate Koewler (Syntiron)	10/20/2021	Megan McCoy
PAM			Jessica Felgenhauer	10/22/2021	Megan McCoy
Semi-annual			Rachael Hoemke	10/26/2021	Paul Lindstrom
Semi-annual			Terresa Xiong	10/28/2021	Nima Estharabadi and Beverly Norris
Semi-annual			Terresa Xiong	10/28/2021	Nima Estharabadi and Beverly Norris
Semi-annual			Terresa Xiong	10/28/2021	Nima Estharabadi and Beverly Norris
PAM			David Masopust	10/29/2021	Ilana Cohen
Semi-annual			Sam Dudley	10/25/2021	Jennifer Borgert and Walt Tollison
Ag			David Israels-Swenson	10/29/2021	Jennifer Borgert
Ag			Bradley Heins	10/29/2021	Jennifer Borgert
Ag			Lee Johnston	10/29/2021	Jennifer Borgert
PAM			Demetri Yannopoulos	10/25/2021	Jennifer Borgert
PAM			Robert Wilson	10/25/2021	Jennifer Borgert
Second Surgery			Markus Meyer	10/25/2021	Jennifer Borgert
PAM			Alexander Khoruts	10/18/2021	Jennifer Borgert
PAM			Brian Betts	10/29/2021	Nima Estharabadi
Second Surgery			Beshay Zordoky	11/3/2021	Nima Estharabadi

Spring 2022 No Findings Report					
Type of Inspection	**Building**	**Room #**	**Responsible Party**	**Date of Inspection**	**Inspectors**
Second Surgery	[redacted]		Peter Sorensen	11/3/2021	Megan McCoy
PAM			Shauna Yuan	11/8/2021	Megan McCoy
Semi-annual			Ed Craig	11/8/2021	Megan McCoy
Semi-annual			Heather Waye	11/1/2021	Jennifer Borgert
Initial Surgery			Kurt Prins	11/10/2021	Megan McCoy
Semi-annual			Ned Patterson	11/8/2021	Megan McCoy
PAM			Georgiy Aslanidi	11/10/2021	Nima Estharabadi
PAM			Nathan Schuldt	11/11/2021	Paul Lindstrom
Semi-annual			Maxim Cheeran	11/15/2021	Paul Lindstrom
PAM			Samuel Dudley	11/16/2021	Nima Estharabadi
Semi-annual			Mark Sanders	11/15/2021	Nima Estharabadi
Semi-annual			Mark Sanders	11/15/2021	Nima Estharabadi
PAM			Eric Jensen	11/17/2021	Nima Estharabadi
PAM			Shujun Liu	11/15/2021	Nima Estharabadi
PAM			Pamela Skinner	11/19/2021	Jennifer Borgert
PAM/Semi-annual			Kimberly Klukas	11/17/2021	Jennifer Borgert
PAM			Devi Patnayak	11/18/2021	Paul Lindstrom
PAM			Ned Patterson	11/18/2021	Paul Lindstrom

Spring 2022 No Findings Report					
Type of Inspection	**Building**	**Room #**	**Responsible Party**	**Date of Inspection**	**Inspectors**
Semi-annual	[redacted]	[redacted]	Carrie Haskell-Luevano	11/22/2021	Paul Lindstrom
Ag			Makaila Klejeski	11/19/2021	Paul Lindstrom
Ag			Samuel Baidoo	11/19/2021	Paul Lindstrom
PAM			David Zarkower	11/23/2021	Paul Lindstrom
PAM			Maureen Cetera	11/23/2021	Paul Lindstrom
PAM			Kirsten Nielsen	11/22/2021	Nima Estharabadi
PAM			James Ervasti	11/24/2021	Nima Estharabadi
Semi-annual			Danielle Hyde and Paige Frendahl	11/29/2021	Nima Estharabadi
PAM			Tianshun Zhang	11/29/2021	Paul Lindstrom
PAM			Tanya Freedman	11/30/2021	Nima Estharabadi
PAM			Liang Liu	11/17/2021	Megan McCoy
PAM			Rebecca Morris	11/17/2021	Megan McCoy
PAM			Timothy O'Connell	12/1/2021	Nima Estharabadi
PAM			Yasuhiko Kawakami	12/2/2021	Nima Estharabadi
Semi-annual			Jennifer Menken	12/6/2021	Nima Estharabadi
Second Surgery			Ratan Banik	12/7/2021	Nima Estharabadi
PAM			Craig Henke	12/7/2021	Paul Lindstrom
PAM			Anthony Baughn	12/8/2021	Paul Lindstrom

Spring 2022 No Findings Report					
Type of Inspection	**Building**	**Room #**	**Responsible Party**	**Date of Inspection**	**Inspectors**
Semi-annual	[redacted]	[redacted]	Karry Bazille	12/10/2021	Ilana Cohen
Second Surgery			James Lokensgard	12/14/2021	Nima Estharabadi
Ag			Dan Braaten	12/13/2021	Megan McCoy
PAM			Bruce Blazar	12/9/2021, 12/14/2021	Paul Lindstrom
PAM			Michelle Willette	12/17/2021	Nima Estharabadi
PAM			Sarah Greising	12/17/2021	Nima Estharabadi
PAM			Laura Niedernhofer	12/15/2021	Nima Estharabadi
PAM			Mary Garry	12/29/2021	Jennifer Borgert
Ag			Brian Crooker	12/20/2021	Paul Lindstrom
PAM			Yigtican Eryaman	12/14/2021	Jennifer Borgert
PAM			Michael Raleigh	12/21/2021	Ilana Cohen
Semi-annual			Edward Craig	12/17/2021	Paul Lindstrom
Semi-annual/Second			Brendan Dougherty	12/15/2021	Paul Lindstrom
Semi-annual			Scott Madill	12/16/2021	Jennifer Borgert and Marilyn Bennett
Semi-annual/Second Surgery			Gordon Smith	12/20/2021	Jennifer Borgert and [redacted]
Second Surgery			Eric Newman	12/15/2021	Megan McCoy

Spring 2022 No Findings Report					
Type of Inspection	**Building**	**Room #**	**Responsible Party**	**Date of Inspection**	**Inspectors**
Semi-annual/Second Surgery	[redacted]		Melanie Graham	12/17/2021	Paul Lindstrom and Whitney McGee
PAM			Ling Li	12/9/2021	Nima Estharabadi
PAM			Daniel Gallaher	1/4/2022	Megan McCoy
Semi-annual			Danielle Hyde and Paige Frendahl	1/7/2022	Megan McCoy
PAM			Masato Yamamoto	1/12/2022	Nima Estharabadi
Semi-annual			Richard Bianco	1/13/2022	Paul Lindstrom and Nate Koewler
PAM			Scott McPherson	1/14/2022	Nima Estharabadi
PAM			Yoji Shimizu	1/18/2022	Ilana Cohen
PAM			Scott Madill	1/7/2022	Ilana Cohen
PAM			Raghu Rao	1/19/2022	Jennifer Borgert
PAM			Peter Kang	1/20/2022	Jennifer Borgert
Semi-annual			Maxim Cheeran	1/21/2022	Nima Estharabadi
Initial Surgery			Scott Dehm	1/19/2022	Paul Lindstrom
PAM			Elizabeth Bradley	1/19/2022	Paul Lindstrom

Spring 2022 No Findings Report					
Type of Inspection	**Building**	**Room #**	**Responsible Party**	**Date of Inspection**	**Inspectors**
Semi-annual/PAM	[redacted]		Ann Fallon	1/19/2022	Paul Lindstrom
Initial Surgery			Marc Jenkins	1/24/2022	Megan McCoy
Semi-annual			Karry Bazille	1/24/2022	Ilana Cohen and Beverly Norris
PAM			Jaime Modiano	1/24/2022	Megan McCoy
PAM			Erin Dickerson	11/19/2021	Megan McCoy
PAM			Jocelyn Richard	1/27/2022	Nima Estharabadi
Semi-annual			Dan Busian	1/24/2022	Paul Lindstrom and Beverly Norris
Second Surgery			Erik Finger	1/20/2022	Paul Lindstrom
PAM			David Potter	1/24/2022	Jennifer Borgert
PAM			Jesse Williams	1/26/2022	Jennifer Borgert
Semi-annual			Karry Bazille	1/26/2022	Megan McCoy and Carolyn Fairbanks
Semi-annual			Karry Bazille	1/26/2022	Megan McCoy and Carolyn Fairbanks
PAM			Michael Smanski	1/27/2022	Megan McCoy
PAM			Alfonso Araque	1/28/2022	Nima Estharabadi
Semi-annual/PAM			Benjamin Hayden	1/26/2022	Paul Lindstrom and Henry Wong

Spring 2022 No Findings Report					
Type of Inspection	**Building**	**Room #**	**Responsible Party**	**Date of Inspection**	**Inspectors**
Semi-annual/Second Surgery	[redacted]	[redacted]	Jan Zimmermann	1/26/2022	Paul Lindstrom and Henry Wong
Semi-annual/PAM	[redacted]	[redacted]	Paul Iaizzo	1/21/2022	Paul Lindstrom and Ferenc Toth
PAM	[redacted]	[redacted]	Cheuk Leung	1/31/2022	Jennifer Borgert
Semi-annual	[redacted]	[redacted]	Mark Masino	2/10/2022	Nima Estharabadi and Jessica Felgenhauer
Semi-annual	[redacted]	[redacted]	Mark Masino	2/11/2022	Nima Estharabadi
PAM	[redacted]	[redacted]	Carol Lange	2/10/2022	Paul Lindstrom
Second Surgery	[redacted]	[redacted]	David Largaespada	2/7/2022	Megan McCoy
Semi-annual	[redacted]	[redacted]	Lacey Mantovani	2/15/2022	Megan McCoy and Keith Barker
PAM	[redacted]	[redacted]	Robert Schumacher	2/15/2022	Megan McCoy
PAM	[redacted]	[redacted]	Karen Ashe	2/16/2022	Nima Estharabadi
PAM	[redacted]	[redacted]	Kevin Wickman	2/16/2022	Nima Estharabadi
Semi-annual	[redacted]	[redacted]	Alessandro Bartolomucci	2/17/2022	Nima Estharabadi and whitney McGee
Semi-annual	[redacted]	[redacted]	Alessandro Bartolomucci	2/17/2022	Nima Estharabadi
PAM	[redacted]	[redacted]	Alessandro Bartolomucci	2/15/2022	Nima Estharabadi
Semi-annual	[redacted]	[redacted]	Sand Mand	2/21/2022	Megan McCoy
Semi-annual	[redacted]	[redacted]	Victoria Hall	2/18/2022	Nima Estharabadi and [redacted]
PAM	[redacted]	[redacted]	Curtis Hughey	2/23/2022	Nima Estharabadi

Spring 2022 No Findings Report					
Type of Inspection	**Building**	**Room #**	**Responsible Party**	**Date of Inspection**	**Inspectors**
PAM	[redacted]		Matthew Aliota	2/23/2022	Jennifer Borgert
Semi-annual/PAM			Jerrold Vitek, Matthew Johnson	2/8/2022	Jennifer Borgert and Beverly Norris
Semi-annual			Katie Tuininga	2/24/2022	Kathryn Trautman
Second Surgery			Kaylee Schwertfeger	2/17/2022	Kathryn Trautman
Second Surgery			DeWayne Townsend	2/22/2022	Kathryn Trautman
Semi-annual/Second			Esther Krook-Magnuson	2/23/2022	Megan McCoy and Kat Coda
PAM			Dana Franzen-Klein	2/25/2022	Nima Estharabadi
Semi-annual			Lisa Anderson	2/24/2022	Paul Lindstrom and Wensheng Lin
Second Surgery			Rosemary Kelly	2/14/2022	Jennifer Borgert
PAM			Rita Perlingeiro	2/25/2022	Paul Lindstrom
Second Surgery			Rachel Koski	2/25/2022	Jennifer Borgert
Semi-annual/PAM			Mark Hove	3/4/2022	Nima Estharabadi and Keith Barker
PAM			Nobuaki Kikyo	3/4/2022	Nima Estharabadi
PAM			Casey Johnson	3/8/2022	Paul Lindstrom
PAM			Robert Kratzke	3/10/2022	Nima Estharabadi
Second Surgery			Ferenc Toth	3/11/2022	Paul Lindstrom
Second Surgery			John Belcher	3/7/2022	Jennifer Borgert
PAM			Robert Cormier	3/8/2022	Jennifer Borgert

Spring 2022 No Findings Report					
Type of Inspection	**Building**	**Room #**	**Responsible Party**	**Date of Inspection**	**Inspectors**
Semi-annual	[redacted]		Frank Maragi	3/11/2022	Ilana Cohen and Whitney McGee
Semi-annual			Thomas Hrabik	3/11/2022	Ilana Cohen and Whitney McGee
Semi-annual			Suzanne McGaugh	3/11/2022	Ilana Cohen and Whitney McGee
Semi-annual			Allen Mensinger	3/11/2022	Ilana Cohen and Whitney McGee
Semi-annual			Eric Schoen	3/15/2022 and 4/7/22	Kathryn Trautman and Giuseppe Dell'Anna
PAM			Tate Gisslen	3/10/2022	Kathryn Trautman
PAM			David Thomas	3/16/2022	Nima Estharabadi
Semi-annual			Edward Craig Jr.	3/10/2022	Megan McCoy and Sally Noll
Initial Surgery			Jean Regal	3/11/2022	Megan McCoy
PAM			Yi-Mei Yang	3/11/2022	Megan McCoy
Semi-annual			Mark Schleiss	3/18/2022	Nima Estharabadi
Semi-annual/Second			Mark Thomas	3/18/2022	Megan McCoy and Jen Hubbard
PAM			Deepal Sachdev	3/22/2022	Nima Estharabadi
PAM			Patrick Alford	3/21/2022	Jennifer Borgert

Spring 2022 No Findings Report					
Type of Inspection	**Building**	**Room #**	**Responsible Party**	**Date of Inspection**	**Inspectors**
Second Surgery	[redacted]	[redacted]	Yasushi Nakagawa	3/21/2022	Paul Lindstrom
PAM			Bong Sook Jhun	3/17/2022	Paul Lindstrom
PAM			Wensheng Lin	3/24/2022	Nima Estharabadi
PAM			Sagar Goyal	3/16/2022	Jennifer Borgert
Ag			Terrill Giannonatti-Bradford	3/23/2022	Paul Lindstrom
Ag			Nikcy Overgaard	3/23/2022	Paul Lindstrom
Ag			Nikcy Overgaard	3/23/2022	Paul Lindstrom
PAM			Benjamin Saunders	3/17/2022	Jennifer Borgert
Second Surgery			Hongbo Pang	3/17/2022	Megan McCoy
Semi-annual			Tim Kurtti and Ulrike Munderloh	3/28/2022	Megan McCoy and Guiseepe Dell'Anna
Second Surgery			Lucy Vulchanova	3/25/2022	Paul Lindstrom
Semi-annual			Eric Schoen	3/23/2022	Kate Trautman and Julia Davydova
Semi-annual			Eric Schoen	3/28/1955	Kate Trautman and [redacted]
Semi-annual			Bridget Nieto	3/30/2022	Kate Trautman and Laura Stone
PAM			Brenda Ogle	3/30/2022	Paul Lindstrom

Spring 2022 No Findings Report					
Type of Inspection	**Building**	**Room #**	**Responsible Party**	**Date of Inspection**	**Inspectors**
Semi-annual	[redacted]		Scott Madill	3/31/2022	Jennifer Borgert and Marilyn Bennett
Semi-annual			Becky Bergo	3/31/2022	Jennifer Borgert and Marilyn Bennett
Semi-annual			Denise Obitz-Cooney	3/31/2022	Jennifer Borgert and Marilyn Bennett
Semi-annual			Brenda Mielke	3/31/2022	Jennifer Borgert and Marilyn Bennett
Semi-annual			Marc Jenkins	3/30/2022	Kate Trautman
PAM			Andrew Nelson	3/24/2022	Jennifer Borgert
Semi-annual			Anna Firshman	3/22/2022	Jennifer Borgert and Walt Tollison
Semi-annual			Antonella Borgatti	3/22/2022	Jennifer Borgert and Walt Tollison
PAM			Andrew Grande	3/30/2022	Megan McCoy
Second Surgery			Anna Lee	3/1/2022	Nima Estharabadi

Spring 2022 Adverse Events							
Type of Inspection	**Building**	**Room #**	**Responsible Party**	**Date of Event**	**Date Reported to IACUC**	**Corrective Action**	**Completion Date**
Adverse Event	[redacted]			10/5/2021	10/13/2021	2 mouse pups found alive in garbage [redacted]; animals euthanized; could not determine owner	To Committee on 11/30/21, closed
Adverse Event				11/15/2021	11/23/2021	Adverse event: dogs identified with medial patellar luxation after lateral arthrotomy	received 11/23/21, to committee 11/30, closed
Adverse Event				11/19/2021	11/29/2021	3 neonatal rat pups were found in a receptacle that is used during cage change-out to recycle dirty bedding. It was suspected that these rat pups were from [redacted]. Cage change out within a room with [redacted] breeding rats was verified [redacted] the previous day. It is suspected the rat pups may have been entangled within the Enviro-dri nesting material and unseen as the cage was changed at that time. Attempts to foster the pups were unsuccessful and the pups were euthanized.	received 11/23/21, to committee 11/30, closed
Adverse Event				9/13/21-1/6/22	2/1/2022	Expired isoflurane found and believed to have been used. Rats experienced labored breathing and some deaths, may be attributable to residual expired iso in vaporizer	Expired isofluane discarded, possible policy change. To FCR 2/8. Policy updated 2/22/22
Adverse Event				2/9/2022	2/25/2022	Pig had severe respiratory depression while being weaned off anesthesia. Emergency actions taken but RAR not directly notified by lab. Pig has recovered	To FCR 3/8, additional info to FCR 3/22. Closed

Spring 2022 Notes to File

Investigator Name	Date of Inspection/submission	Protocol number(s)	Notes written to file
Melanie Graham	submission on 11/12/2021, approved the same day	2001-37750A	Change in experimental dose (DFI 105) that is within 10-fold.
William Elmquist	submitted and approved by Ilana on 11/19/2021	2101-38759A	Added 6 animals to protocol
Sylvain Lesne	change made 12/14/21, approved by Ilana on 12/15/21	1901-36657A	Added 16 mice to protocol
Vivek Verma	change made 1/5/22, approved by Ilana 1/7/22	2109-39442A	Added 20 mice for training on approved procedure
Julia Davydova	submitted 1/24/22, approved by Ilana 1/25/22	2104-38974A	We have added one more Syrian hamster pancreatic cancer cell line (PGHAM1)
Peter Kang	submitted 1/26/22, approved by Ilana 1/28/22	2106-39217A	Added 9 class A mice to protocol
Carrie Haskell-Leuvano	submitted 2/8/22, approved by Ilana 2/9/22	2002-37871A	Added 20 class A mice to protocol
Zhe Chen	submitted 3/1/22, approved by Ilana 3/2/22	2004-38104A	Added 10 class A mice to protocol
Erin Lind	submitted 3/30, approved by Ilana 3/31	2102-38870A	Added 20 class A mice to protocol for training new staff member

Spring 2022 Vet Recommendations

Date of Recommendation	Investigator	Species	Protocol Number	Recommendation
10/5/2021	[redacted]	NHP	1904-36959	This veterinary recommendation is for the use of Ketamine 3mg/kg + Diazepam 0.5 - 1.0 mg/kg IM as an alternative sedation plan.
11/19/2021	Robert Tranquillo	Sheep	2101-38755A	An alternate post-operative anticoagulation medication is being recommended for use to prevent clot formation. For lambs undergoing approved surgical implant procedures they may receive the following (in place of the currently approved 500-2,000IU Heparin SQ evening of the day of surgery, then twice a day (BID) for duration of implant): Enoxaparin 1 mg/kg SQ evening of the day of surgery then twice a day (BID) for 30 days.
12/13/2021	[redacted]	Macaque	2005-38135A	Veterinary approval for alternate route of administration (oral) for diphenhydramine, in order to minimize stress associated with injection.
12/16/2021	Sarah Greising	Pig	1906-37116A	I am recommending an additional option for pre-surgical sedation of 20 mg/kg Ketamine + 2 mg/kg Xylazine, IM. This would be given in place of Telazol/xylazine for sedation prior to induction of anesthesia.
12/20/2021	Matthew Chafee	[redacted]	2102-38868	This veterinary recommendation is for the use of 0.03 mg/kg Dexmedetomidine IM with 0.3 mg/kg Midazolam IM for sedation as an alternative to Ketamine. Antipamizole administered IM (equal volume as Dexmeditomidine) and flumazenil (0.02 mg/kg IV) can be used for reversal.
1/7/2022	Matthew Johnson	[redacted]	2108-39342	For surgical procedures, there is veterinary approval to administer Ceftriaxone at 50mg/kg IV with Saline or LRS with Saline flushes before/after administration. The fluid range for anesthetic events can be broadened to 2-10 ml/kg/hr IV to allow for individual patient variability.
3/8/2022	Robert Wilson	Pig	2012-38723A	Recommending allowing for blood pressure to be monitored during airway stent checks using indirect blood pressure cuffs instead of direct invasive blood pressure monitoring. As the stent checks are relatively short procedures, the risks from placing an arterial cannula for direct BP monitoring may outweigh the benefits from having direct BP monitoring.

Repeat Significant Findings/Self Reports Spring 2022

- ***There were no repeat significant findings during the Spring 2022 Semi-annual Period.***

IMHA Justifications Summary Spring 2022

Investigator	Species	Building	Room number	Protocol Number	Justification
Alejandro, Emilyn	mouse	[redacted]		2106-39213A	We need special housing for this mice that is only available in [redacted] in [redacted]
Aliota, Matthew	mouse			2102-38855A	The experiments to be performed are to be done at [redacted]
Baldo, Caroline	sheep			2003-37957A	Long term survival animals are provided a natural environment at [redacted] This facility is capable of providing housing with pasture and appropriate shelter for a large number of farm animals. This facility also has a veterinary technician living on the grounds. The technician is capable of blood draws, treatments, observing and assessing clinical health, and is GLP competent and maintains the facility under AAALAC and GLP compliancy. Transportation is provided on short notice and during [redacted]. The facility does provide an excellent enriched environment for study animals. In order to maintin the quality and scientific integrity of this study as well as to generate a reliable model for future studies, we are required to follow the regulations set by FDA under 21CFR part 58. Animals may be [redacted] prior to first surgical procedure or for the duration of the study.
Bartolomucci, Alessandro	mouse			2001-37780A, 2006-38206A, 2009-38503A, 2102-38818A	Our studies involve continuous monitoring of mice metabolic functions including daily food intake and body weight monitor as well as weekly body composition and indirect calorimetry analysis. Data acquisition systems are extremely expensive and therefore must be in a secured area. Also, it is absolutely crucial to our research that the animals are monitored in an experimentally controlled environment and that we are able to directly monitor the animals at all times.
Bartolomucci, Alessandro	prairie voles			2102-38818A	Our studies involve continuous monitoring of animal cardiometabolic functions. Importantly, animals fitted with radio telemetry transmitters need to be monitored by visual inspection as well as by verifying the correct function of the software over the entire acquisition period. Data acquisition systems are extremely expensive and therefore must be in a secured area. Also, it is absolutely crucial to our research that the animals are monitored in an experimentally controlled environment and that we are able to directly monitor the animals at all times.

Investigator	Species	Building	Room number	Protocol Number	Justification
Barrell, Emily	horse	[redacted]		1905-37027A, 2107-39259A	Horses are housed in [redacted] presently as there is no RAR housing available; they will continue to be housed in [redacted] for the duration of the study.
Battaglino, Ricardo	mouse			1904-36987A	[redacted] Our studies involve continuous monitoring of mice metabolic functions including body weight monitor. Data acquisition systems are extremely expensive and therefore must be in a secured area. Also, it is absolutely crucial to our research that the animals are monitored in an experimentally controlled environment and that we are able to directly monitor the animals at all times.
Baughn, Anthony	mouse			2104-39054A, 2110-39475A, 2112-39643A, 2201-39719A	Mice will be infected with Mycobacterium tuberculosis, a bacterium that is classified as a Risk Group 3 pathogen due to its high infectivity and transmission via the respiratory route. According to the Biosafety in Microbiological and Biomedical Laboratories 5th ed (CDC), mice infected with M. tuberculosis do not pose an aerosol infection risk and can be maintained under BSL-2 containment. However, the initial infection procedure and processing of infected mice does present a significant aerosol exposure risk and must be conducted inside [redacted]. Standard operating procedures for work in [redacted] and caging equipment used for housing the infected animals are designed to reduce the risk of personnel exposure to infectious organisms during husbandry.
Bee, Mark	frogs			2001-37746A	The main reasons for the long term housing of frogs in this room are the following: A major reason for housing these animals outside of RAR managed facilities concerns the time of day that the animals are used. It is likely that some tests will be conducted at night (e.g., between midnight and 4am) when these frogs are naturally most active. It has been our experience that frogs are often more responsive when tested at night. Second, it is important for our experiments that we maintain some control over the acoustic environment in which the frogs are kept. We may wish to broadcast recordings of natural frog choruses at night in the animal room to acoustically simulate the situation in which females are in natural breeding chorus.

Investigator	Species	Building	Room number	Protocol Number	Justification
Bee, Mark	frogs	[redacted]		2001-37746A	The main reasons for the long term housing of frogs in this room are the following: A major reason for housing these animals outside of RAR managed facilities concerns the time of day that the animals are used. It is likely that some tests will be conducted at night (e.g., between midnight and 4am) when these frogs are naturally most active. It has been our experience that frogs are often more responsive when tested at night. Second, it is important for our experiments that we maintain some control over the acoustic environment in which the frogs are kept. We may wish to broadcast recordings of natural frog choruses at night in the animal room to acoustically simulate the situation in which females are in natural breeding chorus.
Bianco, Alex	horse			1910-37455A	Horses are housed in [redacted] presently as there is no RAR housing available
Bianco, Richard	sheep, pigs			1903-36852A, 1905-37042A, 1905-37103A, 1907-37284A, 1910-37538A, 1911-37578A, 2001-37739A, 2001-377774A, 2002-37883A, 2002-37893A, 2003-37939A, 2003-37937A, 2004-38034A, 2004-37997A, 2004-38078A, 2004-38080A, 2005-38138A, 2009-38424A, 2009-38446A, 2009-38474A, 2103-38906A, 2106-39205A, 2106-	Long term survival animals are provided a natural environment at [redacted] This facility is capable of providing housing with pasture and appropriate shelter for large number of farm animals. This facility also has a veterinary technician living on the grounds. The technician is capable of blood draws, treatment, observing and assessing clinical health and is GLP competent and maintains the facility under AAALAC and GLP compliancy. Transportation is provided on short notice and during off hours. The facility does provide an excellent enriched environment for the test animals. In order to maintain the quality and scientific integrity of this study as well as to generate a reliable model for future studies, we are required to follow the regulations set by FDA under 21CFR part 58.
Bischof, John	fish embryos			2007-38259A, 2104-39002A	Fish embryos will be considered vertebrates after they reach Day 3. They will be housed in [redacted] for observation. After which any surviving fish will be transferred to the [redacted] and housed in tanks and grown out til three months. We will attempt the fish to spawn and evaluate the health of the embryos (non-vertebrates). After which the adult parent fish will be euthanized. The cryopreservation and observation procedures can be handled in [redacted] whereas the housing & care of fish post day 5 can be taken care in the [redacted] The [redacted] has experts and an approved protocol for this procedure (#1506-32642A)

Investigator	Species	Building	Room number	Protocol Number	Justification
Bischof, John	zebrafish embryos	[redacted]		2104-39002A	Fish embryos will be considered vertebrates after they reach Day 3. They will be [redacted] for observation. After which any surviving fish will be transferred to the [redacted] and housed in tanks and grown out til three months. We will attempt the fish to spawn and evaluate the health of the embryos (non-vertebrates). After which the adult parent fish will be euthanized. The cryopreservation and observation procedures can be handled in [redacted] whereas the housing & care of fish post day 5 can be taken care in the [redacted]. The [redacted] has experts and an approved protocol for this procedure (#1506-32642A)
Bold, Tyler	mouse			2203-39863A	Mice will be infected with Mycobacterium tuberculosis, a bacterium that is classified as a Risk Group 3 pathogen due to its high infectivity and transmission via the respiratory route. Mice infected with M. tuberculosis may release infectious bacteria to the air. Therefore, infected mice must be housed inside the [redacted] to contain the highly infectious organisms. Standard operating procedures for work in [redacted] and caging equipment used for housing the infected animals are designed to reduce the risk of personnel exposure to infectious organisms during husbandry.
Camell, Christina	mouse			1909-37389A	[redacted] is required as this will permit the investigators to perform needed experiments (cold challenge for three days)
Camell, Christina	mouse			1909-37389A	We are conducting a study that requires mice to be housed in [redacted] that cannot be serviced by RAR personnel. Therefore it is necessary to obtain clearance for the self management and maintenance of our mice housed in [redacted]
Chen, Xiaoli	mouse			2102-38852A	Our studies involve continuous monitoring of mice metabolic functions including daily food intake and body weight monitor as well as weekly body composition and indirect calorimetry analysis. Data acquisition systems are extremely expensive and therefore must e in a secured area. Also, it is absolutely crucial to our research that the monitored in an experimentally controlled environment and that we are able to directly monitor the animals at all times.

Investigator	Species	Building	Room number	Protocol Number	Justification
Chen, Chi	fish	[redacted]		2105-39108A	We are not aware of services and space in the campus dedicated to the feeding of tilapia, a commercial fish specie for nutrition research. [redacted] has extensive experience in growing tilapia for research. We will grow fingerling (about 5 g) in 10- gallon aquarium, which can be housed in the designated room
Chen, Clark	mouse			1906-37149A	Our experiments would comprise of electrode implantation in the mouse brain. We plan to keep a single mouse in each cage with the cage being specialized to allow enough room for the wires attached to the electrode, such that the wires do not tangle and the mouse gets enough space to roam around inside the cage. This requires special cages and investigator managed housing.
Cvetanovic, Marija	guinea pigs, frog, rat, mouse			2002-37875A	the proposed animals will be used for a teaching lab taught at the [redacted] This is sufficiently far from the Twin Cities that central RAR housing would not be possible
Davydova, Julia	mice			2104-38974A	Imaging with PET/CT using [redacted]
Dudley, Samuel	mouse			2003-37940A	Use of telemetry system
Dougherty, Brendan	rat			2003-37989A	Rats receiving experimental spinal cord injuries receive specific post-op care and monitoring to ensure appropriate recovery. We have found this to be best handled within the laboratory environment by trained staff with access to specific equipment and drugs for the first 24-72 hours.
Ebner, Timothy	mouse			2103-38934A	We request [redacted] of animals undergoing survival surgeries. For [redacted] we request [redacted] for long-term housing of mice undergoing training in behavior tasks and then studied after learning these tasks. Behavioral training requires reverse light-dark cycle, of which [redacted] is outfitted with
Ernst Castro, Nicolas	horse, camelids			2101-38776A	Horses and camelids that are free of infectious disease and are not intended for advanced imaging will be housed at [redacted] There is no RAR houseing for horses.
Ernst Castro, Nicolas	horse, camelids, cow, goat, sheep			2101-38776A	Horses/camelids with potentially infectious disease and/or intended for practice with the advanced imaging modalities will be housed in [redacted]. There is no RAR housing for horses.

Investigator	Species	Building	Room number	Protocol Number	Justification
Fallon, Ann	hamsters	[redacted]		1902-36743A, 2201-39720A	Blood-feeding arthropods cannot be transported to another building to be provided a blood meal.
Ferrington, Deborah	mice			2004-38048A	Rooms listed is where we have a hood set up to perform light stress experiments. These experiments require stringent control of the amount and timing of light so need to be performed outside the norma [redacted] where a 12/12 cycle of light and dark is maintained.
Firshman, Anna	Horse			2008-38349A	RAR does not house horses
Garry, Mary	pigs			1905-37039A	Young piglets require very close attention and specialized care. This level of care is provided by laboratory personnel.
Godden, Sandra	cow			1912-37675A	[redacted] has appropriately sized stalls and appropriate environment for neonatal calves participating on the trial. Furthermore it is very close to our lab where we mix/prepare the colostrum replacement product for administration.
[redacted]	NHP, mouse, rat			1902-36813A, 1902-36830A, 1903-36845A, 1904-36948A, 1905-37026A, 2001-37750A, 2001-37797A, 2003-37936A, 2004-38092A, 2005-38158A, 2006-38229A, 2007-38282A, 2007-38280A, 2008-38343A, 2009-38445A, 2011-38600A, 2102-38846A, 2103-38932A, 2104-38998A, 2104-39058A, 2105-39068A, 2105-39083A	We have modified husbandry practices to be optimal for NHP and rodents used in complex disease models. This [redacted] is capable of exceeding minimum expectations o the guide to provide our animals with varied enrichment, careful husbandry scheduling accommodating the highest level of care and complex environments/interactions that provide the best opportunity for expression of behaviors that represent the species typical repertoire.
Griffith, Thomas	mouse			1906-37113A	We are conducting a study that requires mice to be housed in a [redacted] that cannot be serviced by RAR personnel. Therefore, it is necessary to obtain clearance for the self management and maintenance of our mice housed in this [redacted].

Investigator	Species	Building	Room number	Protocol Number	Justification
Hall, Victoria	birds	[redacted]		2111-39628A	The approved housing for these education raptors by the permitting organizations (US Fish and Wildlife Service and MN Department of Natural Resources) is [redacted] has >40 years experience housing and caring for captive raptors, and staff from the center authored the book that USFWS uses as their standard for captive raptor management.
Harmon, James	sheep			1908-37287A	Long term survival animals are provided a natural environment at [redacted]. This facility is capable of providing housing with pasture and appropriate shelter for a large number of farm animals. This facility also has a veterinary technician living on the grounds. The technician is capable of blood draws, treatments, observing and assessing clinical health, and is GLP competent and maintains the facility under AAALAC and GLP compliancy. Transportation is provided on short notice and during off-hours. The facility does provide an excellent enriched environment for study animals.In order to maintain the quality and scientific integrity of this study as well as to generate a reliable model for future studies, we are required to follow the regulations set by FDA under 21CFRpart 58."
Hart, Geoffrey	mouse			2003-37965A, 2004-38004A	The purpose of these experiments is to try to find a 'fix' for mouse NK cells that are not performing ADCC like human NK cells. Part of the reason for mouse NK cells not performing ADCC might be genetics of their ADCC signaling. We will test that here. Also another reason may be the immune history of the mice may affect NK ability to do ADCC. We will assess the level of ADCC in dirty pet store and B6 co-housed with pet store mice in the [redacted]. We have a hypothesis that levels of infection history or genetics of the mice strain may affect the ADCC response of the NK cells. We will therefore test the ADCC response of pet store mice and also cohoused B6 animals in [redacted]. Our technician has been trained in [redacted] procedures and future people who want to work in this space will do similar training. We will use pet store mice by euthenizing them and taking their spleen, lymph nodes, and/or liver. We will then do ADCC in vitro assays in the [redacted] looking at NK cells. We will do similar for B6 animals that have been cohoused with pet store mice for at least 45 days in [redacted].

Investigator	Species	Building	Room number	Protocol Number	Justification
Haskell-Leuvano, Carrie	mice	[redacted]		2002-37862A, 2004-38021A, 2009-38420A	To house and have access to the specialized TSE mouse metabolic cages described in the protocol. Depending on the experiment (exercise and feeding), the experimental mice need to be continuously housed in these cages for data collection purposes for up to 9 weeks of experimental and 1-2 weeks equilibration
Haskell-Leuvano, Carrie	mice			2002-37862A, 2009-38420A, 2108-39309A (SOP)	To acclimate the mice to a different light schedule and to acclimate the mice to the new room before the behavior testing starts.
Hecht, Stephen	rats			1908-37306A	[redacted] is a University ESO/ISO (external/internal service organization). [redacted] provides animal testing services, as such, the animals are housed in [redacted] and all services are performed in [redacted]
Henke, Craig	mouse			1909-37429A	Hypoxia chamber studies
Hogquist, Kristin	mouse			2004-38042A	We are conducting a study that requires mice to be housed in a [redacted] that cannot be serviced by RAR personnel. Therefore, it is necessary to obtain clearance for the self-management and maintenance of our mice housed in this [redacted]
Hove, Mark	fish			2201-39736A	To complete the life history and behavior studies mussels, animals (fish, amphibians, and aquatic invertebrates) need to be held in aquaria for experiments and observation. Recovery of microscopic mussel larvae from laboratory and naturally infested animals needs to be done in aquaria. Observations made during these studies will be used to improve natural resource management decisions.
Hrabik, Thomas	fish			2103-38889A	Facility was built to specifically house aquatic animals
Ikramuddin, Sayeed	mouse			1912-37686A	Metabolic testing (Indirect Calorimetry, Meal pattern analysis, body composition) are only conducted at [redacted] For these evaluations only 40 mice from this protocol will be operated on and housed at [redacted]
[redacted]	NHP			2110-39514A	Animals must be quarantined after MPTP injection (either IM or intracarotid) and are held in a room adjacent to the colony room in [redacted] During this 72 hour period in which the animal is present, the room will be designated as an IMHA, otherwise it is managed by RAR

Investigator	Species	Building	Room number	Protocol Number	Justification
Kawakami, Yasuhiko	zebra fish	[redacted]		1908-37300A, 2004-38018A	No RAR housing is available for zebrafish. The [redacted] has been established and utilized for years by various research groups, therefore the facility is functionally able to house zebrafish.
Kim, Do-Hyung	mouse			2012-38672A	The protocol includes analysis of mouse physiology, such as the analysis of whole body fat content and food uptake. These assays are available at the [redacted] The mice in the area will be kept 1-2 weeks before the assays are conducted. Once all the assays are completed, mice will be sacrified and tissues will be collected
Kotz, Catherine	mouse			2110-39489A	In our study we will examine effects of optogenic stimulation/inhibition of orexin neurons in context of circadian rhythm. Our studies will include both calorimetry and SPA measurements as well as running wheel studies longer than 24h. Since those kind of observations can not be performed in [redacted] we need to use [redacted]
Kotz, Catherine	mouse			2112-39694A	We are conducting a study that requires mice to be housed in a [redacted] that cannot be serviced by RAR personnel. Therefore, it is necessary to obtain clearance for the self-management and maintenance of our mice housed in this [redacted]
Kozak, Ken	salamanders			2010-38540A	Salamanders cannot be housed in any of the RAR facilities as they do not maintain the proper temperature and humidity for maintaining amphibians.
Krook-Magnuson, Esther	mouse			2011-38662A	Our optogenetic experiments are done with 24-7 video EEG monitoring, and animals are tethered to allow light delivery. This requires special cages and investigator managed housing.
Kurtti, Timothy	hamsters, mouse			1904-36955A, 2108-39373A	Because of difficulties and special facilities needed to contain ticks, and on occasion infected ticks, the animals will be held outside of the primary housing area. When animals are infested with ticks they need to be examined several times daily. Infected animals, cultures and ticks are handled by this team that has extensive training and experience in the handling of human and animal disease agents transmitted by arthropods.

Investigator	Species	Building	Room number	Protocol Number	Justification
Kyba, Michael	mouse	[redacted]		2009-38488A	Our studies involve continuous monitoring of mice metabolic functions including daily food intake and body weight monitor as well as weekly body composition and indirect calorimetry analysis. Data acquisition systems are extremely expensive and therefore must be in a secured area
Langlois, Ryan	mouse, rat, deer mice			2112-39669A	We are conducting a study that requires rats to be housed in a [redacted] that cannot be serviced by RAR personnel. Therefore, it is necessary to obtain clearance for the self-management and maintenance of our rats housed in this [redacted]
Lassig, Amy	mouse			2112-39670A	The smoking machine and the surgery equipment are housed in [redacted]. Mice will be housed in an adjacent room
Lemos, Julia	mouse			1801-35436A, 2012-38674A	Many of the studies conducted in the laboratory entail prior stress or drug exposure and subsequent behavioral or electrophysiology assays. We are requesting that a subset of "in use" animals will be held in the [redacted] (in a room to be shared with [redacted] that is in close proximity to the behavioral and electrophysiology apparati in order to minimize/prevent extraneous forms of environmental stressors introducing variability into our experimental procedures. By reducing variability, this measure will reduce of the number of animals needed to fulfill the experimental mission of our laboratory.
Lemos, Julia	mouse			2012-38674A	We are requesting a second [redacted] in what has been designated as our "stress exposure" room in [redacted]. As we are doing more chronic stressor exposure (up to six weeks - CUMS) that occurs daily, moving the animals back and forth from [redacted] vivarium is likely to introduce untold variance and potential confounds. This room is already equipped (floor, air exchanges) to house mice. We would like to be able to house mice in this room during chronic stress exposure. This will be the exclusive use to this [redacted] Once that animals move to the next phase of the study - physiology or behavior, they will be moved to [redacted]
Liang, Jennifer	zebra fish			2002-37859A, 2111-39552A	The provided housing is a state of the art aquatic system for housing zebrafish. This is not available anywhere else on campus; [redacted] has a state of the art aquatic zebrafish facility that has been running since 2009. There are no other appropriate facilities for zebrafish on campus. Fish before 10-14 dpf will be in petri dishes in incubators [redacted] or on a tray [redacted] After that, they will be in the recirculating aquatic system [redacted]

Investigator	Species	Building	Room number	Protocol Number	Justification
Liang, Yuying	mouse	[redacted]		2011-38659A, 2011-38660A	The immunized mice will be challenged with infectious SARS-CoV-2, which is BSL3 agent. As such, infection and monitoring of the infected mice needs to be conducted in [redacted]
Liang, Yuying	mouse			2011-38660A	The immunized mice will be challenged with infectious SARS-CoV-2, which is BSL3 agent. As such, infection and monitoring of the infected mice needs to be conducted in [redacted]
Liu, Julia	mouse			2002-37905A	Our studies involve monitoring of mouse metabolic functions including daily food intake and body weight as well as weekly body composition and indirect calorimetry analysis. Data acquistion systems are extremely expensive and therefor must be in a secured area. Also, it is absolutely critical to our research that the animals are monitored in an experimentally controlled environment
Lobo, Glenn	zebra fish			2104-38999A	[redacted]
Lokensgard, James	mouse			2001-37808A	The IMHA section will be filled out once we speak with [redacted] regarding housing availability to conduct the Barnes maze.
Lowe, Dawn	mice			1907-37248A	Testing with sensitive physiology equipment that would be better suited in an investigator managed housing area rather than an RAR run facility because access will be limited to those familiar with the study
Lund, Troy	zebra fish			1906-37111A	[redacted]
Madill, Scott	horses			1906-37132A, 1906-37140A, 1906-37178A, 1907-37280A, 2004-38037A	RAR does not have the space to house horses
Mand, Sandy	fish, axolotls, frogs, lizards, snakes, anoles			1907-37285A, 1910-37510A, 2002-37832A, 2006-38181A, 2010-38534A, 2111-39559A	These are animals in [redacted] This IS their primary housing area, but it is not an RAR facility. RAR does not typically house fish.
Mand, Sandy	fish			2002-37832A	These are animals in [redacted] This is their primary housing area but it is not an RAR facility. RAR does not typically house fish. The advantage to housing in this area is that the tanks are fed by well water.

Investigator	Species	Building	Room number	Protocol Number	Justification
Maragi, Frank	fish, amphibians, reptiles	[redacted]	[redacted]	2003-37976A	Fish and reptile species (i.e. turtles) are used in the [redacted] to display animals discussed in [redacted] It is necessary to house them in [redacted] for students to observe during course instruction and discussion.
Mashek, Doug	mouse	[redacted]	[redacted]	2003-37921A, 2007-38274A	Our studies involve continuous monitoring of mice metabolic functions including indirect calorimetry analysis and locomotion. Data acquisition systems are extremely expensive and therefore must be in a secured area. Also, it is absolutely crucial to our research that the animals are monitored in an experimentally controlled environment and that we are able to directly monitor the animals at all times.
Mashek, Doug	mouse	[redacted]	[redacted]	2003-37921A, 2007-38274A	Our studies involve continuous monitoring of mice metabolic functions including indirect calorimetry analysis and locomotion. Data acquisition systems are extremely expensive and therefore must be in a secured area. Also, it is absolutely crucial to our research that the animals are monitored in an experimentally controlled environment and that we are able to directly monitor the animals at all times.
Masino, Mark	zebra fish	[redacted]	[redacted]	1904-36944A, 1905-37035A, 2104-38993A	Usage of zebrafish as a model organism requires the ability to breed fish to produce embryos for experimentation. As embryo production must be large enough to provide statistically meaningful results and embryos must be used within a few minutes of fertilization, in-house production of embryos is the only solution. This [redacted] will also be housing and caring for additional animals (zebrafish) that are found on other protocols.
Masino, Mark	zebra fish embryos	[redacted]	[redacted]	1905-37035A	Our lab uses embryos/larvae from [redacted] for experiments, so we house them in the lab.
Masopust, David	mouse	[redacted]	[redacted]	1910-37451A, 1910-37452A	We are conducting a study that requires mice to be housed in a [redacted] that cannot be serviced by RAR personnel. Therefore, it is necessary to obtain clearance for the self-management and maintenance of our mice housed in this [redacted]
Masopust, David	hamster	[redacted]	[redacted]	1910-37451A	Hamsters will be infected with SARS-CoV2 and this needs to be done in [redacted]
McGaugh, Suzanne	fish	[redacted]	[redacted]	1906-37158A, 1906-37186A, 2002-37827A	These animals need to be in a restricted and solitary space so we can easily set up and conduct behavior assays with them. RAR does not typically house fish.

Investigator	Species	Building	Room number	Protocol Number	Justification
McGaugh, Suzanne	fish	[redacted]		1906-37158A, 1906-37186A, 2002-37827A	These animals need to be in a restricted and solitary space so we can easily set up and conduct behavior assays with them. RAR does not typically house fish.
McGaugh, Suzanne	birds			2007-38317A	We house blue jays and starlings in our facility in the [redacted] so that we can study their behavior as described in the accompanying protocol. [redacted] facility allows us to maintain our blue jay colony in a large room adjacent to the procedure rooms; that is also readily accessible to our offices and data analysis facilities.
McGaugh, Suzanne	fish			2002-37827A	Facility was built to specifically house aquatic aimals.
McGregor, Christopher	pigs			2101-38791A	Long term survival animals are provided a natural environment at [redacted] This facility is capable of providing housing with pasture and appropriate shelter for a large number of farm animals. This facility also has a veterinary technician living on the grounds. The technician is capable of blood draws, treatments, observing and assessing clinical health, and is GLP competent and maintains the facility under AAALAC and GLP compliancy. Transportation is provided on short notice and during [redacted]. The facility does provide an excellent enriched environment for study animals.In order to maintain the quality and scientific integrity of this study as well as to generate a reliable model for future studies, we are required to follow the regulations set by FDA under 21CFRpart 58."
McPherson, Scott	mouse			2002-37909A	Light stress is considered a factor in AMD development and thus we plan experiments that involve light stress. Normal RAR housing is not sufficient to induce light stress. Conversely, we have experiments, such as electroretinograph (ERG) analysis, that must be done in he dark with dark adapted animals. Again normal RAR housing is not totally dark and/or dark long enough for dark adaption.
Menken, Jennifer	snake, turtle, salamander, toad, gecko, fish			1912-37695A	The animals listed are part of the educational programming at [redacted]. They are used for display in [redacted] as well as for demonstration in on-site and off-site classroom room programs. They are an important part of our programming with the public, they are used to demonstrate anatomy, ecology, evolutionary adaptations and biological diversity

Investigator	Species	Building	Room number	Protocol Number	Justification
Mensinger, Allen	fish, frog	[redacted]		2108-39313A	The course tried to integrate physiology with behavior. We house the frogs in [redacted] so the students can observe their behavior and correlate with the experiments. The students are also instructed in basic animal handling and care techniques and by having the frogs in [redacted], we can teach the students this aspect of a science lab; we prefer the students be able to observe the behavior of the weakly electric fish
Mensinger, Allen	fish			1903-36856A, 2011-38640A	Facility was built to specifically house aquatic animals
Mensinger, Allen	fish			2103-38930A	Facility was built to specifically house aquatic animals
Mermelstein, Paul	rat , mice			2101-38780A	We plan to perform behavioral testing on rats in specially-constructed operant chambers as described in Experiment 10 of the approved protocol. This testing will be performed in [redacted], which have been specifically modified to allow us to run our behavioral testing protocol. The only housing for rats in [redacted], and it will not be possible for us to maintain SPF within our operant chambers. Furthermore, SPF procedures would provide additional stress to our rats, and potentially interfere with the results of our behavioral testing.
Mermelstein, Paul	mice			2101-38780A	Our lab studies the effects of environmental experience on brain function and behavior. Our recent studies have shown that even mild stress (handling, injections, and/or novelty exposure) can have significant impact on our outcome measures. The [redacted] will enable us to minimize unwanted stress (e.g., transport from housing colony to lab) and control our animals' environment to reduce variability in our data.
Metzger, Joseph	mouse			2004-38031A	Our lab recently moved to [redacted] is much more accessible for our lab. Previously we have used the [redacted]; 2004-38031A: Running wheel equipment access
More, Swati	mouse			1906-37128A	The telemetry system is only offered at [redacted] so this will be the only place the core offers this service. The mice must be housed in this area during the complete period of the study and they can not be taking in and out to avoid any stress to the mice. We will use the husbandary SOP for the [redacted], 1711-35305A. The animal will be housed for upto 3 months in this area based on the experimental design described below.

Investigator	Species	Building	Room number	Protocol Number	Justification
Munderloh, Ulrike	mice, hamster	[redacted]		1905-37105A, 2103-38899A	Because of difficulties and special facilities needed to contain ticks, and on occasion infected ticks, the animals will be held outside of the primary housing area. When animals are infested with ticks they need to be examined several times daily.
Nelson, Dwight	sheep			2002-37883A	Long term survival animals are provided a natural environment at [redacted] This facility is capable of providing housing with pasture and appropriate shelter for a large number of farm animals. This facility also has a veterinary technician living on the grounds. The technician is capable of blood draws, treatments, observing and assessing clinical health, and is GLP competent and maintains the facility under AAALAC and GLP compliancy. Transportation is provided on short notice and during off-hours. The facility does provide an excellent enriched environment for study animals. In order to maintin the quality and scientific integrity of this study as well as to generate a reliable model for future studies, we are required to follow the regulations set by FDA under 21CFR part 58. Animals may be housed at [redacted] prior to first surgical procedure or for the duration of the study.
Netoff, Tay	rat			2004-38001A	We need to video record the rats 24/7 for 15 days to find whether or not they have behavioral seizures
Netoff, Tay	mice			2004-38031A	Running wheel equipment access
Niedernhofer, Laura	mouse			2003-37982A, 2107-39262A	We are conducting a study that requires mice to be housed in a [redacted] that cannot be serviced by RAR personnel. Therefore, it is necessary to obtain clearance for the self-management and maintenance of our mice housed in this [redacted].
Ondrey, Frank	mouse			1902-36832A, 1905-37092A, 1912-37696A, 1909-37376A, 2002-37849A, 2004-38081A, 2102-38881A, 2107-39298A, 2202-39805A	We have had our own research facility [redacted] for more than 40 years. This is our own research project, and specialized equipment is housed in the facility.
Osborn, John	rat			2008-38368A	Mice involved in this protocol will be instrumented with radio telemeter equipment which requires constant monitoring and measurement. In addition, animals waiting to be implanted with this equipment will also be housed in this room to reduce the stress of being moved prior to the study

Investigator	Species	Building	Room number	Protocol Number	Justification
Osborn, John	sheep, pigs	[redacted]		2002-37873A, 2006-38203A, 2008-38392A, 2008-38393A, 2009-38418A, 2011-38597A, 2106-39189A	Long term survival animals are provided a natural environment at [redacted] This facility is capable of providing housing with pasture and appropriate shelter for a large number of farm animals. This facility also has a veterinary technician living on the grounds. The technician is capable of blood draws, treatments, observing and assessing clinical health, and is GLP competent and maintains the facility under AAALAC and GLP compliancy. Transportation is provided on short notice and during off-hours. The facility does provide an excellent enriched environment for study animals.
Pang, Hongbo	mouse			2107-39268A	Animals are injected with radiotracer and will be "hot", thus can not be housed in [redacted]
Paulsen, Megan	mouse			2007-38296A	Studies involve continuous monitoring of mice metabolic functions including daily food intake and body weight monitor as well as weekly body composition and indirect calorimetry analysis. Data acquisition systems are extremely expensive and therefore must be in a secured area. Also, it is absolutely crucial to our research that the animals are monitored in an experimentally controlled environment and that we are able to directly monitor the animals at all times.
Peterson, Lisa	mouse			1910-37473A	The equipment for the exposure of animals to the inhaled aldehyde vapors is in this location, which is [redacted]. [redacted] is an External Service Organization/Internal Service Organization for the University. This study is an ISO project.
Ponder, Julia	birds			1906-37122A	[redacted] has cages, flight rooms and facilities specifically designed for the safe housing of raptors as well as technical staff with extensive experience in managing these birds. Specific needs include cage size, limited external visibility and perch designs
Potter, Lincoln	mouse			1906-37164A	mice involved in this protocol will be instrumented with radio telemeter equipment which requires constant monitoring and measurement. This equipment is housed in [redacted] In addition, animals waiting to be implanted with this equipment will also be housed in this room to reduce the stress of being moved prior to the study
Revelo, Xavier	mice			2103-38896A	Mice will be housed in the [redacted] for running wheel and calorimetry procedures that require specialized equipment in [redacted]

Investigator	Species	Building	Room number	Protocol Number	Justification
Ruan, Hai-Bin	mice	[redacted]		2112-39682A	Our studies involve continuous monitoring of mice metabolic functions including daily food intake and body weight monitor as well as weekly body composition and indirect calorimetry analysis. Data acquisition systems are extremely expensive and therefore must be in a secured area. Also, it is absolutely crucial to our research that the animals are monitored in an experimentally controlled environment and that we are able to directly monitor the animals at all times.
Sanders, Mark	Mice			2106-39147A	This is the Housing SOP for the [redacted] Animals are administered radiolabeled antibodies. Housing in [redacted] enables them to be kept in a remote, shield location while radioactivity is present.
Schuldt, Nathan	mice			2106-39195A	We are conducting a study that requires mice to be housed in a [redacted] that cannot be serviced by RAR personnel. Therefore, it is necessary to obtain clearance for the self-management and maintenance of our mice housed in this [redacted]
Schrank, Amy	fish			2111-39553A	This lab is biosecure and has the equipment needed to complete this project; RAR does not house fish
Schwertfeger, Kaylee	mouse			1909-37381A	We are conducting a study that requires mice to be housed in a [redacted] that cannot be serviced by RAR personnel. Therefore, it is necessary to obtain clearance for the self management and maintenance of our mice housed in this [redacted]
Shimizu, Yoji	mouse			2011-38649A	We are conducting a study that requires mice to be housed in a [redacted] that cannot be serviced by RAR personnel. Therefore, it is necessary to obtain clearance for the self management and maintenance of our mice housed in this [redacted]
Shostell, Joseph	fish			1911-37642A	[redacted] offers a more restricted research space away from high-traffic teaching classrooms. Thus, it provides a more controlled area for the housed fish. This [redacted] area also offers the height we need for a hanging design and offers ambient conditions similar to an outside summer environment.
Smanski, Michael	fish			1904-36985A	There is no [redacted] housing for zebrafish on campus

Investigator	Species	Building	Room number	Protocol Number	Justification
Smanski, Michael	fish	[redacted]		1904-36985A	There are no [redacted] facilities on campus for fathead minnows or carp.Fish need to be held in aquaria for experiments and regular observation
Sorensen, Peter	fish			2011-38629A	RAR does not possess fish holding facilities that are either large enough or have well water for our carps
Sorensen, Peter	fish			2011-38629A	RAR does not possess fish holding facilities that are either large enough or have well water for our carps.
Stromnes, Ingunn	mouse			2005-38115A	We are conducting a study that requires mice to be housed in [redacted] that cannot be serviced by RAR personnel. Therefore, it is necessary to obtain clearance for the self-management and maintenance of our mice housed in [redacted]
Subramanian, Subree	mouse			2107-39273A	The [redacted] device is large and cannot accommodate to the RAR room racks
Thayer, Stanley	rat and mouse			1911-37610A	These animals will be used for overnight, 24 hour sessions of EEG testing. Moving them back and forth from [redacted] will induce stress. Animals housed for three weeks [redacted]; These animals will be housed in [redacted] during testing. Moving them back and forth between [redacted] and standard housing will induce stress.
Thayer, Stanley	mouse			1911-37610A	These animals will be housed in [redacted] during testing. Moving them back and forth between [redacted] and standard housing will induce stress.
Thomas, Mark	mice			2011-38591A	Our lab studies the effects of environmental experience on brain function. Our recent studies have shown that even mild stress (handling, injections and/or novelty exposure) can have significant impact on our outcome measures. [redacted] will enable us to minimize unwanted stress (e.g. transport from housing colony to lab) and control our animals' environment to reduce variability in our data

Investigator	Species	Building	Room number	Protocol Number	Justification
Tischler, Anna	mice	[redacted]	[redacted]	1912-37660A, 2004-38090A, 2005-38161A, 2102-38860A, 2107-39247A	Mice will be infected with Mycobacterium tuberculosis, a bacterium that is classified as a Risk Group 3 pathogen due to its high infectivity and transmission via the respiratory route. Mice infected with M. tuberculosis may release infectious bacteria to the air. Therefore, infected mice must be housed inside [redacted] to contain the highly infectious organisms. Standard operating procedures for work in [redacted] and caging equipment used for housing the infected animals are designed to reduce the risk of personnel exposure to infectious organisms during husbandry.
Todd, Jeffrey	dog			1906-37145A	cats and dogs are only hospitalized [redacted] until they are adopted or fostered as part of the blood donor program
Todd, Jeffrey	cat			1906-37145A	cats and dogs are only hospitalized [redacted] until they are adopted or fostered as part of the blood donor program
Toth, Ferenc	Goat			1904-36947A	Goats will be housed at [redacted] in the postoperative period so that goats have the ability to live in a natural environment suitable to farm animals.
Townsend, DeWayne	mice			2110-39502A	Some of the studies proposed use specialized equipment or procedures that cannot be used in standard RAR managed rooms.
Tranquillo, Robert	sheep			2001-37778A, 2007-38301A, 2009-38475A, 2101-38755A	[redacted] is able to provide a natural environment complete with outstanding methods of care, husbandry and research practices. It is capable of providing housing for a large number of animals with extended survival time-points. [redacted] is GLP compliant and is inspected biannually by University of MN IACUC and monthly by RAR veterinarians
Tretyakova, Natalia	mouse			2004-38077A	The equipment for the exposure of animals for the inhalations is in this location, which is [redacted] is an External Service Organization/Internal Service Organization for the University. This study is an ISO project.
[redacted]	NHP			1904-36959A	Animals must be quarantined after MPTP injection (either IM or intracarotid) and are held in a room adjacent to the colony room in [redacted] During this 72 hour period in which the animal is present, the room will be designated as an IMHA, otherwise it is managed by RAR

Investigator	Species	Building	Room number	Protocol Number	Justification
Ward, John	frogs	[redacted]		1902-36788A	Housing allows daily post operative monitoring [redacted] to ensure that the frog does not have negative consequences to surgery
Waye, Heather	snakes, amphibians			1907-37208A, 2002-37863A, 2010-38529A, 2010-38559A, 2201-39710A	These animals are housed [redacted] where they are used for display purposes or experimental subjects in a variety of classroom situations/laboratory research
Wefel, Sara	horse			2008-38340A	RAR does not house horses
Willette, Michelle	quail			1908-37293A, 2202-39814A	Quail approximate the size of many of the companion birds seen in practice by veterinarians. Quail is also a component of the diet of many native raptor species that prey on birds in the wild. Young (hatch year) raptors that have been rehabilitated and are being prepared for release need to demonstrate the ability to identify and capture prey as a criteria for being returned to the wild; this requires the use of live quail. We will be using quail that are surplus to the laboratories for this purpose. We have the knowledge and resources to house the quail for this short period of time, and it reduces their stress being adjacent to our surgical and raptor facilities rather than needing to be transported back and forth on a frequent basis.
Yee, Douglas	mouse			2106-39190A	This area (suite) houses the [redacted] that we would like to utilize for our studies on the high fat/ high sugar diet. We would like to be able to monitor their body fat composition. This equipment is extremely expensive and therefore must be in a secured area
Zordoky, Beshay	mouse			2106-39176A	The mice for the stress studies will be housed in [redacted] because our studies involve continuous monitoring of mice metabolic functions including daily food intake and body weight monitor. Also, it is absolutely crucial to our research that the animals are monitored in an experimentally controlled environment and that we are able to directtly monitor the animals at all times for the behavioral assessment.

Reduced Post Approval Monitoring (PAM) Inspection Summary

Spring 2022 REDUCED POST APPROVAL MONITORING INSPECTION RESULTS FROM LAST SIX MONTHS (October 2021—March 2022)

#DID NOT QUALIFY OR COMPLETED: 151
#QUALIFIED FOR REDUCED PAM: 39
#QUALIFIED BUT STAGGERED: 0
NO ACTIVE ANIMAL WORK, INACTIVE PROTOCOL, ETC…: 59

Fall 2021 REDUCED POST APPROVAL MONITORING INSPECTION RESULTS FROM LAST SIX MONTHS (April 2021—September 2021)

#DID NOT QUALIFY OR COMPLETED: 98
#QUALIFIED FOR REDUCED PAM: 0
#QUALIFIED BUT STAGGERED: 0
NO ACTIVE ANIMAL WORK, INACTIVE PROTOCOL, ETC…: 75
Note: There were no PIs that qualified for reduced PAM frequency during the Fall 2021 semi-annual period because PAM inspections were suspended last year during COVID making it necessary for everyone to receive a PAM inspection this year.

Spring 2021 REDUCED POST APPROVAL MONITORING INSPECTION RESULTS FROM LAST SIX MONTHS (October 2020—March 2021)

#DID NOT QUALIFY OR COMPLETED: 162
#QUALIFIED FOR REDUCED PAM: 32
#QUALIFIED BUT STAGGERED: 0
NO ACTIVE ANIMAL WORK, INACTIVE PROTOCOL, ETC…: 85

Fall 2020 REDUCED POST APPROVAL MONITORING INSPECTION RESULTS FROM LAST SIX MONTHS (April 2020—September 2020)

******Post Approval Monitoring Inspections were suspended due to reduced University operations during COVID 19. These inspections will resume October 2020******

Spring 2020 REDUCED POST APPROVAL MONITORING INSPECTION RESULTS FROM LAST SIX MONTHS (October 2019—March 2020)

#DID NOT QUALIFY OR COMPLETED: 111
#QUALIFIED FOR REDUCED PAM: 35
#QUALIFIED BUT STAGGERED: 0
NO ACTIVE ANIMAL WORK, INACTIVE PROTOCOL, ETC…: 63

Fall 2019 REDUCED POST APPROVAL MONITORING INSPECTION RESULTS FROM LAST SIX MONTHS (April 2019—September 2019)

#DID NOT QUALIFY OR COMPLETED: 145
#QUALIFIED FOR REDUCED PAM: 39
#QUALIFIED BUT STAGGERED: 0
NO ACTIVE ANIMAL WORK, INACTIVE PROTOCOL, ETC…: 74

Facility Inspection Dates

Facility Name	Facility Code	Fall 2021	Spring 2022
[redacted]	1	8/25/2021	1/21/2022
	1	7/13/2021	1/26/2022
	1	4/14/2021	10/13/2021
	1	8/25/2021	1/21/2022
	2	7/13/2021	1/26/2022
	2	7/13/2021	1/26/2022
	3	10/26/2021	3/15/2022 and 4/7/22
	4	7/13/2021	N/A - Facility closed
	5	10/26/2021	3/23/22 and 3/28/22
	6	6/29/2021	1/7/2022
	7	7/9/2021 & 7/13/21	1/24/2022
	8	6/29/2021	12/10/2021
	10	4/29/2021	10/26/2021
	10	4/29/2021	10/26/2021
	10	4/23/2021	10/28/2021
	10	4/23/2021	10/28/2021
	10	4/23/2021	10/28/2021
	10	5/20/2021	11/29/2021
	10	9/27/2021	3/30/2022
	12	5/21/2021	N/A - Facility closed
	12	6/18/2021	12/17/2021
		5/21/2021	11/8/2021
	12	10/27/2021	3/31/2022
	12	N/A - No surgery since last inspection	3/22/2022
	12	9/27/2021	3/10/2022
	13	4/12/2021	10/15/21 and 10/18/21
	14	7/22/2021	2/18/2022
	15	9/16/2021	3/11/2022
	16	5/21/2021	11/17/2021
	17	7/23/2021	1/13/2022
	18	6/9/2021	12/16/2021

Facility Name	Facility Code	Fall 2021	Spring 2022
[redacted]	19	4/27/2021	11/1/2021
	20	Due to the pandemic, classes cancelled, no live animal work conducted	Not applicable, no housing
	21	7/28/2021	1/31/2022
	22	7/15/2021	1/31/2022
	22	7/15/2021	1/21/2022
		7/21/2021 and 9/1/21	2/17/2022
		N/A - No Housing	N/A - No Housing
		7/13/2021	1/21/2022
		9/22/2021	N/A - No Housing
		7/28/2021	1/31/2022
		9/29/2021	3/28/2022
		7/22/2021	2/10/2022
		6/9/2021	12/16/2021
		10/8/2021	3/11/2022
		10/8/2021	3/11/2022
		Not Applicable (facility closed)	2/17/2022
		8/26/2021	2/11/2022
		No animals housed; Not applicable	No animals housed; Not applicable
		5/17/2021	11/15/2021
		5/20/2021	11/22/2021
		10/19/2021	3/4/2022
		6/18/2021	12/17/2021
		Not applicable (no further housing)	Not applicable (no further housing)
		6/10/2021	12/16/2021

Facility Name	Facility Code	Fall 2021	Spring 2022
[redacted]		No animals housed; Not applicable	No animals housed; Not applicable
		4/9/2021	10/19/2021
		Not applicable (no further housing)	Not applicable (no further housing)
		5/18/2021	Not applicable (no further housing)
		8/6/2021	2/23/2022
		7/22/2021	2/11/2022
		6/24/2021	12/15/2021
		5/19/2021	11/15/2021
		7/30/2021	2/8/2022
		10/12/2021	N/A - No Housing
		10/12/2021	N/A - No Housing
		6/23/2021	12/6/2021
		8/20/2021	2/21/2022
		Not applicable-no housing	Not applicable-no housing
		9/20/2021	12/21/2021 and 3/18/22
		10/27/2021	3/31/2022
		10/27/2021	3/31/2022
		Not applicable	Not applicable
		Not applicable (no further housing)	Not applicable (no further housing)
		Not applicable/ no fish at this time	Not applicable/ no fish at this time
		7/13/2021	N/A - No Housing
		Not applicable	1/7/2022
		Not applicable--no housing	Not applicable--no housing

Facility Name	Facility Code	Fall 2021	Spring 2022
[redacted]		9/22/21 and 9/23/21	3/23/2022
		4/26/2021	10/29/2021
		4/26/2021	10/29/2021
		5/17/2021	11/19/2021
		5/17/2021	11/19/2021
		5/11/2021	12/13/2021
		5/5/2021	2/3/2022
		Not applicable	Not applicable (CLOSED)
		6/28/2021	12/20/2021
		6/11/2021	2/10/2022
		6/30/2021	2/3/2022
		Not applicable	Not applicable
		Not applicable	Not applicable

Approved Guideline Exceptions Spring 2022

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
1810-36447A	Rothwell, Patrick	Mice	MULTIPLE SURGERY	Project 1: scientific objectives require strict control over the total duration of chronic morphine exposure (7 days), making it scientifically necessary to remove the pumps at this time point. The pumps must also be removed prior to testing morphine conditioned place preference, to avoid any interference with mobility during this behavioral test. Projects 2 and 3: it takes time to accumulate sufficient opsin expression in brain cells to enable optogenetic stimulation. Thus, it becomes necessary to wait two weeks after intracranial virus injection before beginning opioid exposure, including implantation of pumps for opioid administration. In order to tightly control the total duration of chronic opioid exposure (7 days), it is also scientifically necessary to surgically remove pumps at the end of this period. Project 4: recordings cannot be reliably performed until 7-14 days after surgery, which provides time for brain tissue to settle, so that individual brain cells are located in a stable position relative to the electrode.
1812-36610A	Lesne, Sylvain	Mice	MULTIPLE SURGERY	One surgery is to perform AAV injections and the other is to perform the subsequent cranial window surgery. These are essential components of the same project. There will be no additional pain or distress due to having an additional survival surgery and only animals that are deemed healthy post the initial surgery will move onto the next one. We don't predict that there would be any functional deficit incurred on the mice undergoing both surgeries.
1812-36610A	Lesne, Sylvain	Mice	SOCIAL HOUSING	In the event that mice will be subjected to the Barnes Maze (BCM), then the Y-maze, then the Novel Object Recognition task (NOR) - it is possible that a given mouse could be singly housed for 4 weeks time. 2 weeks for the (BCM), and 2 weeks total for the Y-maze (1 day protocol) and (NOR) tasks. Again, the (NOR) task is a two week test when you consider a week of acclimation (with a ping pong ball) followed the next week by 4 days of habituation and testing. This sequence of tasks will depend on whether the Y-maze and (NOR) pilot tests provide usable data.
1812-36628A	Osborn Jr, John	Rat, Mice	MULTIPLE SURGERY	Some surgeries must be performed separately to establish, for example, baseline blood pressures. The DOCA model requires several surgeries to establish the model. Adverse effects of multiple surgeries will be minimized by waiting an adequate amount of time between surgeries and careful daily monitoring of animals to be sure that a full recovery is achieved between surgeries. Pain medication will be delivered 3 days post op at a minimum. Distress will be minimized by additional soft bedding during recovery.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
1812-36628A	Osborn Jr, John	Rat, Mice	ENVIRONMENTAL ENRICHMENT	Exemption from social housing when transmitters are implanted.
1812-36628A	Osborn Jr, John	Rat, Mice	SOCIAL HOUSING	Animals instrumented with telemeters will need to be single housed for recording of blood pressure.
1812-36628A	Osborn Jr, John	Rat, Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	We want to use Urethane and Ketamine/Inactin as different anesthetics during our nerve recording prep. We believe that the anesthesia is having a large effect on our data so testing different anesthetic methods (all previously published) will assist in interpreting our data.
1901-36657A	Lesne, Sylvain	Mice	SOCIAL HOUSING	Mice that are returned to cages after maze trials can often start fighting, which can make behavioral data not usable. We therefore need to singly house all animals that will be behaviorally characterized. Animals will be acclimated to single housing the week before behavioral tests begin. Thus, animals may be singly housed for up to two weeks and no longer.
1901-36697A	Patterson, Ned	Dog	PRIMARY ENCLOSURE SIZE/SPACE	Yes. The size of the ICU kennels are intended for animals which are in need of intensive care and are kept in a more restricted space to keep them quiet. These animals on this protocol will be recovering from surgery therefore should be kept quiet until fully recovered.
1901-36697A	Patterson, Ned	Dog	MULTIPLE SURGERY	The main objectives for all the studies need intracranial EEG monitoring and the device working. If a device fails, then the study would end for that dog and a new dog obtained, the supply of research dogs with spontaneous seizures is not large, and to also reduce numbers of dogs we plan to re-implant the device if needed, Under the previous protocol this was permitted and we did replace the device in 2 dogs. Going forward, as some of these dogs are and will be here for years, the PI will consult with the RAR vet about any concurrent health conditions, and the current seizure status of the dog before going ahead with a second intracranial surgery, and not proceeding if the concurrent conditions are deemed to be serious enough that the dog may not do well with the surgery and/or may not survive long enough post surgery to be valuable to the results. Specifically No second intracranial surgery will be performed without consultation with and approval by the RAR area vet, with their assessment that the dog likely will do fine with the surgery and have a good long term quality of life for 6 months or more after the surgery. There will be at max 2 intracranial surgeries total under this protocol. These procedures are so that the dog can be adopted. (Implant removal, neutering, dental cleaning before adoption)
1901-36697A	Patterson, Ned	Dog	ENVIRONMENTAL ENRICHMENT	As the dogs are recovering from surgery, and need to be quiet and not have the EEG leads in the neck disturbed so for the 1-3 days of recovery they need to be keep quiet.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
1901-36717A	[redacted]	Nonhuman Primate (Macaques)	MULTIPLE SURGERY	Required to record the needed number of neurons. First recording chamber does not produce any deficits and placing additional chambers maximizes the use of the animals. Additional surgery is done only if the animal is in excellent health. Having the ability to reposition the chamber greatly increases efficiency and productivity. Animals require extensive training periods (6-18 months) to master the voluntary movement paradigm. The usefulness of a single recording site is limited because the ability to record single units in the same area decreases over time. Moving the recording chamber increases the yield of single neurons in any one animal and minimizes the number of animals required. Posts and chambers may loosen over time and require tightening or reattachment. Animal was previously implanted with two head restraint posts of a type that we do not expect to continue using in favor of new technology. This animal is also being treated for persistent infections at the post margins by lab and RAR staff. Upon consultation vet, advised that the post be removed prior to implantation of any other type of head post or recording chamber. This explant procedure will allow the tissue to clear the infection and heal before moving forward with the new headpost and recording chamber implant procedure. Explantation is also likely to improve the outcome of our scientific goals as the animal, with the metal posts removed, can then undergo MR imaging. This imaging will greatly improve the targeting of our electrodes in deep cerebellar structures.
1901-36717A	[redacted]	Nonhuman Primate (Macaques)	FOOD/FLUID RESTRICTION RECORDKEEPING	Food and water are provided by both RAR and the [redacted] lab staff as detailed in the attachment: Primate SOP Food and Water.
1901-36717A	[redacted]	Nonhuman Primate (Macaques)	SOCIAL HOUSING	Pair housing of these animals could potentially cause injury to the hands or fingers during altercations. Any injury to the arm/hand would put our research at risk. A single injury to a hand or arm could nullify years of training, data collection, and future funding because data must be duplicated across both limbs before the research can be considered for publication. Also, pair housing could result in damage to the recording chambers, which could be catastrophic to the animal's health. Therefore, pair house is challenging in these animals. Two of these animals are already pair-housed and it is expected that they will remain as a pair, unless there are concerns about the behaviors listed above. The third animal is not likely to be suited to pair-housing, however if a suitable cage mate was available, pair-housing would be attempted.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
1902-36813A	[redacted]	Nonhuman Primate (Macaques)	MULTIPLE SURGERY	Animals have previously been instrumented with a central vascular access port. The placement of a vascular access port is considered a minor surgical procedure (peripheral limb, not entering a major body cavity), essentially similar to routine catheter placement with the notable exception that the access site is placed underneath the skin. VAPs improve safety, and increase animal comfort when intermittent or recurrent venous access is required by avoiding painful 'catheter starts'. VAPs also allow NHPs to participate fully in enrichment programs and social group activities without the restrictions inherent in conventional approaches. This procedure is required to infuse the test therapy under investigation in this study, and is designed to mimic the approach intended in subsequent clinical trials. All surgical procedures (and associated support) are performed by highly trained individuals using multimodal anesthesia and analgesics.
1902-36831A	Newman, Eric	Mice, Rat	EUTHANASIA METHOD	Staff are well-trained on the cervical dislocation procedure.Training records are maintained and updated to ensured staff are qualified to perform the procedure. Cervical dislocation in conscious condition provides a means to recover tissues and body fluids that are uncontaminated by anesthesia. It also provides a means of obtaining anatomically undamaged brain tissue for study. Handling and restraint required to perform this technique may be stressful to animals.The equipment used to perform cervical dislocation will be maintained in good working condition. Staffs are well-trained on decapitation procedure.Training record is maintained and updated to ensured staff are qualified to perform the procedure. Decapitation provides a means to recover tissues and body fluids that are chemically uncontaminated when performed without anesthesia. It also provides a means of obtaining anatomically undamaged brain tissue for study. Handling and restraint required to perform this technique may be distressful to animals.The equipment used to perform decapitation will be maintained in good working condition to ensure sharpness of blades and proper alignment and contact between blades.Between decapitation sessions, and once gross contaminants have been removed, the equipment should be thoroughly cleaned. Rinse a final time with 70% alcohol to ensure evaporation and reduce the need to hand dry the equipment. Replace new scissors every year.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
1902-36831A	Newman, Eric	Mice, Rat	NON-PHARMACAUTICAL GRADE COMPOUNDS	Urethane is used alone or in combination with other drugs to produce anesthesia in laboratory animals. One of the key advantages in utilizing urethane is that it provides an extended period of anesthesia with minimal physiological changes. The long lasting and stable anesthesia induced by intravenous administration of urethane produces minimal related cardiovascular and respiratory depression. Another positive characteristic of urethane is that is produces a much deeper degree of analgesia than many other anesthetics.
1903-36840A	Chan, Sunny	Mice	MULTIPLE SURGERY	In order to achieve successful engraftment of muscle stem and progenitor cells the muscle has to undergo an injury two days before transplantation to induce an essential injury response in the tissue. Muscle injection injury will be performed as described in the previous section, pain and distress in the animals will be monitored for 3 days post-procedure. Because the effects of analgesic compounds on muscle regeneration are unknown, and because we want to examine the role of inflammatory cells in skeletal muscle damage/regeneration, we cannot use analgesics for this procedure.
1903-36840A	Chan, Sunny	Mice	72 HOUR POST-OP ANALGESIA POLICY	Because the effects of analgesic compounds on muscle regeneration are unknown, and because we want to examine the role of inflammatory cells in skeletal muscle damage/regeneration, we cannot use analgesics for this procedure.
1903-36840A	Chan, Sunny	Mice	EUTHANASIA METHOD	Embryos 15 days of gestation or greater will be decapitated.
1903-36847A	Vannucci, Fabio	Pig (Agricultural)	EUTHANASIA METHOD	Per the AVMA guidelines, barbiturates have "a rapid onset of action, and loss of consciousness induced by barbiturates results in minimal or transient pain associated with venipuncture." In the event that an animal cannot be safely restrained for venipuncture, the animal may be sedated with Telazol (2 mg/kg IM).
1903-36867A	Hughey, Curtis	Mice	BLOOD COLLECTION LIMIT	The Metabolic flux studies require samples for analysis of liver glucose production, hormone concentration, and metabolite levels. To prevent a fall in hematocrit, donor red blood cells resuspended in 10U/ml heparinized saline will be infused venously (please see accompanying procedure). (Arterial Sampling via Carotid Artery Catheter during Metabolic Flux Study) This is a terminal blood collection under anesthesia to get donor red blood cells for metabolic flux studies (Blood collection for donor red blood cells for metabolic flux studies)

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1903-36867A	Hughey, Curtis	Mice	72 HOUR POST-OP ANALGESIA POLICY	1. An extensive history of this surgery in mice (since 1999) via the NIH Mouse Metabolic Phenotyping Consortium has shown that more that 24 hours of analgesics is not necessary for the well being of the mouse. The mice do not, except in rare cases, exhibit loss of weight, piloerection, unkempt coat, hunched posture. If this occurs additional analgesic will be provided. 2. The studies within this protocol are aimed at assessing metabolism. Keeping the use of analgesics to a minimum is to avoid metabolic alterations not intended by the experimental design is imperative. *Please note that I would like to have a veterinarian assess the initial mice post-surgery to determine if the full 72 hours is required.
1903-36867A	Hughey, Curtis	Mice	ENVIRONMENTAL ENRICHMENT	The studies are used to determine metabolic factors underlying fatty liver and liver cancer. The metabolism of mice can be very easily modulated by seemingly innocent actions. Vibrations, lighting, novel objects and scents can cause changes in the metabolic responses of mice. Also, objects placed in the cage may get caught on catheters and pull them out. Therefore, it is requested that anything provided to the animals be checked with the investigator before initiating. Exercise (such as from an in-cage exercise wheel) can even change the metabolism of mice. Since exercise is one of the things being studied, extra exercise is undesirable in our animals.
1903-36867A	Hughey, Curtis	Mice	SOCIAL HOUSING	Mice will be group housed prior to surgery. Following surgery, mice will be individually housed to prevent litter mates from pulling out catheters.
1903-36867A	Hughey, Curtis	Mice	EUTHANASIA METHOD	All euthanasia methods (i.e sodium pentobarbital, isoflurane, etc.) alter metabolism. Upon euthanizing the mice, we collect tissues to test the molecular regulators of metabolic flux. Given this, we aim to have the most natural tissue environment possible during collection.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
1903-36900A	Bangalore Kodandaramaiah, Suhasa	Mice, Rat	MULTIPLE SURGERY	We seek exception in surgeries when a virus injection (S2) is performed. We have previously found that in cases where virus injection is immediately followed by the device implantation (see procedures S3, S4 or S5), that the virus labeling is altered by the small brain displacements induced by device insertion. Since the viruses can take weeks to express, implanting the device later, after the viruses have fully expressed, minimizes the chance of a device-related deterioration. Thus, it may be very useful for experiments in which both Subprocedures S2 and S3 (or S4 or S5) are required, that an initial surgery with just procedure S2 can be performed (e.g., the viral infusion), and then the animal fully recovered, and then, 7-120 days later, a second surgery with just procedure S2 (and possibly S3/S4 or S5) can be performed (e.g., the device implantation). In both cases, full surgical technique will be fully followed twice, with all documentation and follow-up.
1903-36900A	Bangalore Kodandaramaiah, Suhasa	Mice, Rat	SOCIAL HOUSING	In the past, we have observed that housing animals that have undergone headplate or device implant are often fight or rival mice chew on implanted devices thereby making them dysfunctional. To avoid such circumstances, we may in some cases keep mice in separate cages.
1903-36906A	Asakura, Atsushi	Mice	MULTIPLE SURGERY	24 hours after muscle injury, cell transplantation will be performed.
1903-36906A	Asakura, Atsushi	Mice	SOCIAL HOUSING	If multiple adult males are in the same cages, they start fighting. Therefore, Single adult male mouse will be housed in a cage. Other way o reduce fighting in males is to keep litter mates together and avoid introducing unrelated males.
1903-36906A	Asakura, Atsushi	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	Scientific justification for use of non-pharmaceutical grade Avertin: Avertin has been widely used as one of the anesthetic agents for mice. Accordingly, RAR site mentioned that "Avertin® is a non-pharmaceutical grade compound. Currently, there is no equivalent veterinary or human drug is available for experimental use of Avertin®. The highest grade equivalent chemical reagent will be used and formulated aseptically, with a nontoxic vehicle, as appropriate for the route of administration. Use of Avertin has been already reviewed and approved by IACUC.
1903-36921A	Lim, Hubert	Guinea Pig	SOCIAL HOUSING	For animals that have undergone a chronic implantation, we will house them in a separate cage to allow the space to recuperate and prevent any possible conflict with other animals and damage that can be caused to the animal by two animals colliding or playing/fighting. They will be housed in the same room as other guinea pigs so that they are not completely isolated.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
1903-36921A	Lim, Hubert	Guinea Pig	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	We need to be outside of our sound chamber when performing the neural recordings to avoid electrical and acoustic noise contamination. Since our protocols usually requires up to 30 minutes of recordings for each session, we need to be able to check the animal's anesthetic state every 30 minutes for some sessions. We make every effort to record all the necessary information at 15 minute intervals. However our experimental procedures are performed in a sound chamber to avoid electrical and acoustic interference. Since our stimulation paradigms sometimes can last up to 30 minutes, we are not able to enter the chamber at the required time points. For some sessions, we are only able to record the anesthetic state every 30 minutes.
1904-36936A	Fairbanks, Carolyn	Rat, Dog	MULTIPLE SURGERY	For the study of mecahnisms electroacupuncture-induced analgesia we need to both induce a state of hypersensitivity (reflective of neuropathic pain) requiring peripheral nerve injury surgery and then later implant spinal microdialysis fibers in order to collect neurotransmitters during and immediately following application of electroacupuncture. These procedures will be separate by a week. For the study of the efficacy of gene therapeutic intervention in rat analgesia we need to both stereotaxically inject viral vectors to specific brain regions and then later implant intravenous catheters for opioid self-administration studies. These procedures will be separate by at least two weeks.
1904-36936A	Fairbanks, Carolyn	Rat, Dog	BLOOD COLLECTION LIMIT	An individual animal will undergo a maximum of three sampling periods within a week's time. Sampling periods will be separated by at least a day. A maximum of seven samples (a baseline sample plus six post-administration samples) will be drawn within one sampling period. We will draw blood at baseline (prior to drug administration) and at selected intervals after administration up to 24 hours later. We will select a maximum of 6 sample time points from the following times: 15 minutes, 30 minutes, 90 minutes, 1 hour, 2 hours, 3 hours, 4 hours, 6 hours, 18 hours, 24 hours. No more than seven total samples will be drawn per blood collection period. Since the blood samples will be withdrawn via catheter, we will replace the removed blood volume with at least an equal volume of warmed sterile saline or lactated ringer's solution prior to refilling the catheter with the catheter locking solution, per RAR blood collection limits sampling guidelines.
1904-36936A	Fairbanks, Carolyn	Rat, Dog	72 HOUR POST-OP ANALGESIA POLICY	Subjects with peripheral neuropathy cannot receive post-operative analgesics because these will inhibit the spinal neuroplasticity intended to induce the condition of study.

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1904-36936A	Fairbanks, Carolyn	Rat, Dog	EUTHANASIA METHOD	Euthanasia solution ≥86 mg/kg IP or IV. Multiple pharmaceutical grade products available. Contains sodium pentobarbital 390 mg/ml + sodium phenytoin 50 mg/ml (dosing based on barbiturate concentration). Administration of barbiturate overdose by IP or IV injection is not a painful procedure and does not require sedation for brief conscious restraint.
1904-36942A	Lim, Hubert	Mice, Rat	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	Animals will be monitored for reflexivity, heart rate, blood oxygen levels and body temperature every 15 minutes during surgical experiments. In some rare instances during prolonged neural recordings it will not be possible to access the animal inside of our recording booth for 30+ minutes. In these cases, the animal's heart rate, blood oxygen levels and body temperature will still be monitored every 15 minutes, and reflexivity will be recorded at the conclusion of the neural recording session.
1904-36947A	Toth, Ferenc	Goat	EUTHANASIA METHOD	Barbiturate overdose will be performed by an experienced investigator with a single venipuncture. Administering a sedative before the barbiturate overdose would only prolong the stress the animal experiences and would require an additional venipuncture.
1904-36959A	[redacted]	Nonhuman Primate (Macaques)	PRIMARY ENCLOSURE SIZE/SPACE	Although a rare situation, space allocation (i.e., caging size) may temporarily be reduced during the quarantine period for larger animals that may normally be allocated more than one standard primate cage. There are multiple rationales for this change. First, it will help to ensure the safety of the affected animal post-treatment as isolating the animal to a single cage makes it more readily accessible to caretakers and, in the case of animals afforded a quad-bank arrangement, limits their ability to fall from significant heights during the acute post-treatment period. Second, the inclusion of a second cage bank in the treatment room would further limit the workable space in the room and pose a risk to the caretaker and cleaning personnel.
1904-36959A	[redacted]	Nonhuman Primate (Macaques)	SANITATION FREQUENCY	Disposal of waste is handled by lab staff, with all items placed in yellow waste bags and treated as chemotherapy waste per our approved SOP. To minimize the risk of exposure, waste is not removed from the room until after the quarantine period, following treatment of the room with the bleach solution or vapor. An exception to daily removal of excreta and food waste is required while an animal is in quarantine isolation following injection of the 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP) neurotoxin. Because such removal significantly increase the risk of potential exposure to humans working with the quarantined animal(s), it is necessary to minimize the movement of items that have been in the animal's cage and thereby exposed to said animal's excreta. Movement can produce aerosols as the food particle and any bedding dust are disturbed, yielding a source of potential exposure to the human worker. Foods that can spoil within the time-frame of the IMHA will not be given.

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1904-36959A	[redacted]	Nonhuman Primate (Macaques)	MULTIPLE SURGERY	Excluding the MPTP surgeries, a total of three primary (i.e., not repair/replacement) surgical procedures may be performed to properly instrument the animal to achieve the experimental aims. This includes 1) placement of the head restraint post, 2) chamber/micro-array placement, and 3) pulse generator implantation. The motivating factors for separating these procedures include: 1) limiting the overall duration of any one surgical procedure (anesthetic episode), and 2) maximizing the overall integrity and lifespan of the implant. Additional surgeries are required for induction of the parkinsonian state. Response to the MPTP neurotoxin varies across animals and it is considered best practice to approach the desired severity level gradually rather than risk overshooting the behavioral target and inducing an unnecessarily severe parkinsonian state. This approach typically requires multiple intra-carotid surgical procedures combined, in some cases, with systemic injections to safely achieve the desired severity level. Chamber/headpost/microdrive repairs, though rare, may be necessary if either is damaged by the animal. We justify the repairs as they limit the number of animals used in the study. If parkinsonian animals do require additional survival surgeries (e.g. unexpected headcap repair), the RAR veterinary staff will be consulted and a determination will be made as to whether the additional survival surgery is appropriate given the animal's current health status.
1904-36959A	[redacted]	Nonhuman Primate (Macaques)	SOCIAL HOUSING	All animals will be pair housed with the exception those animals who have repeatedly shown an inability to accept paired housing (excessive and sustained aggression/injury, self-injury, or persistent antisocial behaviors). Odd numbers of animals or attrition of a partner may also result in singly house animals until a suitable new match/pairing can be determined. Some pair-housed animals may be temporarily separated during surgical recovery and/or based on experimental demands. In all cases, however, the animals will have ready access (visual, smell, etc.) to other animals in the colony space.
1904-36978A	van Berlo, Jop	Mice, Rat	MULTIPLE SURGERY	we sometimes add osmotic minipumps to other more invasive procedures, such as cardiac pressure overload (TAC) or cardiac ischemic injury. The goal would be to add thymidine anologs such as BrdU or EdU to perform pulse chase experiments of proliferative cells to measure regeneration. Alternatively, we could add neurohormonal stimulation in strains of mice that are especially resistant to cardiac injury.
1904-36978A	van Berlo, Jop	Mice, Rat	EUTHANASIA METHOD	We will only use this method of euthanasia in newborn pups younger than post-natal day 7, where we will use sharp scissors to quickly decapitate the pup.

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1904-36985A	Smanski, Michael	Fish (Zebra fish), Fish (Other)	EUTHANASIA DEATH/MORIBUND ENDPOINT	We are testing embryonic lethality of gene overexpression. Typically this will be assessed before 72 hrs post fertilization, but in rare cases we might need to look for lethality in embryos less than 7 days post fertilization.
1904-36985A	Smanski, Michael	Fish (Zebra fish), Fish (Other)	NON-PHARMACAUTICAL GRADE COMPOUNDS	Clove oil is ordered from Sigma in 500 mL bottles and stored at room temperature in a chemical cabinet in [redacted]. It is not listed as pharmaceutical grade on the Sigma website.
1904-36985A	Smanski, Michael	Fish (Zebra fish), Fish (Other)	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	Our anesthesia protocol only lasts 3-5 minutes, with a maximum of 10 minutes. After that protocol, fish are returned back into a holding tank. We currently record what happens after that protocol, which technically meets the 15 min reporting interval requirement.
1905-37039A	Garry, Mary	Pig (Biomedical)	ENVIRONMENTAL ENRICHMENT	It is possible that single housing will be required if: 1) there is only one animal in the litter 2) littermates die or are euthanized 3) single housing is needed to minimize transmission of illness among piglets or 4) if directed for the welfare of the animal by the RAR Vet.
1905-37039A	Garry, Mary	Pig (Biomedical)	SOCIAL HOUSING	It is possible that we will need an exception to social housing for the reasons stated in 17B. If possible, however, we will house socially.
1905-37059A	Wilcox, George	Rat, Mice	72 HOUR POST-OP ANALGESIA POLICY	The intention of the spared nerve injury is to induce a state simulating the hyperalgesia experienced in neuropathic pain. Administration of analgesics would be likely to alter the course of hyperalgesia development, defeating the goal of the experiment.
1905-37059A	Wilcox, George	Rat, Mice	EUTHANASIA METHOD	Cervical dislocation may be indicated at times for emergency humane euthanasia where provision of prior isoflurane anesthesia is either not possible or would prolong the suffiering of the mouse unnecessarily.
1905-37059A	Wilcox, George	Rat, Mice	SOCIAL HOUSING	The only animals to be housed singly will be the rats with exteriorized catheters that might be damaged in a social housing situation.
1905-37091A	Graves, Steven	Mice	SOCIAL HOUSING	Prior to surgery, all mice will be group housed. Mice undergoing self administration via jugular vein infusion will be individually housed post catheter implant surgery onward until their approved experimental endpoint. We need the option to house individually during this period to promote and improve healing time after implantation and also for higher success during self administration sessions.
1905-37099A	Moriarity, Branden	Mice	TUMOR ENDPOINT CRITERIA	With approval we will be following our attached Mouse Tumor Burden Scoring Document created and approved with RAR Veterinarian staff that outlines tumor ulceration endpoint criteria.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
1905-37103A	Bianco, Richard	Sheep (Biomedical)	MULTIPLE SURGERY	As described in procedure, goal is to evaluated autologous stem cells in vascular graft after in vitro differentiation. In Vitro harvest and differentation take upto 2 weeks. The fat is harvested from each animal, isolated, and coated on graft's lumen surface prior to being implanted back in the same animal. Hence this require two procedures on each animal. (Adipose Fat Harvest) As described in study design, animals are implanted with engineered graft coated with autologous stem cells. To evaluate presence of cells on the graft surface, optical coherence imaging will be utilized, which require access into vascular lumen. The frequency of every 2 weeks allows for insertion site to heal. (Angiogram and/or OCT survival)
1906-37113A	Griffith, Thomas	Mice	EUTHANASIA METHOD	All staff have been trained in and are competent at cervical dislocation.
1906-37116A	Greising, Sarah	Pig (Biomedical)	MULTIPLE SURGERY	Animal will undergo 2 survival procedures 6 weeks apart. This surgery is minimally invasive and animals will received adequate pain management to prevent or relieve any pain for surgeries. Furthermore, the subsequent procedures to evaluate muscle function only at 6 weeks requires only sub-dermal electrode placement and no incision to the animal. Although the animal is intubated for delivery of anesthesia this is a procedure more than a surgery.
1906-37132A	Madill, Scott	Horse, Cow (Biomedical)	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	standing sedation and sampling only, entire procedure less than 5 minutes
1906-37132A	Madill, Scott	Horse, Cow (Biomedical)	NON-PHARMACAUTICAL GRADE COMPOUNDS	Our standard pharm grade KCl used for adding to IV solutions for deficient animals is 20mEq/10 ml. This is equivalent to 1500 mg of KCl per 10 ml or sufficient for 10 kg at the upper dose range above. A 600 kg horse would thus require 600 ml of this solution (or 60 vials). The AAEP guidelines from Iowa state University (attached) use a saturated solution of non-pharm grade KCl. This would be made up as needed (on the day) and not in advance so would not be stored. Please note this is our least favored method and would only be used when others were not an option.
1906-37132A	Madill, Scott	Horse, Cow (Biomedical)	SOCIAL HOUSING	While not in [redacted] we do house our stallion separately to the rest of our horse herd to prevent unscheduled breeding (mares) and antagonistic interractions (geldings). He is housed adjacent conspecific with both direct sightline and sound (distance across 2 fences separating is approimately 8-10 feet). This is typical industry housing for stallions.
1906-37137A	Bradley, Elizabeth	Mice	SOCIAL HOUSING	Single males males within a litter will be house separately to prevent fighting among non-litter mates.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
1906-37162A	Cheeran, Maxim	Mice	MULTIPLE SURGERY	For the self-administration protocol, the mice will have a patent catheter placed in their jugular vein to administer opiates. Those mice will receive a TBI either before or after catheter placement. We intend to start with the catheter placement prior to TBI surgery so the mice can have more complete pain control (with analgesics) that does not impact the inflammatory response to TBI (which is the outcome of our study). However, if maintaining patency for extended periods proves difficult, we will have to move catheter placement after the TBI surgery. Performing both surgeries on the mice at the same time would require repositioning the mouse during the procedure, and increases the risk of contaminating instruments, surgical site, and surgeon. In the alternate approach, we would first perform the TBI and allow for the animals to recover for 5-7 days prior to the catheter placement, thereby reducing the stress level of the animals and to ensure a healthy recovery from TBI. In this latter case, no analgesics will be given to the animal as that will impact inflammation resulting from TBI.
1906-37162A	Cheeran, Maxim	Mice	72 HOUR POST-OP ANALGESIA POLICY	Pain post-surgery is expected due to injury to the scalp/skin incision. Animals will receive an application of lidocaine gel (2%) in and around the skin incision every 2 hours post-op as needed (evidence of discomfort, prolonged anorexia, etc.) to alleviate the irritation and pain associated with the surgery. NSAIDs or other antiinflammatory drugs will not be administered to these animals at any point in the study as they will interfere with the immunological parameters that are central to this study (Gomaa, S. JoBAZ. Adverse effects induced by diclofenac, ibuprofen, and paracetamol toxicity on immunological and biochemical parameters in Swiss albino mice. The J. Basic and applied Zoology (2018) 79: 5.; Eisenstein T.K., Hilburger M.E. Opioid modulation of Immune responses: effect on phagocyte and lymphoid cell populations. J. Neuroimmunol. (1998) 83: 36-44).
1906-37180A	More, Swati	Mice	FOOD/FLUID RESTRICTION RECORDKEEPING	I don't think we need a justification, but to clarify- lab staff will remove food from select cages 16 hours prior to testing and replace food at the appropriate time. These cages will be marked by lab staff. During all other times and for all un-marked cages, RAR will feed and water as usual.
1906-37184A	Ning, Jianfang	Mice	MULTIPLE SURGERY	Intratumoral injection is the only approach for NK cells effectively getting to GBM in orthotopic tumor model due to blood-brain barrier. Mice will be treated with Buprenorphine SR to cover the 72 hour post-operative period. Mice will be observed and weighed everyday between both surgeries.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
1907-37197A	Ikramuddin, Sayeed	Mice	SOCIAL HOUSING	Because of monitoring of fecal and urinary out put after surgery, as well as feeding an iso-caloric diet after the VSSG/Sham surgery - we will need to house these mice individually after the surgical intervention in this study. If the mice are cohoused it can cause inappropriate shifts in the microbiome leading to altered study endpoints.
1907-37213A	Junge, Harald	Mice	TAIL BIOPSY	We require a method of animal identification that is unambiguous and permanent and can be used for mice in developmental studies (postnatal pups, genotyping results required at P8) or in aging studies over 1 year. We will cut toes after they are no longer webbed in mice P6-P8 and use the toes for genotyping. Pups older than P8 will not be toe clipped. In neonatal mice before 8 days of age toe clipping appears to have few adverse effects on behavior and well-being. We will also use ear punch for genotyping if the mice are of 21 days or older, or tail snips with appropriate anesthesia as described in the IACUC Guideline on Rodent Tail Biopsy Procedures (https://docs.google.com/document/d/14RZQyVYCrM_sCqqKojilTTBF_nfCKPkafnIlPqn5KJ0/edit) (Breeding)
1907-37213A	Junge, Harald	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	We observed in preliminary experiments that Mdm2 ECKO mice die about 1 week after tamoxifen induced recombination using a Cdh5-ERT2 Cre driver. The cause of death appears to be pleural effusion. We euthanize the mice 5-6 days after tamoxifen injection, at which time animals are showing the first sign of being lethargic. We euthanize them as early as possible to prevent distress but as late as necessary until the relevant phenotype (blood-retina barrier defects) manifests. If the animal does not move freely through the cage even after gentle stimulation (e.g., after holding the tail base and lifting it up), the animal will be subjected to the transcardial perfusion procedure or euthanized.
1907-37213A	Junge, Harald	Mice	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	anesthesia is performed immediately before euthanasia (Euthanasia)
1907-37213A	Junge, Harald	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	sulfo-NHS biotin is not available USP grade, it will be ordered from Sigma. It will be made up fresh from powder in PBS (0.3 mg/ml) and sterile filtered. This agent is frequently used in blood-brain barrier or blood-retina barrier assays. No adverse effects have been reported.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
1907-37216A	[redacted]	Dog, Frog (Xenopus), Gerbil, Goat, Guinea Pig, Hamster, Nonhuman Primate (Macaques), Pig (Biomedical), Rabbit, Rat, Sheep (Biomedical), Turkey, Cow (Biomedical), Chinchilla, Ferret, Cat, Mice	EUTHANASIA METHOD	Euthasol® 0.22 ml/kg IV (~86 mg/kg pentobarbital)
1907-37216A	[redacted]	Dog, Frog (Xenopus), Gerbil, Goat, Guinea Pig, Hamster, Nonhuman Primate (Macaques), Pig (Biomedical), Rabbit, Rat, Sheep (Biomedical), Turkey, Cow (Biomedical), Chinchilla, Ferret, Cat, Mice	SOCIAL HOUSING	Training animals are typically acquired from labs as surplus or culled animals. There will be times where they may be transferred to the protocol as individually housed due to exceptions from the transferring protocol or due to attrition. In the case that singly housed animals are received, we will try to use these animals first for trainings, make attempts to pair/social house if possible, or humanely euthanize if no scheduled trainings are in the foreseeable future. Some of the animals transferred to our protocol may be mature adults and may not be as easy to socially house (particularly unfamiliar adult males), but an initial attempt may be made with appropriate monitoring if we feel it will better suit the animal awaiting use. For our training animals we also try to incorporate increased enrichment (i.e. items, treats, playpens, human interaction, etc) when possible.
1907-37234A	Garry, Mary	Mice	EUTHANASIA METHOD	Cervical dislocation is rapid and humane and sedation is not required.
1907-37234A	Garry, Mary	Mice	SOCIAL HOUSING	Following LAD ligation or femoral artery ligation, femoral artery ameroid constrictor installation animals must be housed singly to prevent removal of closures.
1907-37242A	Alford, Patrick	Mice	EUTHANASIA METHOD	The neonates are decapitated with scissors at P2

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
1907-37248A	Lowe, Dawn	Mice	MULTIPLE SURGERY	Simultaneous with ovariectomy, a subset of mice will have nerve cuffs implanted. The ovariectomy procedure takes less than 5 minutes beyond the never cuff and it is less stressful for the mouse than having separate surgical interventions. One goal of the project is to determine the effect of estrogen on muscle regeneration. A second surgery we are requesting is freeze injury or cardiotoxin or BaCl2 injury to the tibialis anterior muscle, which are minimally invasive surgeries. That is, each involves making a skin incision and then placing a freezing probe on the muscle or injecting the muscle with cardiotoxin to induce injury and subsequent muscle regeneration. Mice will be 2-8 weeks post-ovariectomy before either type injury is induced. A subset of cardiotoxin injured mice will be transplanted as well. A subset of mice will have transplantation done 24 hours post BaCl or cardiotoxin injury.
1907-37248A	Lowe, Dawn	Mice	72 HOUR POST-OP ANALGESIA POLICY	Antibiotics and anti-inflammatory reagents are acceptable if necessary for the first surgery nerve cuff/ovariectomy, but are not acceptable after freeze injury or cardiotoxin injury because we are studying the inflammation. We need to avoid anti-inflammatory reagents following BaCl injury because we are studying the effects of hormones on inflammation and subsequent regeneration of the muscle. Thus, if analgesics are determined necessary, in consultation with a veterinarian as we routinely do, the mouse will be sacrificed. We will not give injections of Buprenorphine after the transplantation surgery because the surgery is minimal (no body cavity is opened) and we do not notice signs of post-surgical distress. Antibiotics and anti-inflammatory reagents are not acceptable after cardiotoxin injury and transplantation because we are studying the inflammation and regeneration. Thus, in consultation with vet staff, if pain is apparent as detailed in post-operative care parameter, the mouse will be euthanized.
1907-37248A	Lowe, Dawn	Mice	ENVIRONMENTAL ENRICHMENT	To monitor physical activities (wheel running capacity or cage activities), mice will be housed individually. The environment will influence the physical activity of the mice which in turn will affect skeletal muscle function. Because the magnitude of physical activities will likely vary depending on hormonal status, an enriched environment would add another level of variables that at this time we do not wish to explore. Placing nestlets etc in the cages for mice to shred is OK, but further enhancement of the environment needs to be avoided in our studies.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
1907-37248A	Lowe, Dawn	Mice	SOCIAL HOUSING	To monitor physical activities (wheel running capacity or cage activities), mice will be housed individually.
1907-37262A	Schleiss, Mark	Guinea Pig	SOCIAL HOUSING	Males fight when caged together, often resulting in extreme injury, bleeding, and occasional death. To minimize the pain and trauma to male breeder animals, they are not housed together with other males.
1907-37275A	O'Connell, Timothy	Mice	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	Our lab has found in the preliminary studies from the expiring protocol that the frequent handling of the mice (weekly weighing and cage changes, monthly echocardiography, echo-MRI and blood pressure monitoring) has hindered the mice from gaining the weight we would expect on this HFD. In consultation with Dr. Cathy Kotz, an expert in obese mouse models, she suggested that we only weigh the mice bi-weekly. This bi-weekly weighing, along with our decrease in data collection as spelled out in this renewal (baseline, 8-weeks and final collection point at 20 weeks; instead of every four weeks) will hopefully lessen the handling stress the mice endure and allow them to gain weight more closely reflected in the literature.
1907-37285A	Mand, Sandy	Fish (Other)	SANITATION FREQUENCY	We use either under-gravel filters where the sediment waste on the gravel is siphoned out monthly or above-tank charcoal filter systems (especially for the marine tanks) where the charcoal cartridges are changed based on manufacturer's recommendations. We have protein skimmers for the marine tanks. We also have an Z-Hab system in [redacted] which includes a bio filter, filter, charcoal filter and UV light sterilization for our zebrafish. This also has automatic temperature control, pH and conductivity.
1907-37285A	Mand, Sandy	Fish (Other)	SOCIAL HOUSING	We are using [redacted] and the fish are all housed socially except the male beta fish and electric fish which are housed in separate tanks.

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1908-37310A	Li, Ling	Mice	MULTIPLE SURGERY	For the parabiotic pairing/separation procedure, two surgeries will need to be performed on the mice. First is parabiotic surgery to join the two mice. After 1-6 months, the parabiosed mice will need to undergo second surgery to be separated for neurobehavioral assessments as described in the neurobehavioral testing procedure. Thus, the parabiotic pairing/separation surgeries are essential components of the same project. The separation surgery will not cause any more pain and distress than the first parabiotic surgery. Functionally, it will restore the functionality of the individual mice. During the parabiosed period, some of the mice will be subjected to intracerebral injection of amyloid-beta (to induce Alzheimer's-type pathology including neuroinflammation). These procedures are necessary to study the mechanisms of recruitment of immune cells in the brain. The parabiosed mice are the best models to elucidate the role of peripheral immune cells in neuroinflammation. To achieve effective anesthesia, a controlled flow of isoflurane 1-3% with oxygen through a cone device will be administered to each of the parabiosed mice during stereotaxic procedure for intracerebral injection of amyloid-beta peptide. We have used this approach and successfully performed the procedure with no complications.
1908-37315A	Yuan, Shauna	Mice	EUTHANASIA METHOD	For E18 pup cultures, pups will be decapitated using scissors immediate after they are taken out of the sac
1908-37330A	Geller, Melissa	Mice	MULTIPLE SURGERY	The manufacturer of these osmotic pumps explains why removal is necessary (found here: http://www.alzet.com/products/guide_to_use/implantation_and_explantation.html): After its pumping lifetime has ended, an ALZET osmotic pump becomes an inert object for a period of time lasting about half again as long as the pump's specified pumping duration. After that time, because of the continued osmotic attraction of water into the pump, it may swell and begin to leak a concentrated salt solution, resulting in local irritation of tissues around the pump. Therefore, DURECT advises explanting spent ALZET osmotic pumps

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1908-37334A	Meyer, Markus	Pig (Biomedical)	MULTIPLE SURGERY	At weeks 3, 5 and 8 after initial surgery animals will be placed under anesthesia for an Echocardiogram and endocardial heart biopsy. At week 8 the animal will be euthanized after procedure. After initial surgery animals will be placed under anesthesia at weeks 3 and 5 for visualization of the stenosis with fluoroscopy. After initial surgery at weeks 3 and 5 animals will be placed under anesthesia for an Echocardiogram, pv loop testing, renal denervation, and endocardial heart biopsy. At week 8 the animal will be euthanized after procedure. At weeks 3 the DOCA, transmitter, and pacemaker will be implanted. At week 5 the PV loop testing, start pacing, and Renal Denervation will be performed. At week 8 the animal will be euthanized..
1908-37348A	Newman, Eric	Mice	MULTIPLE SURGERY	Mice will be prepared for chronic awake cortical imaging in two or three steps. In the first surgery, the skin over the scalp will be removed and a metal head bar will be permanently attached to the skull with cyanoacrylate glue and dental cement. The animal will then be allowed to recover and given adequate antibiotics Baytril (Bayer; 5mg/kg) and pain medication Buprenex (2mg/kg) so that it fully recovers and is pain-free. The animal will then be acclimated to being fixed to a frame under a microscope for several days. Following acclimation, a second surgery will be performed to create a thinned-skull cranial window for imaging the cortex. The third surgery will be creating a burr hole for the injury model. The reason to perform the surgery in two or three steps is that following the creation of the cranial window and recovery from the second surgery, which will take 2 to 3 days, we can immediately begin our imaging sessions on the awake animal. The animal will have already been acclimated to being fixed under the microscope. However, this immediate imaging paradigm may not always be necessary and we will also perform both surgical steps in a single session. If this proves successful, we will perform, whenever possible, future surgeries in a single session.
1908-37348A	Newman, Eric	Mice	SOCIAL HOUSING	Post-surgery animals will be single housed for 7 days. After 7 days, we will introduce another animal had the same procedure. Co-housing is beneficial for post-operative cranial window animals. We limit each cage has two post-surgery mice together. Social house will improve their grooming, play, and interactions.
1909-37362A	Bastian, Thomas	Mice, Rat	EUTHANASIA METHOD	Decapitation without anesthesia or sedation will only be performed on embryonic and early postnatal day (P)0-P5 mice. Decapitation without sedation will only be performed on embryonic or newborn rats when skeletal tissues are weak and decapitation is rapid.

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1909-37381A	Schwertfeger, Kaylee	Mice	MULTIPLE SURGERY	Because the primary tumors reach endpoint prior to establishment of robust metastasis, primary tumor resection will be necessary to assess metastatic growth and burden in these models. All procedures for tumor resection will include anesthesia and pain relief in the same manner as provided for the initial surgery. Due to the increased blood vessel growth associated with primary tumors, cauterization of blood vessels may be required. (Injection of tumor cells into the mammary fat pad) We will need to clear endogenous epithelium from the mammary gland and allow the inflammation to resolve prior to performing the macrophage depletion and subsequent injection of cells into the mammary gland. (Mammary fat pad clearing and transplantation)
1909-37384A	Yang, Yi-Mei (Amy)	Mice	EUTHANASIA METHOD	Mice are sacrificed by decapitation using a DecapiCone and a sterile sharp blade. The DecapiCone is a plastic conical rodent restraint device that is commonly used to restrain animals in order to reduce stress from handling, and to minimize the chance of injury to experimenters. This way, a rapid loss of consciousness is accomplished and the harvested brain tissue is not chemically contaminated.
1909-37384A	Yang, Yi-Mei (Amy)	Mice	SOCIAL HOUSING	The causes for autism include genetic and environmental risks. Social deprivation during early childhood increases the incidence of autism, the underlying mechanisms remain elusive. To reveal the epigenetic regulation of brain functions, we propose to generate a mouse model by isolating pups at postnatal day 21 in a singly housed opaque cage for 2-3 weeks. Then we will perform behavioral tests while keeping them singly housed. At the endpoint, we will do electrophysiological recordings from brains slices after decapitation. As to the choice of opaque cages, we have searched the literature regarding the rearing conditions to induce the behavioral deficits. In most studies, the mice were isolated in opaque cages to limit any contact (including visual contact) with other mice or humans. The reason is that the neurological changes underlying mouse behaviors are very sensitive to the caging environment. Any variables in handling or housing could reverse the animal responses to social isolation. I list two examples describing the experimental details for social isolation (see Methods) and an article discussing the environmental influences on animal behaviors. In light of these reports, we will keep the same environment between socially reared and socially isolated groups. If social isolation causes severe distress to the mice, such as poor body condition, paleness, dehydration, decreased activity or lethargy, excessive licking and scratching and self-mutilation, we will terminate the experiments and euthanize the animals as soon as possible.

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1909-37389A	Camell, Christina	Mice, Mice, Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	Moribundity as an experimental endpoint is required in experiments that desire to address whether age or GDF3 accelerates LPS-induced lethality and the metabolic changes that occur due to this challenge. An appropriate timepoint for examining these changes in old mice is not clear. Initial experiments will identify that timepoint by establishing the time of moribundity. Follow-up experiments will be performed at the time when 50% of the old mice were moribund. These experiments are required to identify molecular and cellular characteristics that are induced by age or GDF3. Identification of these characteristics may lead to therapeutic candidates to improve responses to bacteria in the aged.
1909-37389A	Camell, Christina	Mice	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	Animals will be euthanized 3 minutes after the injection is performed. (Retro-orbital Injection) Animals will be euthanized immediately after blood collection. They will not survive this procedure. (Blood Collection)
1909-37389A	Camell, Christina	Mice	EUTHANASIA METHOD	This method will be used with cohorts receiving a cold challenge (challenged or control mice). Tissue are needed for analysis prior to the warming from the cold challenge. This method will provide for euthanasia without removal from [redacted], which means tissues will be analyzed directly from the challenge. Removal from [redacted] and warming of the mouse, which happens instantly, would alter the results. Control mice that are kept at room temperature will receive the same method of euthanasia to ensure identical and comparable methods performed. All lab personnel are trained in this method. This interference only applies for experimental objectives in the lethal LPS challenge. All other experiments will follow IACUC Criteria for Euthanasia. Body-weight, body-temperature and visual monitoring will occur in the lethal LPS challenge.previous data from Starr et al and Lamkanfi et al show that, 18mg/kg LPS is nearly 75% fatal to 3-month-old C57BL6/J mice beginning at 48-72 hours after LPS injection. It is not clear at what time point the older animals would succumb to the 18mg/kg dose. These experiments are required because they permit testing for and identification of molecular and cellular therapeutic candidates that may contribute to protection against bacteria challenge in the elderly

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1909-37406A	Yamamoto, Masato	Mice, Hamster	MULTIPLE SURGERY	In the animals the therapeutic viruses are injected into the orthotopic pancreatic tumor, both the initial cell inoculation and the injection of the virus will be performed after surgically opening abdomen. There is no method to inoculate the cell into the pancreatic bed precisely with minimal leakage into peritoneal cavity without opening abdomen. There is no way to inject the therapeutics accurately into the pancreatic tumor without opening abdomen. Therefore, two operations are inevitable for such experiments
1909-37406A	Yamamoto, Masato	Mice, Hamster	TUMOR ENDPOINT CRITERIA	Oncolytic adenoviruses occationally induce tumor ulceration when anti-tumor effect is strong. Usually, ulceration is seen before the tumor disappears. This is a part of therapeutic effect and the ulceration is self limiting. We want to observe ulcerated tumor up to 7 days unless continuous oozing (>24hrs) or infection is observed or reaching other euthanization criteria. Signs of bleeding: Observation of bleeding from tumor, Blood on bedding, Euthanasia criteria for tumor ulcer bleeding: 1) oozing without complete hemostasis from tumor ulceration more than 3 hrs, or 2) bleeding more than 50ul (makes 6mm diameter stein on Kim Wipe) in 30min. Signs of Infection: Observation of pus, pus on bedding Euthanasia criteria for tumor infection: when any sign of infection was observed.
1909-37416A	Vallera, Daniel	Mice	TUMOR ENDPOINT CRITERIA	Tumors are not expected to ulcerate, but there are times when this happens and is outside our control. If the tumor is small and ulcerates, the animal will be monitored for signs of discomfort and infection, and steps will be taken to make it comfortable. It will be euthanized if the problem cannot be resolved in three days. If the tumor is large, approaching 2cm3, the animal will be euthanized.
1909-37416A	Vallera, Daniel	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	For pilot studies ONLY, this is necessary to analyze maximum tolerated dose of the drugs administered. In order to collect data on maximum tolerated dose, mice will reach a moribound state when administered the highest dose. If animals are discovered moribound, or hunched/shaking, they will be euthanized. Animals sometimes die over night, but death is not an endpoint we are using.
1909-37416A	Vallera, Daniel	Mice	EUTHANASIA METHOD	Barbiturate overdose will be delivered by injection Euthanasia solution ≥86 mg/kg IP or IV, contains sodium pentobarbital 390 mg/ml + sodium phenytoin 50 mg/ml (dosing based on barbiturate concentration).

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1909-37430A	Ogle, Brenda	Mice	MULTIPLE SURGERY	The time between surgeries is intended to more accurately model the disease state of a myocardial infarction. Delaying treatment after inducing an infarction allows for an inflammatory response that simulates the onset-to-door time, common in myocardial infarction cases. The first surgery induces the MI and the second surgery is necessary to administer the experimental treatment. Additional analgesics will be provided if the animal appears in pain or distress (assessed by monitoring eating habits and mobility) or a veterinarian may be consulted on further actions.
1909-37430A	Ogle, Brenda	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	Avertin is only available as non-pharmaceutical grade. It is filter sterilized before use. It is made up and stored according to RAR guidelines to avoid formation of toxic breakdown products
1909-37444A	Kratzke, Robert	Mice	TUMOR ENDPOINT CRITERIA	For ulcerated tumors, we are requesting an exception to IACUC guidelines for euthanasia as sometimes, tumor ulcers can form and might be related to the treatment given. Therefore, for tumors that develop ulcers, we will treat the ulcers with collasate. So long as the ulcers are less than 0.8cm in diameter and 3mm deep or less, the mice will be treated approximately 3x/week with collasate (more or less frequently as needed to ensure that ulcers are covered). Should ulcers exceed these parameters or should they demonstrate painful behavior associated with the ulcers, the mice will be euthanized/
1910-37451A	Masopust, David	Mice, Hamster	MULTIPLE SURGERY	The experiment is designed to test if intra-tumoral injection of peptide can re-activate memory lymphocytes within the brain tumor to reduce tumor burden as an immunotherapy. Our lab has shown that intra-tumoral injection of peptide in a skin model can reduce and eliminate tumor in some cases as well as provide protection from subsequent tumor growth. The initial survival surgery will implant the tumor while this subsequent surgery will inject tumor in the same injection site to reduce tumor growth through stimulating the immune system. Animals will be treated with bupivicaine daily for 3 days post surgery. Animals evidencing undue pain or distress will be euthanized in accordance with RAR endpoints (weight loss, moribund, etc.)

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1910-37451A	Masopust, David	Mice, Hamster	EUTHANASIA DEATH/MORIBUND ENDPOINT	We need to know if the immunizations are working or not. We also need to know if the control group without immunization is morbund or not to know if the infection is working. COVID-19 is fatal in a fraction of humans. We will assess the dynamics of the immune response, in relation to disease outcome, and death is a relevant disease outcome, as our analyses that proceed death in mice that are experiencing severe disease. To evaluate vaccine efficacy, immunized and unimmunized animals will be challenged with SARS-COV-2. At this time, we do not know if our vaccine will elicit full or partial protection from infection and disease severity in mice. It is possible our vaccine may not protect from infection but may reduce severe disease outcomes. In order to compare, there must be a control vaccinated group that is inoculated and becomes severely sick to evaluate that outcome. Because we are evaluating this vaccine's efficacy for greater than 7 days, it is likely that animals in the control arm will reach moribundity or succumb to disease while we expect vaccinated mice to survive with less weight loss and less disease. From days 5-21: Once animals are observed to become ataxic, suffocating (labored breathing), paralyzed, lose 25% of their body weight, or can't right themselves, they will be euthanized. If they do not show these symptoms by day 21, they will be euthanized.
1910-37451A	Masopust, David	Mice, Hamster	SOCIAL HOUSING	We wil house female hamsters singly if they are used in experiments because they are aggressive and males in pairs.
1910-37451A	Masopust, David	Mice, Hamster	NON-PHARMACAUTICAL GRADE COMPOUNDS	Avertin has been used in procedures for several years and is listed as an anesthetic in order to maintain consistency across previous experiments. Pharmaceutical grade Avertin is no longer available. Therefore, it is necessary that we mix our own stocks from non-pharmaceutical grade Avertin. All stocks are kept sterile and are only used for two weeks. Avertin is required for the experiments outlined in this protocol since isoflurane causes muscle contractions and prevent accurate data acquisition. Avertin has been used in procedures for several years and is listed as an anesthetic in order to maintain consistency across previous experiments. Avertin will be stored in a light resistant container and pH will be tested every use prior to administration.

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1910-37452A	Masopust, David	Mice	MULTIPLE SURGERY	In some parabionts pairs will be separated to further residency studies. To best understand the residency of cells parabiosis is a critical step in assessing the origin of cells, however after the parabionts stabilize it is necessary to separate the parabionts to further analyze the cells that migrated to the partner, such as their location, duration, expression of unique cellular factors, and response to stimuli. Although the separation of the parabionts is a less invasive procedure than the original parabiosis we still proceed with identical treatment regarding pain or distress that we use when joining the parabionts. We do not anticipate any excess pain or discomfort besides the suture or staples used to close the skin where attachment was originally made. Additionally, we allow for 1-2 months between parabiosis and separation to reduce the impact on the animal from consecutive surgeries.
1910-37452A	Masopust, David	Mice	72 HOUR POST-OP ANALGESIA POLICY	Post-operative analgesic therapy is contraindicated because the objective of the procedure is to determine whether the experimental treatment causes hypersensitivity. Provision of analgesics would inhibit the neurochemical changes required to develop the hypersensitive states to be studied.
1910-37452A	Masopust, David	Mice	EUTHANASIA METHOD	All personnel performing cervical dislocation must prove themselves extremely competent to prevent inhumane euthanasia
1910-37452A	Masopust, David	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	Our previous studies have utilized Avertin as the sole anesthetic and switching to a Ketamine/Xylazine anesthetic agent would make comparisons between studies invalid necessitating a very large increase in experimental animals to replicate previous experiments. This combined with our attempt to minimize the use or sharps inside [redacted] by using a single injection of Avertin as opposed to an injection of Ketamine/Xylazine and an injection of Yohimbine makes Avertin our preferred choice.
1910-37455A	Bianco, Alex	Horse, Cow (Biomedical), Sheep (Biomedical), Other* (USDA), Goat	72 HOUR POST-OP ANALGESIA POLICY	Flunixin meglumine will be given if needed. However, part of the goal of this lab is student monitoring for pain and distress. If such is identified, animals will be treated. In general, this procedure is well tolerated and analgesics (off label use in cattle) are not required. (Bovine omentopexy lab) Animals will be euthanized shortly after recovery. (Pony Castration) Animals will be euthanized shortly after recovery. (Donkey Castration)

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1910-37455A	Bianco, Alex	Horse, Cow (Biomedical), Sheep (Biomedical), Other* (USDA), Goat	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	Animals will be euthanized shortly after recovery. Nothing to monitor.
1910-37455A	Bianco, Alex	Horse, Cow (Biomedical), Sheep (Biomedical), Other* (USDA), Goat	NON-PHARMACAUTICAL GRADE COMPOUNDS	Ponies and donkeys are intact males and need to be housed individually for their own health and safety. Ponies and donkeys should also be housed separately from the main teaching herd.
1910-37464A	Cao, Ruifeng	Mice	EUTHANASIA METHOD	We need to look at protein kinase activation in the brain after acute stimulation, such as a light pulse. Due to the transient nature of the protein kinase activities, animals must be euthanized immediately and brain tissue must be harvested and processed within minutes after light exposure. The time it takes to sedate the animals are too long for our experiment purpose. Also, sedatives can induce changes in the brain that may interfere with experimental treatments. Cervical dislocation and decapitation are commonly used in neuroscience research. To keep the kinases and signaling molecules in the brain as close to the physiological conditions as possible, mice need to be killed and brains need to be harvested and processed as quickly as possible(usually in 3 minutes). Anesthesia will affect the neuronal signals in the brain and it will take too long to capture the rapid changes in the brain proteins.
1910-37464A	Cao, Ruifeng	Mice	SOCIAL HOUSING	1) To record the mouse wheel-running behavior, mice will be individually housed in circadian behavioral cages equipped with a running wheel per cage. Housing multiple mice in a cage will interfere with the wheel-running recording. 2) After cannulation animals will be housed individually to avoid removal of the cannulae by other mice housed in the same cage.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
1910-37469A	Redish, David	Rat	MULTIPLE SURGERY	Some animals will receive two surgeries – one to provide DREADD-based or optogenetic virus to transfect cells and the second to implant the hyperdrive device. The transfection takes 3-4 weeks to take full effect, and the hyperdrive takes 1-2 weeks to reach its target, with the best recordings occurring during the subsequent several weeks. This means that if we did both procedures in the same surgery, the optimal time for DREADD transfection and hyperdrive recording will be mismatched. Therefore, we will do two surgeries, one, first to transfect with DREADDs and the second to implant the hyperdrive. Rats will have at least 2 weeks between surgeries. (Intracranial infusion for viral transfection (DREADDs, anatomical tracers)) This procedure will (by definition) be a second surgery. This procedure should not include any additional pain, distress, or functional deficit beyond a normal single surgery. Both surgeries will be done under full anesthesia and with all appropriate analgesics. We do not expect additional distress from the procedure. (Replacement of Neural or LED implantation (Hyperdrive, silicon probes, miniscopes, etc))
1910-37469A	Redish, David	Rat	SOCIAL HOUSING	The implantation of hyperdrive devices preclude dual housing due to safety concerns. Similarly DREADD and optogenetic surgeries preclude dual housing due to safety concerns. Because the behavioral experiments must be directly compared to our hyperdrive, DREADD, and optogenetic experiments, all of our rats must receive the same treatment (i.e. single housing).
1910-37473A	Peterson, Lisa	Rat, Mice	ENVIRONMENTAL ENRICHMENT	We will continue to use 1/4 inch ground corn cob bedding, with an igloo in each cage. As the majority of our work is lung cancer prevention, vapor toxicity exposure, and Maximum Tolerated Dose studies, all involving lung function and sample taking, we do not want to introduce any other fine particulate matter into the cages, as this may introduce variables that would complicate data comparison between our previous work and our future work.
1910-37482A	Kawakami, Yasu	Mice	72 HOUR POST-OP ANALGESIA POLICY	We will characterize natural regeneration process after digit amputation. Pharmacological treatments likely affect the regeneration process through systemic modulation of cellular activities, and therefore, we should not treat neonates with analgesics. We will also not use a topical anesthetic, such as lidocaine cream. It is known that digit regeneration involves cells around the injury site, including the nerve. Therefore, topical anesthetic might affect cells that would participate in regeneration. If animals show signs of pain or distress, we will euthanize them rather than treating with analgesics.

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1910-37482A	Kawakami, Yasu	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	Avertin allows us to anesthetize our animals below toe pinch response in a minimal amount of time, with a minimum of stress. Avertin is metabolized very rapidly and these animals recover to the point of ambulation within 45 minutes. This very rapid recovery helps reduce stresses to the animal. Use of other standard anesthetics, such as Ketamine, require very high doses to bring the animal under toe pinch response, which would cause a prolonged recovery period and stress. This would affect animals' ambulation and normal walking behavior. Normal ambulation of animals is important, because ambulation causes weight loading to the knee. For this purpose, it is important that animals recover from anesthesia and show normal ambulation as quickly as possible without stress. We have already performed experiments in the last 3 years and collected data. The use of Avertin makes all experimental conditions consistent with the last 3 years, and make data comparable without any possibility of introducing variable factors by anesthetic agents. We will also not use Isoflurane. Isoflurane is a profound respiratory depressant, and respiration must be closely monitored. To perform survival surgery with minimum operation period, we consider such characteristics are not suitable. Therefore, we plan not to use isoflurane.
1910-37483A	Largaespada, David	Pig (Biomedical)	SOCIAL HOUSING	Whenever possible, pigs will be group housed. However, pigs may have to be physically separated during drug administration to ensure that each animal receives the entire dose. It may also be necessary to separate animals during blood collection procedures. Animals will be placed in a separate kennel where they can still see each other and then be released into group housing immediately after blood collection/drug administration.
1910-37487A	Freedman, Tanya	Mice	MULTIPLE SURGERY	Because the primary tumors reach endpoint prior to establishment of robust metastasis, primary tumor resection will be necessary to assess metastatic growth and burden in these models. All procedures for tumor resection will include anesthesia and pain relief in the same manner as provided for the initial surgery. Due to the increased blood vessel growth associated with primary tumors, cauterization of blood vessels may be required.

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1910-37487A	Freedman, Tanya	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	Based on previously published data, we expect nearly 100% of wild type mice will survive a 5 mg/kg dose and 75% of wild-type mice to survive a 10 mg/kg dose. However, it is possible that some of the Lyn knockout animals used for this study may have defects in inflammation regulation and it is possible they may not survive to the 120 hour endpoint. Although we strive to use models that do not administer untoward discomfort, the LPS injection model is a commonly used research model designed to mimic the effects of Toxic shock syndrome or sepsis commonly seen in human patients. Sepsis is a deadly disease with few treatment options and LPS challenge has proven useful for testing the effects of different genetic manipulations on the immune system's response to inflammatory stimuli. At the doses we plan to use in this study, we expect that even at the highest dose, roughly 75% of wild-type mice will survive the procedure. However, because this procedure may lead to death, we plan to monitor the mice closely, every hour for the first 24 hrs, to ensure animal well being. If an animal has a lack of responsiveness to manual stimulation, immobility, and/or an inability to eat or drink, the animal will be Euthanized to limit the potential for harm. We believe monitoring every hour for the first 24 hrs is sufficient to prevent suffering in the event an animal is unable to control the immune response. After 24 hrs, the likelihood of death decreases dramatically and it would be safe to monitor the mice every 4-6 hours for the next 24 hrs and after that time period, daily checks should be sufficient.
1910-37493A	Lim, Hubert	Mice, Rat	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	Animals will be monitored for reflexivity, heart rate, blood oxygen levels and body temperature every 15 minutes during surgical experiments. In some rare instances during prolonged neural recordings it will not be possible to access the animal inside of our recording booth for 30+ minutes. In these cases, the animal's heart rate, blood oxygen levels and body temperature will still be monitored every 15 minutes, and reflexivity will be recorded at the conclusion of the neural recording session. (Acute nerve and brain surgery with stimulation
1910-37507A	Hallstrom, Timothy	Mice	MULTIPLE SURGERY	This procedure depends upon two surgeries. The first is the actual optic nerve crush assay. This damage can promote axon regeneration, depending on the underlying genotype tested. To detect the regenerated axons, a second surgery is required. During the second surgery, axons are labelled with cholera toxin B subunit (CTB). This minor surgery involves injection into the vitreous of the anesthetized mouse. We are skilled with intravitreal injections and expect errors to be minimal.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
1910-37507A	Hallstrom, Timothy	Mice	72 HOUR POST-OP ANALGESIA POLICY	We propose not using analgesia on the neonatal models based on the following criteria: 1. This is a minor procedure, involving a small incision across the developing neonate eyelid. This tissue is partially lost within days following the procedure during normal neonate development. 2. In our experience, the pups recover quickly from this procedure and do not display evidence of pain following the procedure. Observations on evidence of pain have looked for A) lethargy or reluctance to move; in contrast all the pups are active and nursing. B) Labored or increased respiration has not been observed. C) No decrease in appetite has been observed, as all pups continue nursing and do not lose body weight. 3. It is unclear how certain analgesics might affect cellular changes in the retina that we are observing.
1910-37507A	Hallstrom, Timothy	Mice	EUTHANASIA METHOD	used only on day 0 neonates, or if older mice appear to have survived C02 treatment.
1910-37510A	Mand, Sandy	Fish (Other)	SANITATION FREQUENCY	We use under-gravel filters where the sediment waste on the gravel is siphoned out monthly and above-tank charcoal filter systems where the charcoal cartridges are changed based on manufacturer's recommendations. Water is changed out on a weekly basis and each week the water is tested.
1910-37517A	Gewirtz, Jonathan	Mice, Rat	MULTIPLE SURGERY	Optogenetic techniques requires two surgical procedures: (1) stereotactic microinjection of the channelrhodopsin-containing virus; and (2) implantation of the LED light source for activation of the transfected channelrhodopsin. These surgeries are oftentimes completed at one time (virus injection followed by LED implantation) when it's appropiate to light-activate neuron somas. However, it's a more precise manipulation to light-activate the axon terminals of neurons having incorporated the channelrhodopsin, and therefore drive the activity of one particular neuronal pathway. In our experiments, viral targeting occurs within the glutamatergic neurons of the anterior cingulate cortex (ACC), whereas LED activation occurs at the axon terminals of these neurons within the basolateral nucleus of the amygdala (BLA). This activation of axon terminals controls for effects of activating ACC-containing neurons that project to other regions of the brain. These projections are hetereogeneous and could influence a range of behavioral outputs. It's feasible to complete both surgeries in quick succession; however, doing so requires several hours and could compromise the health of the surgical subject. This technique of axonal activation has been reviewed previously (Tye 2012). All animals will be given adequate time (3-4 weeks) to recover between surgeries. Further, medication (ketaprofen) to alleviate post-operative pain will be administered following both procedures.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
1910-37521A	Michaeli, Shalom	Rat	MULTIPLE SURGERY	A chronic pain state needs to develop prior to electrode implantation We may need to allow time for viral expression before implanting optical fibers
1910-37521A	Michaeli, Shalom	Rat	72 HOUR POST-OP ANALGESIA POLICY	Subjects with peripheral neuropathy cannot receive post-operative analgesics because these will inhibit the spinal neuroplasticity intended to induce the condition of study.
1910-37521A	Michaeli, Shalom	Rat	NON-PHARMACAUTICAL GRADE COMPOUNDS	Urethane has several advantages, including several possible administration routes, steady and long-lasting (6–12 h) surgical level of anesthesia, minimal effects on respiration and cardiovascular system, and muscle relaxation. Although some thalamic and cortical suppression has been identified, several regions are only minimally modulated by urethane, and peripheral stimuli produce reflexes at the central nervous system level that modulate autonomic functions. Urethane has mild effects on multiple ion channels, a feature distinguishing it from many other anesthetics. At an anesthetic concentration, GABAA and glycine receptors are only slightly enhanced (20%–30%), while certain glutamate and α-amino-3-hydroxy 5-methyl- 4-isoxazolepropionic acid receptors are only modestly inhibited (10%–20%). In addition, the anesthetic concentration of urethane slightly (15%) enhances the function of nAChRs (Hara and Harris, 2002). Therefore, urethane at a concentration near the surgical level anesthesia may be more suitable for electrophysiologic measurements and pharmacologic studies than other anesthetics. Functional connectivity under anesthesia of the brain has been shown to be closer to that of an awake animal using urethane in comparison with other most commonly used anesthesia protocols (e.g. isoflurane and medetomidine). These findings justify utilization of urethane.
1910-37521A	Michaeli, Shalom	Rat	SOCIAL HOUSING	Animals undergoing optrode implantation may need to be singly housed post-implantation to avoid damaging each other's implants.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
1910-37539A	Steer, Clifford	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	Preparation: Before a surgery, Avertin solution pH will be evaluated by pH paper. When the pH of the Avertin solution is lower than 6, MGL will discard all the Avertin solution and new one will be prepared. It is known that Avertin adverse effects are caused by toxic products generated by light or heat of the Avertin solution and those toxic products will lower the solution pH below 6. Justification: The MGL uses Avertin (222 tribromoethanol/ tert. Amyl alcohol) for our anesthetic. This anesthetic allows us to anesthetize our animals below toe inch response in a minimal amount of time. We require our animals to be below toe inch response because residual nerve responses cause flinching of the animal tissue and make the microsurgical procedures – vasectomies and embryo transfer – very ineffective. Avertin has the qualities of placing the animals under toe pinch response with a minimum of stress, usually 2-3 minutes for complete effect. Avertin is metabolized very rapidly and these animals recover to the point of ambulation within 45 minutes. This very rapid recovery helps reduce stresses to the animal that may impact the ability of the animal to maintain the pregnancy from embryo transfer. Use of other standard anesthetics ie: Ketamine, etc, require very high doses to bring the animal under toe pinch response, resulting in a very prolonged recovery period and subsequent stressor induced loss of pregnancies.
1910-37539A	Steer, Clifford	Mice	EUTHANASIA METHOD	Procedure is instant. Mice are dispatched immediately. Also, we do not want the embryos to be anesthetized upon harvest. We will only use decapitation for embryos, as described in the procedures.
1911-37568A	Yamamoto, Masato	Mice	MULTIPLE SURGERY	In the animals the therapeutic viruses are injected into the orthotopic pancreatic tumor, both the initial cell inoculation and the injection of the virus will be performed after surgically opening abdomen. There is no method to inoculate the cell into the pancreatic bed precisely with minimal leakage into peritoneal cavity without opening abdomen. There is no way to inject the therapeutics accurately into the pancreatic tumor without opening abdomen. Therefore, two operations are inevitable for such experiments

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
1911-37568A	Yamamoto, Masato	Mice	TUMOR ENDPOINT CRITERIA	Remarkably functional treatment occationally induce tumor ulceration when anti-tumor effect is strong. Usually, ulceration is seen before the tumor disappears. This is a part of therapeutic effect and the ulceration is self limiting. We want to observe ulcerated tumor up to 7 days unless continuous oozing (>24hrs) or infection is observed or reaching other euthanization criteria. Signs of bleeding: Observation of bleeding from tumor, Blood on bedding, Euthanasia criteria for tumor ulcer bleeding: 1) oozing without complete hemostasis from tumor ulceration more than 3 hrs, or 2) bleeding more than 50ul (makes 6mm diameter stein on Kim Wipe) in 30min. Signs of Infection: Observation of pus, pus on bedding Euthanasia criteria for tumor infection: when any sign of infection was observed.
1911-37597A	O'Connell, Timothy	Mice	SOCIAL HOUSING	Similar to all our prior TAC studies, we request that the mice be individually housed post-surgery for the following reasons: 1. Group housed mice will groom each other and this excessive grooming of the surgical wound can impede healing and increase risk of infection. 2. Group housed mice will always work towards defining a social hierarchy. In an effort to establish this hierarchy, the mice fight with each other. This added stress will confound our ability to assess/record/monitor the cardiac physiology of each individual mouse which is the entire foundation of our proposed study. If we are not able to differentiate the cardiac physiological differences (measured via echocardiography--wall thicknesses, fractional shortening, ejection fraction, global longitudinal strain, stroke volume, etc) between the genetically different mice undergoing MI-I/R, we will not be able to report/publish any data. {Keep in mind that the mice requested in this protocol are only for learning the surgical technique and will not undergo the Echo procedures--we are operating this protocol as though it was the "real" thing, hence the need for individual housing justifications). 3. We have attached a review from Neuroscience and Biobehavioral Reviews that beautifully summarizes the cardiac complications that manifest in social housing situations in rodents. The increased fibrosis (Fig 6 and 7) and the increased arrhythmias in Fig 11. It is these confounding factors we need to avoid in our study.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
1911-37602A	Jenkins, Marc	Mice	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	The food consumption of the mice should not change with this addition of 2W peptide or amino acid diet and no weight loss is anticiptated. If a mouse is found to be in distress, an RAR vet or vet tech will be consulted and allowed to treat as needed or the mouse will be euthanized. Bromodeoxyuridine is not acutely toxic to mice at the dose being given and no impact on the animals health is expected. If a mouse is found to be in distress, an RAR vet or vet tech will be consulted and allowed to treat as needed or the mouse will be euthanized. The water consumption of the mice should not change with the addition of OVA or these antibiotics and no weight loss is anticiptated. If a mouse is found to be in distress, an RAR vet or vet tech will be consulted and allowed to treat as needed or the mouse will be euthanized.
1911-37610A	Thayer, Stanley	Rat, Mice	EUTHANASIA METHOD	E17 fetuses will be removed from the euthanized dam and euthanized via decapitation with sharp scissors
1911-37610A	Thayer, Stanley	Rat, Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	Halothane is no longer used clinically. However its use for overdose euthanasia is currently used in our laboratory and has been for many years. Thus, to be consistent with past and ongoing studies we wish to continue with this procedure. Because pharmaceutical grade halothane is no longer available in the US, we use non-pharmaceutical grade halothane of high purity (>99%). It should be noted that we check for reflexive or any higher order (e.g. struggling, vocalization) response by pinching the toes forcefully prior to rapid decapitation with sharp scissors. Halothane is stored in a cool, dark location prior to use. Within a fume hood, approximately 1 mL of halothane solution is deposited in a Nalgene induction chamber to anesthetize a mouse.
1911-37610A	Thayer, Stanley	Rat, Mice	SOCIAL HOUSING	Group housing appears to damage surgical implants. Single housing is standard procedure for surgical implants that can be perturbed by cage mates. While single housing is more stressful to mice than group housing, single housing is critical to the health of the animals in cases where cage mates could damage surgical implants, such as intra-cranial implantations. In our lab, pilot studies have shown that having cage mates decreases the long-term stability of EEG electrodes. Thus, to control for the potential for damage to surgical implants, decrease risk of complications post-surgery, and decrease total number of subjects necessary to conduct these studies, we propose to single house animals that receive intra-cranial implantations. This procedure results in an overall decrease in our animal usage.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
1911-37621A	Olson, Julie	Mice	EUTHANASIA METHOD	Neonates younger than 7 days, do not require additional justification for not anesthetizing prior to decapitation. The demyelinating disease which the mice develop following TMEV infection or EAE induction leads to hind limb paralysis and loss of weight. The mice are monitored daily and receive food supplements until the experimental end point, unless the mice have reached a moribund state at which point they would be euthanized. Some mice with EAE will completely recover from the hind paralysis.
1911-37623A	[redacted]	Nonhuman Primate (Macaques)	MULTIPLE SURGERY	The placement of a vascular access port is considered a minor surgical procedure (peripheral, not entering a major body cavity), essentially similar to routine catheter placement with the notable exception that the access site is placed underneath the skin. VAPs improve safety, and increase animal comfort when intermittent or recurrent venous access is required by avoiding painful 'catheter starts'. VAPs also allow NHPs to participate fully in enrichment programs and social group activities without the restrictions inherent in conventional approaches. (Placement of Vascular Access Port) In order to safely undergo MRIs, animals will need to have their microchips removed. MRI scans are needed to provide accurate models of the brain and cranium to facilitate surgical plans that precisely target brain areas and structures that are of interest to us and/or to evaluate changes to the brain over time as a result of study treatments. Many of these subsequent procedures are survival surgeries. This is a minimally invasive minor surgery, and pain and recovery time are expected to be minimal. Animals will be monitored and receive analgesics (Meloxicam) for three days following surgery. (Microchip removal)
1911-37634A	Pravetoni, Marco	Rat	BLOOD COLLECTION LIMIT	Animal will be euthanized by this method and will not survive this blood collection
1912-37649A	Whitley, Chester	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	NA (AAV vector administration) NA (AAV vector administration)
1912-37651A	Lesne, Sylvain	Mice	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	Recording body weights weekly would introduce considerable pre-handling of the mice that could affect our Barnes Circular Maze test.
1912-37651A	Lesne, Sylvain	Mice	SOCIAL HOUSING	Mice that are returned to cages after maze trials can often start fighting, which can make behavioral data not usable or unreliable. We therefore need to singly house all animals that will be behaviorally characterized. Animals will be acclimated to single housing the week before behavioral tests begin. Thus, animals may be singly housed for up to two weeks and no longer.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
1912-37651A	Lesne, Sylvain	Mice	FOOD/FLUID RESTRICTION RECORDKEEPING	Recording body weights weekly would introduce considerable pre-handling of the mice that could affect our Barnes Circular Maze test.
1912-37666A	Regal, Jean	Rat	MULTIPLE SURGERY	In this procedure, animals undergo surgery with anesthesia on gestation day 14 to cause placental ischemia. Then on gestation day 17 or 18 a carotid artery catheter is placed under isoflurane anesthesia for monitoring of blood pressure on gestation day 19 prior to exsanguination under anesthesia and necropsy. The carotid artery catheter is not placed at time of RUPP surgery on day 14 of gestation because maintaining patency of the catheters for prolonged periods of time is difficult in the rat and previous experiments have revealed that an extra surgery on day 17 or 18 significantly increases the overall success rates of the experiments and reduces the number of animals required to complete studies overall. Animals that are allowed to give birth for use of the offspring will not undergo carotid artery placement.
1912-37666A	Regal, Jean	Rat	SOCIAL HOUSING	I request an exception for the pregnant animals having undergone survival surgery with catheters in place. They need to be housed singly. For offspring they will be group housed after weaning, with sex appropriate companions. After consultation with the veterinarian, I am requesting single housing for both of these following situations with pregnant rats: 1. Post op pregnant rats from gestation day 14 (surgery) until necropsy (gestation day 19) with carotid catheters (surgery at gestation day 18) or without carotid catheters (no second survival surgery). 2. Post op pregnant rats from gestation day 14 (surgery) until pups are born and necropsied at either postnatal day 13 or weaned at 21 days.
1912-37667A	Vezys, Vaiva	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	In our model of intestinal pathology and autoimmunity, we use death as an endpoint, especially when we are testing any interventions to alleviate intestinal pathology. This is because rescuing animals from death is a very high bar for efficacy. The endpoints are death or recovery from having malaise or being moribund. We have often seem moribund recover and become completely healthy with our various interventions.
1912-37667A	Vezys, Vaiva	Mice	EUTHANASIA METHOD	Decapitation w/scissors will only be used as a means of euthanasia on P0-P4 neonatal mice. Neonatal mice do not respond to sedation.

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1912-37667A	Vezys, Vaiva	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	Pharmaceutical grade Avertin is no longer available. Therefore, it is necessary that we mix our own stocks from non-pharmaceutical grade Avertin. All stocks are sterile filtered and IACUC guidelines will be followed. Avertin will be kept sterile and are only used for two weeks. Avertin is required for the experiments outlined in this protocol since isoflurane causes muscle contractions and prevent accurate data acquisition. Additionally, isoflurane inhalation via a bell jar only lasts a short time period. Since a vaporizer is not available for use in RAR spaces, avertin will be used to ensure adequate timing for procedure to be performed. Avertin has been used in procedures for several years and is listed as an anesthetic in order to maintain consistency across previous experiments. Avertin will be stored in a light resistant container and pH will be tested every use prior to administration.
1912-37681A	Segura, Bradley	Mice, Guinea Pig	EUTHANASIA METHOD	Decapitation is a standard approach for procurement of neural system tissue, sedatives may interfere with the cellular dynamics. Decapitation of guinea pigs will be provided by individuals with a demonstrated high degree of technical proficiency. We will keep a decapitation log and maintenance log of decapitation equipment.
1912-37696A	Ondrey, Frank	Rat, Mice	BLOOD COLLECTION LIMIT	Blood collection is terminal
1912-37696A	Ondrey, Frank	Rat, Mice	ENVIRONMENTAL ENRICHMENT	We will continue to use 1/4 inch ground corn cob bedding, with an igloo in each cage. As the majority of our work is lung cancer prevention, vapor toxicity exposure, and Maximum Tolerated Dose studies, all involving lung function and sample taking, we do not want to introduce any other fine particulate matter into the cages, as this may introduce variables that would complicate data comparison between our previous work and our future work.
1912-37717A	Grissom, Nicola	Mice	EUTHANASIA METHOD	Certain molecular indices, for example protein phosphorylation states, are especially sensitive to external manipulations and can change rapidly as a result of drug/anesthetic exposure or CO2 exposure. While the preferred method of euthanasia in the laboratory will be CO2 exposure followed by decapitation to ensure death, when the experiment requires that we measure protein phosphorylation or activity changes, or changes in the expression of immediate early genes, we will employ cervical dislocation followed immediately by decapitation to maximize the speed of tissue collection. Dr. Grissom has extensive experience (6+ years) with this approach, and she will perform these procedures herself until such time as she is confident in the ability of other approved members of the protocol to execute this method with the speed necessary to both 1) ensure the humane and immediate death of the animal and 2) to ensure the quality of the brain tissue collected as a result.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
1912-37717A	Grissom, Nicola	Mice	SOCIAL HOUSING	In special circumstances, the welfare of the animals requires the need for individual housing instead of group housing. This could include instances of aggression/injury from cagemates, post-operative recovery of a single surgical subject, or behavioral monitoring in a home cage environment.
1912-37727A	Bischof, John	Mice	EUTHANASIA METHOD	The lab staffs are well trained and proficient enough to perform the procedure quickly and effectively.
2001-37736A	Schumacher, Robert	Mice	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	The recording frequency for this procedure will only be once at drug administration since this is mild sedation and not anesthesia for a procedure lasting less than 10 seconds.
2001-37740A	Lokensgard, James	Mice	EUTHANASIA METHOD	Decapitation is used on one-day old pups to collect brain tissue for cell cultures.
2001-37741A	Lokensgard, James	Mice	MULTIPLE SURGERY	The scientific justification for multiple surgeries is that repeated antigen exposure mimics the HIV patients on optimal therapy that show CSF viral escape (i.e., HIV blips). Thus, multiple surgeries in our model will boost recall immune responses to kill the encountered peptide-loaded glial cells to control CNS inflammation. After at least 30 days these animals will undergo CFSE dye- and viral peptide-loaded glial cell injection. The scientific justification for multiple surgeries is that by injecting the Luciferase-expressing LV-CMV-p24-luc, we can monitored longitudinally over time using bioluminescent imaging for luciferase reporter gene expression. Later on we will inject anti-PD-1 or anti-PD-L1 Abs into the right lateral ventricle to monitor and assess increased viral clearance in the presence of PD-1: PD-L1 pathway blockade using bioluminescent imaging.
2001-37741A	Lokensgard, James	Mice	72 HOUR POST-OP ANALGESIA POLICY	NSAIDs or other anti-inflammatory drugs will not be administered to these animals at any point in the study as they will interfere with the immunological parameters that are central to this study. Recent articles that refer to the potential use of other drugs (e.g., Gabapentin, Memantin and Mexiletin) for analgesia were considered as alternate analgesic agents. However, these compounds have significant effects on neural/brain function and would interfere with our ability to study the oxidative stress response in the brain during viral encephalitis and hence will not be used.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2001-37746A	Bee, Mark	Amphibian (Other)	SANITATION FREQUENCY	A small net or gloved hand is used to remove large debris (e.g., leftover cricket carcasses, feces) from each tank on a daily basis. On a designated “cleaning day” each week, frogs are temporarily housed in small plastic containers (identical to the containers used to collect them from the field) while their home tank, including perches and refugia, is cleaned using hot water and vigorously scrubbing with a brush or sponge. A minimum of 2 times/year, each tank, including perches and refugia, is sanitized using a 10% bleach solution and hot water followed by extensive and repeated rinsing with hot water to remove chemical residues. We do not use soaps/detergents/bleach during weekly cleanings to avoid the possibility of harming the frogs by exposing their porous skin to potentially harmful chemicals. Compared to other vertebrates, frogs are FAR more sensitive to chemicals in their environment, which is what makes them such important "canaries in the coal mine" to monitor the health of natural environments. Thus, with frogs, there is potentially a trade-off between cleanliness and chemical toxicity. Based on our experience running the IMHA since 2006, and based on conversations with our area veterinarians over this time frame, we believe our current sanitation practices balance this trade-off quite well.
2001-37746A	Bee, Mark	Amphibian (Other)	BLOOD COLLECTION LIMIT	We do NOT actually need an exception to the blood collection limit. Instead, we are using this space to provide additional information on this procedure. Previous stipulations about making these blood draws under anesthesia as a terminal procedure suggest this additional information might be helpful. (Is there a better place for this somewhere else in e-protocol??) We are interested in examining the effects of endogenous and exogneous hormones on behavior. Survival blood draws are necessary because we often draw blood prior to conducting behavioral experiments. More importantly, we are interested in the possibility of using experimental designs that balance the order of behavior testing and hormone sampling, which allows us to control for the effects of one on the other. We recently showed that 10 tested females unanimously exhibited robust behavioral approaches toward male mating calls when tested immediately (< 2 min) following cardiac puncture (Gall et al. 2019). That is, within less than 2 min of having blood drawn from their hearts, females were interested in mating and exhibited normal mating behavior. This suggests to us that frogs may be more tolerant of cardiac puncture than other laboratory animals.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2001-37746A	Bee, Mark	Amphibian (Other)	NON-PHARMACAUTICAL GRADE COMPOUNDS	Based on previous conversations with IACUC, our understanding is that pharmaceutical-grade tubocurarine is not available. Paralytics must also be prepared in amphibian ringers solution. When conducting experiments that require immobilization, we prepare fresh tubocurarine solutions (tubocurarine as powder dissolved in amphibian ringers solution) on a monthly basis and autoclave these solutions prior to use in animals. Paralytics must be prepared in amphibian ringers solution. When conducting experiments that require immobilization, we prepare fresh succinylcholine solutions (succinylcholine chloride as powder dissolved in amphibian ringers solution) on a monthly basis and autoclave these solutions prior to use in animals.
2001-37750A	[redacted]	Nonhuman Primate (Macaques)	MULTIPLE SURGERY	Animals have previously been implanted using minimally invasive technique with a vascular access port to ensure proper delivery of the planned immunosuppression regimen prior to transplant and facilitate cooperation with ongoing clinical care related to fluid administration and clinical monitoring in the absence of chemical or physical restraint. (Group B recipients only: Kidney transplant and naive kidney nephrectomy)
2001-37757A	Araque, Alfonso	Mice	MULTIPLE SURGERY	In our procedure we state that following viral injections some of our mice will be given a cannulae or an optic fiber implant. We would like the alternative of performing this surgery separately to shorten the amount of time the mice wear these implants. Expression of the injected virus takes 2-4 weeks. This means that the mice will have the cannula and the optic fiber implant at least that long before commencing the experiment. These implants extend from the surface of the brain a couple of centimeters and some mice either by grooming or scratching can remove or alter this implants. This can result in open wounds, infection and increased death rates. Further, after implantation of the cannulas, each mouse needs to be single housed to lower the risk of losing the implants by action of their cage mates. Therefore, by decreasing the amount of time the mice wear the cannula, it can increase their survival rates and decrease the amount of time the mice needs to be single housed.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2001-37757A	Araque, Alfonso	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	We would like to use Tribromoethanol as an anesthetic for the transcardial perfusion procedure which is a terminal procedure. When used appropriately Tribromoethanol, can be a very effective non harmful anesthetic. Urethane is purchased from Sigma-Aldrich (U2500), and this non pharmaceutical-grade urethane is used as an anesthesia in non-survival surgeries. Urethane is the best and only option for this procedure because results will be comparable to previous research. (DOI:10.1523/JNEUROSCI.4801-06.2007 , DOI: 10.1073/pnas.1520759113)
2001-37768A	Haynes, Christy	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	Following injection of Plasmodium chabaudi or saline (control), mice would be monitored every 24 to 48 hours by personnel on the protocol for weight, activity level, hematuria, and general appearance. Observance would be recorded and the mice can only be euthanized when the parasite level are at the appropriate level (5% to 50%). The exception would be if the mice were very sick with major weight loss. In this case, the mice will be monitored closely for 24 hrs, and they will be euthanized if no improvement was seen.
2001-37778A	Tranquillo, Robert	Sheep (Biomedical)	MULTIPLE SURGERY	It is important to understand if the conduit can support a transcatheter valve implant, as this would be the expectation clinically.
2001-37780A	Bartolomucci, Alessandro	Mice	MULTIPLE SURGERY	We request an exception to allow for our use of AAV viral infusion and chronic icv peptide delivery in otherwise undisturbed animals. Use of two separate surgical procedures (AAV + minipump implantation) is beneficial, as it will reduce the amount surgery done at one time (reduces potential for tissue trauma), minimizes the need for anesthesia supplements during surgery, allow animals to fully recover between each class B surgery. It also maximizes the potential for animals to reach the study completion. Maximal viral-mediated gene transfer occurs approximately 3-8 weeks after infection, depending on the brain region and neuronal process (cell body versus terminals) being targeted. In vitro and in vivo studies begin at this time, but require up to 4 weeks of additional time for completion. This method will substantially reduce the overall number of animals required to complete experimental studies. This conservation of animal resources is particularly useful when studies occur in transgenic animals, which require considerable time and money to generate. The time between individual surgeries will be at ~4 weeks. We do not anticipate two individual survival procedures to produce any functional deficits. Animals will be monitored after each surgery as described above, and will be given saline (0.5 ml, s.c.) and ketoprofen (5 mg/kg, s.c.) to counteract any post-operative dehydration or pain, respectively.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2001-37780A	Bartolomucci, Alessandro	Mice	SOCIAL HOUSING	Animals may be singly housed at times to prevent stress, injury and death due to same-sex incompatibility between male mice that can be experienced even in groups of male siblings in some strains of mice. Animals may be singly housed at times to allow full recovery from surgery during the immediate post-surgical phase and as required for the accurate assessment of indirect calorimetry, food intake and locomotor activity during the duration of the recording (up to 8 weeks).
2001-37790A	Goyal, Sagar	Pig (Agricultural)	EUTHANASIA METHOD	The veins of these animals are easily accessible for the administration of euthanasia solution.
2001-37795A	Pang, Hongbo	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	We have used avertin routinely in our previous studies (Pang HB et al, 2014). It is easier to store and use in the lab.
2001-37795A	Pang, Hongbo	Mice	SOCIAL HOUSING	The group house could not guarantee the same alcoholic dosage in the liquid diet for every animal. So according to reference 1, the mice need to be separated into every single cage (1 mouse in 1 cage with a liquid diet feeding-tube inside) for the same alcohol treatment to each animal. 1. Adeline B, et.al. Nature Protocols, Vol.8 No.3, 2013, 627-637
2001-37798A	Brady, Valerie	Fish (Other)	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	We will follow INAD policy on anesthesia data recording (added as attachment). We are inducing minor sedation to make fish handleable, so their time in anesthesia until recovered is expected to be less than 15 minutes. INAD policy states that individual fish records do not need to be collected for fishes immersed in 40 mg/L solution, become handleable within 5 minutes and are therefore removed from immersion, and time to recovery does not exceed 20 minutes (pg. 11 of INAD:AQUI-S 20E - Study Protocol). Deviations outside these parameters will be recorded to comply with INAD program. At minimum, we will be collecting and reporting information on dosage, fish species, numbers of each species treated, and whether the outcome was satisfactory (i.e. did fish become handleable within 5 minutes and did they recover within 20?). We will start with 40 mg/L solution strength but can adjust in the field. For example, trout may enter unintended deep sedation in a 40 mg/L solution, and non-trout fishes may take longer than 5 minutes to attain adequate sedation. If that occurs we will start treating trout first at a 30 mg/L, and after all trout are tagged, double the solution strength to 60 mg/L to accommodate non-trout fishes. Dosage adjustments will always remain within the accepted ranges for trout and non-trout fishes provided in INAD Study Protocol pg. 11.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2001-37802A	Tran, Phu	Mice, Rat	EUTHANASIA METHOD	Dr. Tran and his staff are experienced in performing mouse decapitation proficiently. Rapid decapitation without sedation is performed with large sharp scissors only in juvenile rats (P0, P7, or P15 timepoints in our experimental design). All laboratory personnel who perform this euthanasia method have demonstrated technical skill with the method. All rat pups undergoing rapid decapitation are significantly under 200g (as stipulated by the University of Minnesota RAR decapitation guidelines). Staff performing decapitation will have demonstrated technical skill to be able to do this. Also, E17 mice are small, allowing for extremely rapid decapitation.
2001-37804A	Fife, Brian	Mice	MULTIPLE SURGERY	Animals will undergo subsequent nephrectomy to assess the viability of the islets (day +30-100), essential to the research question of this study.
2001-37804A	Fife, Brian	Mice	EUTHANASIA METHOD	Cervical dislocation and decapitation of small rodents no longer require scientific justification or an explanation of why other methods are not suitable. With some exceptions small rodents may be euthanized by these physical methods if performed by individuals with a demonstrated high degree of technical proficiency.
2001-37804A	Fife, Brian	Mice	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	Bromodeoxyuridine is not acutely toxic to mice at the dose being given and no impact on the animals health is expected. If a mouse is found to be in distress, an RAR vet or vet tech will be consulted and allowed to treat as needed or the mouse will be euthanized. The water consumption of the mice should not change with the addition of these antibiotics and no weight loss is anticiptated. If a mouse is found to be in distress, an RAR vet or vet tech will be consulted and allowed to treat as needed or the mouse will be euthanized.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2001-37808A	Lokensgard, James	Mice	MULTIPLE SURGERY	The scientific justification for multiple surgeries is that repeated antigen exposure mimics the HIV patients on optimal therapy that show CSF viral escape (i.e., HIV blips). Thus, multiple surgeries in our model will boost recall immune responses to control CNS inflammation while it may also exacerbate neurotoxicity. If any animal shows signs of illness -- e.g. rough fur, hunched, slow moving or morbid -- prior to the 2nd surgery, we will euthanize the animal. In our experience with MCMV infection of the brain after 30 days, we rarely encounter illness of animals as the MCMV becomes dormant/inactive. Hence we usually don't need additional animals in this experiment. After HIVLP injection, animals will be monitored for any pain, distress, or functional deficit and provided moist food before being housed in [redacted] Surgeon will monitor the animals several times a day for 7 days. Any sick or ill animals will be euthanized by RAR staff. The scientific justification for multiple surgeries is that repeated antigen (viral peptides) exposure in our model may boost recall of specific immune responses. (Injection of MCMV or HSV-1 peptide) The scientific justification for multiple surgeries is that repeated antigen (AI-9) exposure mimics the viral reactivation as seen during CSF viral escape (i.e., blips). Thus, multiple surgeries (i.e., multiple antigen exposures) in our model may boost specific recall immune responses. (2nd AI-9 injection)
2001-37808A	Lokensgard, James	Mice	72 HOUR POST-OP ANALGESIA POLICY	NSAIDs or other anti-inflammatory drugs will not be administered to these animals at any point in the study as they will interfere with the immunological parameters that are central to this study. Recent articles that refer to the potential use of other drugs (e.g., Gabapentin, Memantin and Mexiletin) for analgesia were considered as alternate analgesic agents. However, these compounds have significant effects on neural/brain function and would interfere with our ability to study the oxidative stress response in the brain during viral encephalitis and hence will not be used.
2001-37818A	Lund, Troy	Mice	MULTIPLE SURGERY	The study of CSF over time is part of our long term goal. We do not believe there will be long term distress from this.
2002-37827A	McGaugh, Suzanne	Fish (Other), Fish (Other), Mexican cave tetra	NON-PHARMACAUTICAL GRADE COMPOUNDS	Not available in pharm-grade

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2002-37829A	Johnson, Tim	Turkey	EUTHANASIA METHOD	Euthanasia up to time of transfer to [redacted] is covered under the unit SOP which was approved for the use of cervical dislocation of newly hatch poults up to one week of age.Per unit SOP "Cervical dislocation of young poultry is requested because of the extremely long time needed to euthanize poultry with CO2 especially up to one week of age after hatch. They are resistant to CO2 having hatched under high CO2 conditions in the egg. Anyone conducting euthanasia is trained in using CO2 or cervical dislocation. Senior staff will do cervical dislocation." The earlier IACUC guideline-based euthanasia criteria cannot be used because we are testing the pathogenicity of different ORT strains, which requires assessment of clinical signs. However, if clinical signs beyond that of a typical ORT respiratory infection are demonstrated (including lameness or immobilization, indicative of a systemic infection), birds may be euthanized prior to the study endpoint.
2002-37832A	Mand, Sandy	Fish (Other)	SANITATION FREQUENCY	We use either under-gravel filters where the sediment waste on the gravel is siphoned out monthly or above-tank charcoal filter systems where the charcoal cartridges are changed based on manufacturer's recommendations.
2002-37833A	Perlingeiro, Rita	Mice	MULTIPLE SURGERY	In some few cases (Serial Injury) we will re-injure the muscle with cardiotoxin after 8-weeks, then 3-week, then 3 more weeks. This is to test if the cells are capable of regenerating under for stringent conditions after multiple injuries. As stated elsewhere, the the surgery is minor, involving a small incision with little noticeable pain, distress and functional deficit similar to the first cardiotoxin injection that has been described elsewhere.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2002-37833A	Perlingeiro, Rita	Mice	72 HOUR POST-OP ANALGESIA POLICY	Because the effect of analgesics on muscle regeneration is unknown, and because we want to examine the role of inflammatory cells in skeletal muscle damage/regeneration, we cannot use any agents that may interfere with inflammation. These mice can therefore not be treated with analgesics. The surgeries that required post-op analgesics are minimally invasive requiring only a small (~0.5cm) incision and needle injection. The veterinarian Dr. Hashway has commented that the surgery would cause very minor pain and therefore should not substantially negatively affect the welfare of the animals. If going forward, we find that we cannot perform these experiments due to excessive pain/distress we will then add an analgesic. However, since we do not know the effects of opioids or local analgesics on muscle regeneration, in addition to the strong effect of addiction and dependence that the mice may experience, we request a switch to Pain class C without the administration of any analgesics. We have been having low engraftment since using oral Ibuprofen and have some evidence that analgesics could interfere with our experiments: Stem Cells. 2015 Apr;33(4):1173-86. doi: 10.1002/stem.1927. Cyclooxygenase-2 or tumor necrosis factor-α inhibitors attenuate the mechanotransductive effects of pulsed focused ultrasound to suppress mesenchymal stromal cell homing to healthy and dystrophic muscle. (see attachment).
2002-37833A	Perlingeiro, Rita	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	Our justification is that TBE is only used as anesthetic in non survival procedure in the context of physiological recording of muscle force using an organ bath, where our usual anesthetic ketamine/xylazine is not indicated due to its potential muscle relaxant effect as well as its sensory and motor uncoupling activity from the brain. The alternative of isoflurane pose special challenges with the scavenging of waste anesthetic gases and the requirement of an apparatus/system that is only located in our RAR facility that is too distant from our complex Organ Bath apparatus, neither of which can be moved. Additionally, TBE has been approved by our IACUC on our protocol.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2002-37849A	Ondrey, Frank	Mice	SOCIAL HOUSING	We request to house one female mouse, singly, once smoking exposures begin. We have 7 female and six male mice for this experiment. One female is our naive mouse, with no experimental procedures performed. This mouse is the first mouse we will scan, acquiring parameters for the remaining scans. Initially, this mouse will be housed with another 3 females. On the Monday when the 12 other mice begin cigarette smoke exposures, we want to begin the single housing of the naive mouse. She will be housed singly for 15 to 20 days, until the smoke exposures are complete. Scans are performed after the smoke exposures are complete. We have determined that this mouse should not be exposed to the residual components on the fur of the smoke exposed mice. Communal grooming will expose this mouse to smoke components. She must be completely naive for the scanning parameters.
2002-37862A	Haskell-Luevano, Carrie	Mice, Mice	EUTHANASIA METHOD	Any use of anesthetic will inhibit or block certain blood chemistry that we are studying.
2002-37875A	Cvetanovic, Marija	Frog (Other), Rat, Guinea Pig, Mice	SOCIAL HOUSING	Mice with implants may need to be singly housed to avoid cage mates chewing on the implants.
2002-37875A	Cvetanovic, Marija	Frog (Other), Rat, Guinea Pig, Mice	EUTHANASIA METHOD	Frogs will be euthanized by double-pithing followed by decapitation. We have to resort to physical methods for euthanasia as chemical methods such as barbiturates, tricaine or benzocaine produce long-lasting blockade of voltage-dependent and ligand-dependent ion channels which would confound the experiments aimed to measure the excitability of neurons and axons.
2002-37876A	Hamilton Hart, Sara	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	In this model of cerebral malaria and lung pathology, there is some heterogeneity in the timing and incidence of severe disease (requiring euthanasia, since there are no defined treatments to reverse the lethal disease at that point). However, we need to distinguish between mice that become moribund and those with transient, mild illness, which may recover from the disease (for example, following the proposed cytokine treatments). We and others have explored use of other clinical features that would predict the inevitable onset of lethal disease prior to the criteria used (for example, we have collaborated with Dr. Aaron Johnson at Mayo Clinic, who has used MRI scans of ANKA infected mice as a potential way to anticipate the onset of disease before clinical signs - with minimal success). Hence, the need to use moribundity as a criteria for an experimental endpoint.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2002-37876A	Hamilton Hart, Sara	Mice	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	This restriction is only needed for a few hours and mice are not expected to lose weight. (Food Restriction for Oral Listeria Infection) The procedure proposed is not a restriction in access to water, but instead is provision of water containing antibiotics. We have never seen evidence that decrease their water intake in the past when using this procedure (when water bottles were the norm - the consumption rate seemed similar to regular water). (Procedure 3c: Bone marrow chimeras to test response to IL-10 in malaria) There is no expected weight loss or change in fluid consumption from antibiotic containing water. (Antibiotic water for bone marrow chimeras)
2002-37885A	Dudley, Samuel	Mice	MULTIPLE SURGERY	Mice may receive multiple survival surgeries, including: coronary ligation or uninephrectomy + DOCA implantations, AAV9 jugular vein injection, and transmitter subcutaneous implantation. Mice will undergo either coronary ligation to induce myocardial infarction, or uninephrectomy plus DOCA pellet implantation to induce hypertension. Both surgeries will cause heart failure (HF) in 4-8 weeks. Mice will receive intravenous injection of AAV9 vector before or after HF-inducing surgery to alter the expression of specific genes. Subcutaneous implantation of transmitters will be performed before the experiment endpoint to assess the arrhythmic risk in mice. At least 1-2 weeks of recovery time will be allowed between any two survival surgeries to minimize the stress. Mice will be closely monitored after survival surgery. Any signs of ill health will exclude the animal from following study.
2002-37885A	Dudley, Samuel	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	We noticed that myocardial infarction induced by coronary ligation led to increased mortality in mice. We suspect that lethal arrhythmia may be the cause of the death. To prove that, we need to record the heart rhythm by telemetry when death happens.
2002-37885A	Dudley, Samuel	Mice	SOCIAL HOUSING	Mouse during telemetry recording will be housed singly to avoid cross talkings between transmitters. Mouse with uninephrectomy plus DOCA pellet implantation will be housed singly to avoid the fight between mice which may cause skin damage where the DOCA pellet is implanted.
2002-37885A	Dudley, Samuel	Mice	ENVIRONMENTAL ENRICHMENT	To avoid signal cross talking between the transmitter inside each individual mouse and receiver, mouse has to be housed singly.

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2002-37888A	Vulchanova, Lucy	Mice	MULTIPLE SURGERY	1. In some mice, brain injections of viral vectors or neuronal tracers will precede (1-8 weeks) or follow (2-8 weeks) Spared Nerve Injury. The addition of these injections are not expected to exacerbate the level of pain and distress associated with spared nerve injury. The rationale for administering the two survival surgeries in the same animal is that the viral injections will allow us to study and manipulate specific neurons within the circuits that mediate chronic hypersensitivity in the SNI model. 2. In some mice that receive a brain injection, it will be necessary to administer a second viral injection in the same location 2-4 weeks after the first injection. Although we originally proposed to administer the two viral injections through an in-dwelling cannula and have approval for this approach, we are concerned that we don't know how the scar tissue that forms around the cannula will affect the distribution of the second vector. Therefore, we would like to compare the dual injection approach to the in-dwelling cannula approach. We do not expect that the second injection will result in additional pain or distress. 3. In some mice that receive a brain injection, it will be necessary to administer a second viral injection in the spinal cord 2-8 weeks after the first injection. Two viral vector injections are needed for monosynaptic gene transfer.
2002-37888A	Vulchanova, Lucy	Mice	72 HOUR POST-OP ANALGESIA POLICY	Post-operative analgesic therapy is contraindicated because the objective of the procedure is to determine whether the experimental treatment causes hypersensitivity. Provision of analgesics would inhibit the neurochemical changes required to develop the hypersensitive states to be studied.
2002-37888A	Vulchanova, Lucy	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	Exception is requested for the use of non-pharmaceutical grade urethane for non-survival surgeries. In our experience, this usually produces a very stable and long-lasting (8-16 hours) state of anesthesia, which is the reason for choosing this non-pharmaceutical grade anesthetic agent for these experiments.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2002-37897A	Sachdev, Deepali	Mice	TUMOR ENDPOINT CRITERIA	While the injection itself should not cause significant pain (since the animal is anesthetized), we will be allowing these tumors to grow (in control animals) until the tumor burden necessitates euthanasia, i.e. the animal becomes moribund. Hence, we have designated this procedure as pain Class C. In order to assess the full extent of which IGF1R targeted drugs and CDK4/6i reduce established bone metastases, we need to be able to observe the control animals up until the state at which they become moribund. If animals are sacrificed earlier, we may miss metastases in drug treated animals that arise late or that have acquired resistance to the treatment. The term moribund refers to an animal that is near death or in the process of dying. Animals in this state are often comatose (unresponsive and unaware of stimuli). When we first notice signs of lethargy, lack of eating/drinking, ruffled fur, posture, increased respiratory rate, and lack of grooming in these subset of animals, we will begin monitoring animals twice daily (holidays and weekends included). Other clinical signs that indicate the primary tumor(s) has metastasized may include seizures, swollen abdomen, labored breathing. We will communicate with RAR extensively when any of the above symptoms are observed and are open to treatment options at onset of symptoms outlined (analgesia, soft bedding, moist food, easy to reach food/water, etc).
2002-37897A	Sachdev, Deepali	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	For 50 mice injected intracardiac with MDA-MB-231-BoM: While the injection itself should not cause significant pain (since the animal is anesthetized), we will be allowing these tumors to grow (in control animals) until the disease burden necessitates euthanasia, i.e. the animal becomes moribund. Hence, we have designated this procedure as pain Class C. In order to assess the full extent of which IGF1R targeted drugs and CDK4/6i reduce established bone metastases, we need to be able to observe the control animals up until the state at which they become moribund. If animals are sacrificed earlier, we may miss metastases in drug treated animals that arise late or that have acquired resistance to the treatment. Frequency of observation of these animals in outlined in the health and monitoring section. Death is not an endpoint for these animals.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2002-37899A	Kelly, Rosemary	Pig (Biomedical)	MULTIPLE SURGERY	The placement of the constrictor on the LAD is an essential component to the creation of hibernating myocardium. Pain and distress will be minimized by using a multi modal ,balanced anesthetic protocol. The pig are socialized with with people to decrease the fear response before and after the procedure to ease in handling and transport. The pigs are monitored closely in recovery until they can stand on their own. (Thoracotomy - LAD Hibernation) The revascularization procedure is an essential component of this study to evaluate the effects of bypass on hibernating myocardium and how mitochondrial transplant or exosome patch may serve as an adjunctive therapy. Pain and distress will be minimized by using a multi modal ,balanced anesthetic protocol. The pig are socialized with with people to decrease the fear response before and after the procedure to ease in handling and transport. The pigs are monitored closely in recovery until they can stand on their own. (Revascularization or Off Pump Bypass-Sternotomy and femoral cut down)
2002-37899A	Kelly, Rosemary	Pig (Biomedical)	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	The process of loading the animals and weighing them has the potential of causing distress. Decreasing the frequency will provide RAR and the lab the objective data needed without stressing the animals more than necessary.
2002-37899A	Kelly, Rosemary	Pig (Biomedical)	SOCIAL HOUSING	After the hibernation and revascularization procedures, pigs will be singly housed for 7 days while the incision(s) heal to reduce the risk that incisions could be disrupted by another animal, and to protect the incision(s) from infection during the healing phase. After 7 days, pigs are returned to group housing. The pigs will still have visual, auditory, and olfactory contact with other pigs in the room during the post-operative single housing.
2003-37916A	Fairbanks, Carolyn	Mice, Rat	MULTIPLE SURGERY	For the study of mecahnisms electroacupuncture-induced analgesia we need to both induce a state of hypersensitivity (reflective of neuropathic pain) requiring peripheral nerve injury surgery and then later implant spinal microdialysis fibers in order to collect neurotransmitters during and immediately following application of electroacupuncture. These procedures will be separate by a week.
2003-37916A	Fairbanks, Carolyn	Mice, Rat	72 HOUR POST-OP ANALGESIA POLICY	Subjects with peripheral neuropathy cannot receive post-operative analgesics because these will inhibit the spinal neuroplasticity intended to induce the condition of study. The intention of this procedure is to induce a state simulating the hyperalgesia experienced following a surgical procedure. Administration of analgesics would be likely to alter the course of hyperalgesia development, defeating the goal of the experiment. (Induction of Post-Incisional Hyperalgesia)

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2003-37916A	Fairbanks, Carolyn	Mice, Rat	EUTHANASIA METHOD	We are trained and experienced in the appropriate technique and anesthetization and sedation elevates the stress to the subject. We only intend to use cervical dislocation as an emergency method to alleviate unanticipated distress of the subject (rare instances).
2003-37921A	Mashek, Douglas	Mice, Mice	BLOOD COLLECTION LIMIT	This is a terminal blood collection under anesthesia to get donor red blood cells (Blood collection for donor red blood cells for metabolic clamp studies) The metabolic studies require samples for analysis of liver glucose production, kidney glucose production, intestine glucose production, hormone concentrations, and metabolite levels. To prevent a fall in hematocrit, donor red blood cells resuspended in 10U/ml heparinized saline will be infused venously (please see accompanying procedure) (Arterial sampling via carotid artery catheter during metabolic clamp studies)
2003-37921A	Mashek, Douglas	Mice	72 HOUR POST-OP ANALGESIA POLICY	1. An extensive history of this surgery in mice (since 1999) via the NIH Mouse Metabolic Phenotyping Consortium has shown that more that 24 hours of analgesics is not necessary for the well being of the mouse. The mice do not, except in rare cases, exhibit loss of weight, piloerection, unkempt coat, hunched posture. If this occurs additional analgesic will be provided. 2. The studies within this protocol are aimed at assessing metabolism. Keeping the use of analgesics to a minimum is to avoid metabolic alterations not intended by the experimental design is imperative. *Please note that I would like to have a veterinarian assess the initial mice post-surgery to determine if the full 72 hours is required.
2003-37921A	Mashek, Douglas	Mice	ENVIRONMENTAL ENRICHMENT	Individual housing is mandated by some of the instrumentation in use for the determination of accurate metabolic responses such as Indirect calorimetry, locomotor activity or meal pattern analysis, where both energy expenditure and mouse eating behavior can be evaluated accurately only for individual subjects.
2003-37921A	Mashek, Douglas	Mice	SOCIAL HOUSING	Some feeding studies involving caloric restriction (protocol 2) will require individual housing since we need to know exactly what control mice are eating so we limit the restriction group to 70% of control.

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2003-37929A	Starr, Tim	Mice	TUMOR ENDPOINT CRITERIA	Note regarding small ulcerations: A small subset of mice with tumors may develop minor skin ulceration over the tumor. This is not an expected complication. The tumors appear to be getting rubbed against the cage wire bar during normal ambulation. The mice are otherwise active, alert, and normal. For tumor ulcerations that are superficial, dry, and not bleeding, RAR staff will administer treatments such as topical application of dilute chlorhexidine or ointments In cases where the tumor volume cannot be measured externally and mice do not display any of the specific tumor endpoint criteria, we will use moribundity as a terminal endpoint in the study. The nature of the cancers we work with (gastrointestinal tract, lung, and ovarian) do not generally manifest as measurable tumors and the other tumor endpoint criteria are not evident. For these animals we cannot easily determine morbidity or tumor mass as a percentage of body weight, as it is currently not feasible to conduct advanced imaging such as MRIs or CT scans. Animals will be considered moribund if they do not respond to manual stimulation, are immobile, and/or they are unable to eat or drink.
2003-37929A	Starr, Tim	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	In cases where the tumor volume cannot be measured externally and mice do not display any of the specific tumor endpoint criteria, we will use moribundity as a terminal endpoint in the study. The nature of the cancers we work with (gastrointestinal tract, lung, and ovarian) do not generally manifest as measurable tumors and the other tumor endpoint criteria are not evident. For these animals we cannot easily determine morbidity or tumor mass as a percentage of body weight, as it is currently not feasible to conduct advanced imaging such as MRIs or CT scans. Animals will be considered moribund if they do not respond to manual stimulation, are immobile, and/or they are unable to eat or drink.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2003-37929A	Starr, Tim	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	Avertin has been used as an anesthetic in many labs for many years at the University of Minnesota and was routinely approved under IACUC protocols. Avertin has also been used at many other institutions, including the University of Wisconsin and Jackson Laboratories, where it was the “anesthetic of choice” for mice undergoing short surgical procedures. I have personally used Avertin under IACUC approved protocols in the past and it has worked well with no untoward or unexpected events. Avertin does not cause as much bradycardia including effects on loading conditions and ventricular function compared to ketamine and Avertin has a lower mortality rate than Ketamine . Avertin not only acts as a general anesthetic, it also provides good analgesia, relatively rapid onset (5 minutes), and appropriate time of effect for procedures outlined in this protocol (30-60 minutes). Moreover, the ability to give avertin by i.v. or i.p. injection avoids exposure to inhalation of volatile gases.
2003-37936A	[redacted]	Nonhuman Primate (Macaques)	MULTIPLE SURGERY	Animals will arrive on the protocol with implanted vascular access ports (VAPs). The placement of a central VAP is considered a minor surgical procedure (peripheral limb, not entering a major body cavity), essentially similar to routine catheter placement with the notable exception that the access site is placed underneath the skin. The placement of the portal vascular access port allows cell products to be delivered intraportally using a non-invasive technique, that improves agreement with the clinical situation and moves surgical manipulation of the portal vein outside of the diabetic immunosuppressed phase. VAPs improve safety, and increase animal comfort when intermittent or recurrent venous access is required by avoiding painful 'catheter starts'. VAPs also allow NHPs to participate fully in enrichment programs and social group activities without the restrictions inherent in conventional approaches. The utility of the prevascularized site has been evaluated in small animal models and in the clinic, small animal models have been poorly predictive of clinical success with prevascularized sites. This will be done during the diabetic phase using the intended timing that will be used in the clinical situation to accurately estimate efficacy and safety.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2003-37950A	Baehr, Carly	Mice, Rat	EUTHANASIA DEATH/MORIBUND ENDPOINT	Only animals in [redacted] will use death as an experimental endpoint. The animals will be continuously monitored following administration of a potentially lethal opioid challenge, until death occurs or until animals recover from the challenge. The purpose of this experiment is to determine whether the mAb treatment is capable of rescuing animals from opioid poisoning. Therefore, animals receiving the saline control are likely to experience opioid lethality. Since opioids are analgesics, these studies will not cause pain and distress in rats. For all other experiments, the IACUC guidelines will be followed.
2003-37989A	Dougherty, Brendan	Rat	MULTIPLE SURGERY	Removal of the gonads is vital to answer fundamental experimental questions. Removing the gonads and allowing for a week of recovery creates a "new baseline" of reduced sex steroid production and circulation for which to conduct our studies. These procedures are have significant scientific merit and are considered standard procedures in the study of sex steroids. Following removal gonads, our capacity to reintroduce steroids in a controlled manner is critical to interpretation of our results. Similarly, to discern how inflammation impedes the expression of plasticity and potential sexually dimorphic responses to inflammation, carefully controlled administration of LPS is warranted for clear data interpretation. Our ability to accurately define the motor neurons involved in these effects is vital to data interpretation. This straight forward and simple procedure has been validated in multiple previous studies, causes minimal distress and no observable side-effects. All attempts will be made to complete procedures in the same surgical session to reduce or eliminate the need for multiple surgeries. One exception may be the combination of SCI surgeries which are generally completed from a dorsal approach, and implanting EMG electrodes which will take place from a ventral approach. It may be necessary to enable healing of one surgery before initiating another to ensure full recovery of both procedures. We will work with UMN veterinarians should this become necessary to determine the best timing.
2003-37989A	Dougherty, Brendan	Rat	72 HOUR POST-OP ANALGESIA POLICY	Adequate analgesic effects for these routine and very brief procedures are accomplished in a single pre-operative administration.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2003-37989A	Dougherty, Brendan	Rat	SOCIAL HOUSING	Paired rats receiving modifications to fluid and/or diet to study the effects of obesity may gain sufficient body mass to surpass allowable weight restrictions within standard Rat containers. If this should occur, all attempts would be made to provide larger housing containers to allow for continued paired housing and adequate environmental enrichment for these rats as there is no specific scientific need to separate them. However, in the event that suitable accommodations for lager rodents could not be attained, rats would be housed individually until the completion of the study. Enrichment would continue to be provided. This exception would permit adequate freedom of movement, access to food and water and access to environmental enrichment.
2003-37989A	Dougherty, Brendan	Rat	NON-PHARMACAUTICAL GRADE COMPOUNDS	We may utilize non-pharmaceutical-grade urethane as all acute neurophysiological experiments are terminal. Transition from inhaled isoflurane to Urethane is necessary for studies of respiratory neurophysiology because isoflurane is a profound respiratory depressant, while urethane maintains long-lasting anesthesia with minimal effect on cardio-respiratory function. We may utilize non-pharmaceutical-grade Pancuronium Bromide if/when pharmaceutical grade is unavailable. The pharmaceutical grade version of this compound is currently available through only one vendor (Pfizer) and is frequently back ordered for weeks to months at a time. Also, this compound is stable for up to 36 months in solution as specified by the manufacturer (they recommend retesting at 36 months). We will maintain our stores of Pan B for up to 12 months. For best practice, Pan B will be made using USP Saline and filter sterilized into sterile vials using 0.45uM filters.
2003-37991A	Guedes, Alonso	Pig (Biomedical), Rabbit	MULTIPLE SURGERY	The study endpoint will be two weeks post-fentanyl challenge. If necessary, the fentanyl challenge with PK samples will be repeated in the same animals (once) no sooner than 7 days after the first challenge, at which point the minipigs will be humanely euthanized. Animals undergoing a repeat challenge will be humanely euthanized while under anesthesia for that challenge.
2003-37991A	Guedes, Alonso	Pig (Biomedical), Rabbit	EUTHANASIA METHOD	Animals will already be under anesthesia.
2004-37998A	Lee, Anna	Mice	BLOOD COLLECTION LIMIT	We require 10 uL of blood for blood ethanol analysis, for a total of 50 uL of blood for a time course. We will replace fluid loss with a 0.5 mL s.c. injection of saline.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2004-37998A	Lee, Anna	Mice	SOCIAL HOUSING	During the oral drug consumption tests and taste preference tests, mice will be individually housed to be able to measure the amount of consumption for each mouse. The mice will either be group housed again after the tests are over, or euthanized if the experiment is completed.
2004-38001A	Netoff, Tay	Rat	MULTIPLE SURGERY	Two surgeries are required as part of the same project: 1 epilepsy induction surgery and 2 implantation surgery. Epilepsy induction must be done separately from implantation because it is essential for rat to be quickly recovered for the kainic acid to work properly.
2004-38004A	Hart, Geoffrey	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	We need to know if the immunizations are working or not. We also need to know if the control group without immunization is morbid or not to know if the infection is working. From days 5-21: Once animals are observed to become ataxic, suffocating (labored breathing), paralyzed, lose 25% of their body weight, or can't right themselves, they will be euthanized. If they do not show these symptoms by day 21, they will be euthanized.
2004-38004A	Hart, Geoffrey	Mice	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	The procedure proposed is not a restriction in access to water, but instead is provision of water containing antibiotics. We have never seen evidence that decrease their water intake in the past when using this procedure (when water bottles were the norm - the consumption rate seemed similar to regular water).
2004-38012A	Aboudehen, Karam	Mice	EUTHANASIA METHOD	embryonic mice starting at E14.5 and early newborn mice that are less than 10 days of age will decapitated post CO2 to ensure complete euthanasia.
2004-38012A	Aboudehen, Karam	Mice	SOCIAL HOUSING	Female mice used for timed pregnancies will be housed individually after the plug date. This is done to ensure the accuracy of the timed collection of embryos. If left with a male mouse a plug that failed to produce a pregnancy could result in a successful pregnancy at a later day. The female would be needlessly sacrificed if this were the case. By separating the pair we can monitor for pregnancy and if none is seen the female can be bred again, there by reducing the number of animals used overall.
2004-38021A	Haskell-Luevano, Carrie	Mice	SANITATION FREQUENCY	The cages supplied from the RAR facility will be cleaned by RAR staff. TSE cages/running wheels/feeders/water bottles that will be damaged by use of a cage washer are washed by hand with water and anti-bacterial soap. The cages are then sprayed down thoroughly with 70% isopropanol and allowed to air dry. If such cages house a single mouse, they will be cleaned weekly according to RAR policy. Microbiological assessment will be routinely done quarterly (or more frequently if requested), in conjunction with RAR.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2004-38021A	Haskell-Luevano, Carrie	Mice	EUTHANASIA METHOD	Using anesthesia interferes with gene expression for certain brain tissues collected and glucose measurements. For Decapitation of the mice, scissors are preferred to limit damage that can occur to the brain when using a guillotine and scissors are easier to clean in between animals to remove blood that can cause unnecessary stress on the mouse. All personnel using this method demonstrate a high degree of technical proficiency.
2004-38021A	Haskell-Luevano, Carrie	Mice	ENVIRONMENTAL ENRICHMENT	Single housed mice will be utilized, mice will need to have food weighed to see how much is consumed. The mice housed in the [redacted] and on the feeding studies will be single housed to insure proper measurements of food intake for each animal.
2004-38031A	Metzger, Joseph	Mice, Rat	TUMOR ENDPOINT CRITERIA	Cancer cachexia is a clinical syndrome characterized by weakness, fatigue, poor appetite, and muscle and adipose wasting. The model we propose to use in our studies - male CD2F1 mice with colon-26 adenocarcinoma tumors is one of the most commonly studied models of cancer cachexia and represents many facets of the human syndrome. Weakness in late stage cachexia is documented by decreased grip strength, anorexia is indicated by decreased food intake, and wasting is shown in decreased body, muscle and adipose masses. Because the experiments specifically involve using a model of cancer cachexia, mice are expected to lose a significant amount of body weight, including both adipose and muscle mass. Therefore we cannot follow the first criteria for euthanasia of weight loss in the animals. Additionally, anorexia (decreased food intake) is a natural part of the progression of cachexia in this model. Because mice are not housed individually, food intake for the cage can be monitored but not for individual mice. Moistened food can be placed in a petri dish at the bottom of the cage to facilitate food/water intake in late stage cachexia. However, mice will be monitored for all other euthanasia criteria (inability to obtain food/water, moribund state, infection and signs of organ system dysfunction), and will be euthanized immediately if one or more criteria are met.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2004-38031A	Metzger, Joseph	Mice, Rat	EUTHANASIA METHOD	Only performed on mice younger than P7 Because the experiments specifically involve using a model of cancer cachexia, mice are expected to lose a significant amount of body weight, including both adipose and muscle mass. Therefore we cannot follow the first criteria for euthanasia of weight loss in the animals. Additionally, anorexia (decreased food intake) is a natural part of the progression of cachexia in this model. Because mice are not housed individually, food intake for the cage can be monitored but not for individual mice. Moistened food can be placed in a petri dish at the bottom of the cage to facilitate food/water intake in late stage cachexia. However, mice will be monitored for all other euthanasia criteria (inability to obtain food/water, moribund state, infection and signs of organ system dysfunction), and will be euthanized immediately if one or more criteria are met.
2004-38031A	Metzger, Joseph	Mice, Rat	SOCIAL HOUSING	Due to the nature of the running wheel experiments requiring the monitoring of each individual mouse's running wheel activity singly housing them is unavoidable. All animals will be euthanized at the end of the two week experiment
2004-38033A	Modiano, Jaime	Mice, Dog	EUTHANASIA METHOD	Euthanasia solution itself causes sedation, so the same procedure that leads to humane death by euthanasia causes sedation. The animals are not sedated in advance by other methods because the euthanasia solution is injected by the intraperitoneal route, which causes no to minimal, momentary discomfort. The active ingredient in the solution is the equivalent of 86 mg/kg pentobarbital. The process of additional sedation would increase the animal's stress and discomfort far beyond the momentary injection of euthanasia solution. The action of the euthanasia solution is quite rapid and equivalent to other methods of sedation or anesthesia. As needed, euthanasia will be ensured by cervical dislocation.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2004-38045A	Guedes, Alonso	Mice	72 HOUR POST-OP ANALGESIA POLICY	The scientific justification for not providing extended post-surgical analgesia at this stage of our experiments is that provision of available analgesics will highly likely preclude proper interpretation of our results. Opioids cannot be used since they would interfere with one of the main goals of our experiments, which is to understand the CD38/opioid signaling crosstalk. Non-steroidal anti-inflammatory drugs are not good analgesics for neuropathic pain and blocking COX activity could likely affect opioid/CD38 crosstalk We would need to determine first if there is no interaction between COX and CD38 or opioid signaling in spinal cord. Mice will be provided with a local anesthetic block at the time of surgery, which is expected to last for 6-12 hours, and provided with soft bedding to minimize discomfort. Based on our previous experiments, which not included extended post-surgical analgesia, the SNI mice appeared not to be in overt pain as they maintained active mobility, appearance and behavior. The hyperalgesia is only observed when a small area of the paw is probed with the use of von Frey filaments.
2004-38045A	Guedes, Alonso	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	We request an exception for the use of non-pharmaceutical grade compounds for this procedure. Avertin (tribromoethanol) is an effective anesthetic agent for this procedure due to the fact that this procedure, is not a survival procedure and therefore there is no risk for ulcers or tissue necrosis at site of injection. Further Avertin is not harmful or a controlled substance and under proper preparation it is a potent anesthetic.
2004-38045A	Guedes, Alonso	Mice	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	Since animals wont have diet restriction and wont loose weight, and due to the potential long duration of the study, we would ask to measure body weight every month instead of every week.
2004-38045A	Guedes, Alonso	Mice	EUTHANASIA METHOD	Will be performed only by staff with demonstrated technical proficiency. Used for harvesting spinal cord slices for calcium imaging.
2004-38055A	Gewirtz, Jonathan	Rat	MULTIPLE SURGERY	In the event of catheter malfunction, a new catheter will be implanted in the ipsilateral femoral vein in order to keep a rat on protocol and avoid using additional new rats. Such catheter "reimplants" are well tolerated by the rats (they are indistinguishable in terms of general health and performance in behavioral protocols) and significantly reduces the number of animals needed for a given protocol. Catheter reimplants typically occur several weeks or months after the first surgery (Indwelling catheter implantation) All animals in this protocol will be tested for drug self-administration. Hence they will undergo in-dwelling IV catheter implantation prior to the start of behavioral procedures. (Brain microinjection)

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2004-38055A	Gewirtz, Jonathan	Rat	SOCIAL HOUSING	Rats will be housed individually after catheterization surgery. If they are housed together they may damage another's catheter harness, which may then harm the rat if his/her catheter is pulled out.
2004-38060A	Moriarity, Branden	Mice	TUMOR ENDPOINT CRITERIA	With approval we will be following our attached Mouse Tumor Burden Scoring Document created and approved with RAR Veterinarian staff member that outlines tumor ulceration endpoint criteria.
2004-38061A	Webber, Beau	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	Pending overall health evaluation of animals in consultation with veterinary staff, animal experiments will be carried out up to 6-months post-infusion. At this time, animals will be sacrificed for histopathological examination. Thus, the duration of animal experiments will be approximately 6 months. For the EB mouse strains, we will be closely monitoring pups for sores and swelling. The lab will ensure that pups are able to eat and drink (they may need food in crocks or food may need to be moistened) and that they are not exhibiting signs of pain or distress such as hunched posture, lethargy, and weight loss of 20% or more. Any mice that continue to develop sores and swelling that prevent them from normal function (moving around easily, eating, and drinking); will be euthanized by lab staff.
2004-38061A	Webber, Beau	Mice	EUTHANASIA METHOD	cervical dislocation will be used Pending overall health evaluation of animals in consultation with veterinary staff, animal experiments will be carried out up to 6-months post-infusion. At this time, animals will be sacrificed for histopathological examination. Thus, the duration of animal experiments will be approximately 6 months. For the EB mouse strains, we will be closely monitoring pups for sores and swelling. The lab will ensure that pups are able to eat and drink (they may need food in crocks or food may need to be moistened) and that they are not exhibiting signs of pain or distress such as hunched posture, lethargy, and weight loss of 20% or more. Any mice that continue to develop sores and swelling that prevent them from normal function (moving around easily, eating, and drinking); will be euthanized by lab staff.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2004-38064A	Schwertfeger, Kaylee	Mice	MULTIPLE SURGERY	Because the primary tumors reach endpoint prior to establishment of robust metastasis, primary tumor resection will be necessary to assess metastatic growth and burden in these models. All procedures for tumor resection will include anesthesia and pain relief in the same manner as provided for the initial surgery. Due to the increased blood vessel growth associated with primary tumors, cauterization of blood vessels may be required. (Injection of tumor cells into the mammary fat pad) Because the primary tumors reach endpoint prior to establishment of robust metastasis, primary tumor resection will be necessary to assess metastatic growth and burden in these models. All procedures for tumor resection will include anesthesia and pain relief in the same manner as provided for the initial surgery. Due to the increased blood vessel growth associated with primary tumors, cauterization of blood vessels may be required. (Primary tumor resection)
2004-38075A	Widge, Alik	Rat	72 HOUR POST-OP ANALGESIA POLICY	The animal usually does not feel pain 24 hours post-surgery, but we will monitor the rat for at least 72 hours post-surgery. Analgesics will be given if the rat is still feeling the pain either 48 or 72 hours post-surgery accordingly.
2004-38075A	Widge, Alik	Rat	SOCIAL HOUSING	The animals will be singly housed for the duration of the study after electrode implantation so that the animals do not injure each other as they heal or damage the acrylic head cap that is securing the electrodes.
2004-38092A	[redacted]	Nonhuman Primate (Macaques)	BLOOD COLLECTION LIMIT	Multiple blood draws are planned to evaluate safety required to support a regulatory submission, please see attachment that details the combination of planned blood draws and relationship with average weight of animals. Sampling will be up to 0.5% weekly or 1% with equivalent fluid replacement (normal saline or LRS IV or SC) and normal HgB levels (>10g/dL) observed in CBC safety sampling at previous timepoint.
2004-38104A	Chen, Zhe	Mice	EUTHANASIA METHOD	Mice under 10 days of age are fairly resistant to CO2 euthanasia, so it may take up to 20 minutes or longer to effectively euthanize the mice. Decapitation as a primary method for neonatal mice up to P7 is an acceptable method of euthanasia per IACUC guidelines. All personnel carrying out decapitation are proficient and trained to carry out decapitation with scissors. Training will be documented in lab training records.

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2005-38115A	Stromnes, Ingunn	Mice	MULTIPLE SURGERY	In Aim 9 we will assess the ability of "cured" mice to respond to tumor rechallenge. In this case, we perform a second survival surgery in the case of pancreas cancer in which we orthotopically implant KPC cell line. Alternatively, tumors may be placed subcutaneously. (Orthotopic injection of tumor cell lines into mouse pancreas) One prior surgery to implant orthotopic tumors into the pancreas will be performed 80-120 days prior to parabiosis. The parabiosis experiments will be performed to determine if pancreas-residing tumor-specific T cells have differentiated into resident memory T cells. (Parabiosis)
2005-38117A	Bischof, John	Mice, Rat	SOCIAL HOUSING	For the procedure of "Telemetric temperature monitor", animals will be housed individually after chip implantation, to eliminate interference of RFID recording signal from multiple mice. When extra mice from the same cohort, without the sensing chip, are available, the mouse with chip will be housed together with those without to allow for social housing.
2005-38117A	Bischof, John	Mice, Rat	EUTHANASIA METHOD	The lab staffs are well trained and proficient enough to perform the procedure quickly and effectively. 1. Tumor appearance (no treatment): Certain types of tumor (e.g. 4T1) are aggressive and are likely to outgrow their blood supply, causing skin complicates. These appearance are normal outcome of tumor growth and should not count as tumor endpoint. However, if the skin complication is severe enough, including but not limited to (1) bleeding or hemorrhage of surrounding tissue , (2) necrosis (black skin) larger than 1/3 of the tumor diameter, (3) ulceration area larger than 1/2 of the tumor diameter, (4) inflammation, (5) sign of pain or impedance of movement or (6) tumor long axis diameter larger than 16mm, the animal will be euthanized. 2. Tumor thermal therapy: Thermal therapy is design to cause necrosis. Damage to the skin surrounding the tumor is expected despite our best effort in keeping the procedure minimally invasive. Ulcerated or necrotic tissue can predispose the animal to infection and should be reported to vet staff. Wound healing is expected 1-3 days after thermal therapy, therefore complication including (1) loss of skin, (2) ulceration and (3) bleeding should not be observed 3 days after the date of thermal therapy. After 3 days, these complication will count as tumor endpoint. Between day 3 and day 10 after thermal therapy, recovery will take place. The tumor will appear like a scab with pale/whitish discoloration to the edges. The tissue may be slightly indented or project outward.

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2005-38127A	[redacted]	Nonhuman Primate (Macaques)	MULTIPLE SURGERY	In many cases animals need at least one procedure to implant a head holder to allow for proper gaze position training that is done prior to chamber implantation to reduce infection risks. A head post is implanted to permit monitoring of eye position. The animals are then trained to perform the task while maintaining fixation on a small spot on a video display under head restraint, and with some tasks to make specific eye movements to visual targets. In cases where the chamber is implanted at the same time as the head holder, a second surgery is required to perform a craniotomy. In these procedures it is absolutely vital to have a fully sealed and aseptic chamber since the implant is chronic. We thus need to wait for proper healing of the chamber to occur to test for potential contamination before the microdrive is attached. The placement of a VAP can help reduce stress in animals who may be trained for cooperative blood draws and injections. Sometimes, often after a few years, the implants will become less stable and susceptible to infection. When this happens it is necessary to remove the implant for the health of the animal. The decision to remove an implant is always made with the animal's health as the priority. In order to safely undergo MRIs, animals will need to have their microchips removed. MRI scans are needed to provide accurate models of the brain and cranium to facilitate surgical plans that precisely target brain areas and structures that are of interest to us.
2005-38131A	Vulchanova, Lucy	Mice	MULTIPLE SURGERY	The rationale for injection in VPL or parabrachial nucleus prior to SNI is: 1) to label projection neurons for identification in subsequent ex vivo physiological experiments, and 2) to deliver neuromodulatory genes to projection neurons for subsequent behavioral or ex vivo physiological experiments. 1. In some mice, LPbN injection of a neuronal tracers will precede (1 week) or follow (1 week) Spared Nerve Injury. The addition of these injections are not expected to exacerbate the level of pain and distress associated with spared nerve injury. The rationale for administering the two survival surgeries in the same animal is that the traver injections will allow us to study the effects of TLQP-62 on spinal projection neurons in the SNI model. 2. In some mice that receive PbN injection of a neuronal tracer, it may be necessary to administer a viral injection in the spinal cord 1 weeks after the first injection. This will allow us to identify spinal projection neurons among the neurons transduced by the virus. (Injection of viral vectors or neuronal tracers in PbN)

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2005-38131A	Vulchanova, Lucy	Mice	72 HOUR POST-OP ANALGESIA POLICY	Post-operative analgesic therapy is contraindicated because the objective of the procedure is to determine whether the experimental treatment causes hypersensitivity. Provision of analgesics would inhibit the neurochemical changes required to develop the hypersensitive states to be studied.
2005-38131A	Vulchanova, Lucy	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	Exception is requested for the use of non-pharmaceutical grade urethane for non-survival surgeries. In our experience, this usually produces a very stable and long-lasting (8-16 hours) state of anesthesia, which is the reason for choosing this non-pharmaceutical grade anesthetic agent for these experiments.
2005-38135A	[redacted]	Nonhuman Primate (Macaques)	MULTIPLE SURGERY	Viral tract-tracers and traditional neural-tract tracers must be compared, within subjects, in order to establish the relative efficacy of the new viruses for transport and uptake. They unfortunately can't be injected during the same procedure, because the transport time for viral tracers is >4 weeks, while the traditional tracers need 2 weeks (greater wait times until perfusion and the traditional tracers will not be visible in the cell). We will adjust time between surgeries according to veterinarian recommendations for each individual animal based on recovery. Additional painkillers may be given between surgeries if recommended, as well In order to safely undergo MRIs, animals will need to have their microchips removed. MRI scans are needed to provide accurate models of the brain and cranium to facilitate surgical plans that precisely target brain areas and structures that are of interest to us and/or to evaluate changes to the brain over time as a result of study treatments. Many of these subsequent procedures are survival surgeries. This is a minimally invasive minor surgery, and pain and recovery time are expected to be minimal.
2005-38158A	Graham, Melanie	Mice	MULTIPLE SURGERY	Following transplant, after demonstration of a prolonged period of normoglycemia or insulin reduction greater than 50%, animals will undergo graft explant by removing the graft and following up the animals subsequent reversion to the diabetic state the functional state can be (or not) attributed to the graft. Animals that do not demonstrate prolonged normoglycemia or insulin reduction greater than 50% will not undergo graft removal.

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2005-38159A	Urriola, Pedro	Pig (Agricultural)	SOCIAL HOUSING	Pigs will be housed individually to allow measurement of feed intake of the individual pigs. This is essential to interpret the impact of compound intake and metabolic responses. If housed in groups, it would be impossible to determine the intake of the compound and the results of the experiment will be incorrect. We recognize the needs of housing social animals such as pigs. Therefore, we will mitigate this impact using two interventions. Pigs will have access to neighboring pigs via bars in the pen division. In addition, enrichment will be provided according to housing guidelines.
2006-38173A	Liang, Yuying	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	For arenavirus (PICV and LCMV)-infected mice, we will use death as endpoints, which is the established practice for LCMV-mouse model ((von Herrath and Whitton. Animal models using lymphocytic choriomeningitis virus. Curr Protoc Immunol. 2001. Chapter 19: Unit 19). After LCMV infection intracranially, mice will begin to show signs of morbidity (ruffled fur, hunched posture, reduced mobility) around day 6 to 7 post-challenge, and will succumb rapidly thereafter. Death may be delayed in certain genetically modified strains and/or treatment with inhibitors. The differences in the mortality rate and the days of survival are the scientific goals of the experiment. Early termination of mice would invalidate the results of the experiment.
2006-38175A	Liang, Yuying	Guinea Pig, Mice, Turkey, Rabbit	EUTHANASIA DEATH/MORIBUND ENDPOINT	For arenavirus (PICV and LCMV)-infected mice, we will use death as the endpoint, which is the established practice for LCMV-mouse model (von Herrath and Whitton. Animal models using lymphocytic choriomeningitis virus. Curr Protoc Immunol. 2001. Chapter 19: Unit 19). After LCMV infection intracranially, mice will begin to show signs of morbidity (ruffled fur, hunched posture, reduced mobility) around day 6 to 7 post-challenge, and will succumb rapidly thereafter (by 8-9 dpi). Death may be delayed in certain genetically modified strains and/or treatment with inhibitors. The differences in the mortality rate and the days of survival are the scientific goals of the experiment. Early termination of mice would invalidate the results of the experiment.
2006-38181A	Mand, Sandy	Fish (Zebra fish)	SANITATION FREQUENCY	We use the Pentair Z-hab system for most of the fish, fish that are not housed on the Zhab system will have daily 10% water changes and excess detritus will be removed from the bottom of the tank.
2006-38181A	Mand, Sandy	Fish (Zebra fish)	SOCIAL HOUSING	Adult fish will be housed singly during the immune response experiment for approximately 4-5 hours. Fish are euthanized at the end of this experiment.
2006-38181A	Mand, Sandy	Fish (Zebra fish)	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	Fish will be considered recovered once they are moving in the recovery tank. This should take less than a minute. If the fish is not recovering well, we will use a transfer pipette to move water over the gills. Any complications will be recorded.

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2006-38185A	Schumacher, Robert	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	Mice in toxicity studies are classified as Pain class C, because we need to see whether clinical signs of drug toxicity are reversible, i.e., whether the animals recover or continue to decline after a dose that causes symptoms of toxicity. See Health and Monitoring section for description of practices and procedures to assure that humane euthanasia is administered in a timely way.
2006-38190A	Clarkson, Christina	Horse, Cow (Biomedical), Pig (Biomedical), Goat, Sheep (Biomedical), Donkey	EUTHANASIA DEATH/MORIBUND ENDPOINT	In this teaching protocol the animals are euthanized upon arrival and then embalmed for dissection in our veterinary anatomy course. Indicated 'Yes' since we are NOT waiting for one of the endpoints as described above.
2006-38190A	Clarkson, Christina	Horse, Cow (Biomedical), Pig (Biomedical), Goat, Sheep (Biomedical), Donkey	EUTHANASIA METHOD	Animals are sedated by vendor prior to transport. This allows for ease in transport and negates the need for us to use a sedative. In this teaching protocol the animals are euthanized upon arrival and then embalmed for dissection in our veterinary anatomy course. Indicated 'Yes' since we are NOT waiting for one of the endpoints as described above.
2006-38199A	Widge, Alik	Rat	72 HOUR POST-OP ANALGESIA POLICY	The animal usually does not feel pain 24 hours post-surgery, but we will monitor the rat every day for at least 72 hours post-surgery. Analgesics will be given if the rat is still feeling the pain either 48 or 72 hours post-surgery accordingly.
2006-38199A	Widge, Alik	Rat	SOCIAL HOUSING	Because the animals will need to be singly housed during and after the surgery recovery period so that the animals do not injure each other as they heal or damage the acrylic head cap that is securing the electrodes/opto-electrodes, we will singly house the rats before the behavioral training but after at least a week of habituation period following arrival. Changing pair-housing to single housing during the middle of behavioral training will not be ideal. The animals will be single-housed for the duration of the study, but enrichment will be consistently provided by lab staff.
2006-38201A	Iaizzo, Paul	Pig (Biomedical), Other* (USDA), Sheep (Biomedical), Dog	NON-PHARMACAUTICAL GRADE COMPOUNDS	We prepare a modified St. Thomas solution that is typically used for heart transplantation. Our solution has demonstrated improved function after re-animation to make the most of the research prep from each study and we also aim to improve/modify solutions in order to improve outcomes in cardiothoracic transplantation.

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2006-38206A	Bartolomucci, Alessandro	Mice	MULTIPLE SURGERY	Use of two separate surgical procedures (AAV + fiber implantation) is beneficial, as it will reduce the amount surgery done at one time (reduces potential for tissue trauma), minimizes the need for anesthesia supplements during surgery, allow animals to fully recover between each class B surgery. It also maximizes the potential for animals to reach the study completion. Maximal viral-mediated gene transfer occurs approximately 3-8 weeks after infection, depending on the brain region and neuronal process (cell body versus terminals) being targeted. In vitro and in vivo studies begin at this time, but require up to 4 weeks of additional time for completion. However, optical implants are delicate, and generally only have reliable function for ~ 4 weeks. Therefore, is advantageous to implant them at a time when viral expression is maximal. This method will prevent subject loss due to optical implant failure, and will substantially reduce the overall number of animals required to complete experimental studies. This conservation of animal resources is particularly useful when studies occur in transgenic animals, which require considerable time and money to generate. The time between individual surgeries will be a minimum of 3 weeks, up to a maximum of 8 weeks. We do not anticipate two individual survival procedures to produce any functional deficits. Animals will be monitored after each surgery as described above, and will be given saline (0.5 ml, s.c.) and carprofen (5 mg/kg, ip) to counteract any post-operative dehydration or pain, respectively.
2006-38206A	Bartolomucci, Alessandro	Mice	EUTHANASIA METHOD	Cervical dislocation is among the fastest euthanasia methods, that, when performed as in our case, by personnel trained and experienced with the procedure.
2006-38206A	Bartolomucci, Alessandro	Mice	SOCIAL HOUSING	Animals may be singly housed at times to prevent stress, injury and death due to same-sex incompatibility between male mice that can be experienced even in groups of male siblings in some strains of mice. Animals may be singly housed at times to allow full recovery from surgery during the immediate post-surgical phase and as required for the accurate assessment of indirect calorimetry, food intake and locomotor activity during the duration of the recording (up to 8 weeks).
2006-38215A	Herzberg, Mark	Mice	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	No adverse affects are expected with the addition of antibiotics which are known to be well tolerated. (Antibiotic Feeding) No adverse impact on animal health is expected. (Sucrose and/or Fructose Feeding)

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2007-38243A	Jameson, Stephen	Mice	72 HOUR POST-OP ANALGESIA POLICY	Post-operative analgesic therapy is contraindicated because the objective of the procedure is to determine whether the experimental treatment causes hypersensitivity. Provision of analgesics would inhibit the neurochemical changes required to develop the hypersensitive states to be studied (see Ji et al. 2014 Nat. Rev. Drug. Disc. 13:533). Furthermore, some commonly used analgesics (e.g. lidocaine: Okura et al. 2015 Anesth. Analg. 120:597)have been found to target the P2xr7 receptor under investigation. For these reasons, treatment with typical analgesics may undermine the goals of these studies. (Spared Nerve Injury (SNI))
2007-38243A	Jameson, Stephen	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	Avertin is no longer available as a pharmaceutical grade anesthetic. However, as a short-term, non-inhaled anesthetic that is not a controlled substance it is very useful in certain applications. We propose to add use of Avertin as an anesthetic for work involving influenza infection, in order to generate data that are directly comparable to studies being conducted in the [redacted] "dirty mouse" project (under protocol 1609-34184A). Avertin was approved for use in that protocol. We are concerned that use of alternative anesthetics (e.g. isoflurane or ketamine/xylazine) in the studies we propose here (working with SPF mice, in [redacted] will compromise our ability to compare with the outcomes of the two parallel studies. Hence, we propose use of Avertin only in the case of some of the proposed studies using influenza infection.
2007-38243A	Jameson, Stephen	Mice	EUTHANASIA METHOD	Personnel will be trained to efficiently restrain mice and rapidly perform cervical dislocation minimizing the need for sedation. This protocol will only be used for fetal mice, retrieved from pregnant dams (which will themselves be euthanized via CO2 inhalation) and neonatal mice (after chilling on ice). Day 12-13 mouse fetuses and neonates are poorly responsive to CO2 as a euthanization method, hence we decapitate the pups prior to cell isolation.
2007-38247A	Bradley, Elizabeth	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	Failure of engraftment may result in mortality. As suggested after consult with RAR Veterinarians, some mortality is expect within this protocol.
2007-38259A	Bischof, John	Fish (Other)	SANITATION FREQUENCY	Petri dishes are replaced every day and not used again. Tanks are replaced and cleaned at sign of algal growth. Floors are washed monthly.
2007-38261A	Moen, Ron	Fisher, Bobcat, Rodent (Other - Non-USDA), Rodent (Other - Non-USDA), Other* (Non-USDA)	EUTHANASIA DEATH/MORIBUND ENDPOINT	Death is the endpoint for lethally captured small mammals; for bobcats and fishers, death will not be the endpoint and IACUC criteria for Euthanasia guidelines will be followed.

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2007-38268A	Parr, Ann	Rat	MULTIPLE SURGERY	The rat must first be injured and recover to model a spinal cord injury so that we can test our optical stimulation. Pain and distress will be controlled through analgesics and antibiotics.
2007-38268A	Parr, Ann	Rat	SOCIAL HOUSING	Immediately after surgery, our rats are singly housed to prevent them from licking or biting at the fresh wounds. When we remove the sutures at 2 weeks, we then typically re-house them in pairs.
2007-38285A	Klein, Amanda	Mice	72 HOUR POST-OP ANALGESIA POLICY	The neuropathic pain model, spinal nerve ligation, proposed herein will cause some pain. Using analgesic drugs may antagonize the pain hypersensitivity and spinal neuronal (i.e. central) sensitization that is developed after injury over time. Administration of analgesic drugs post surgery, however, would confound our behavioral experiments in which we like to determine the efficacy of KATP channel agonists/antagonists on neuropathic pain models.
2007-38290A	Whitley, Chester	Mice	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	Following irradiation, the mice are susceptible to infection and the added stress of handling for weighing could potentially have fatal consequences. I request that body weights be taken prior to irradiation and four weeks later, one week following the removal of the gentamycin administration.
2007-38292A	Dehm, Scott	Mice	MULTIPLE SURGERY	Two surgical procedures are necessary to mirror the clinical course of human prostrate cancer. One surgery is necessary to implant tumors at orthotopic or subcutaneous sites in the mouse. The second surgery, castration, is used to mimic androgen depletion therapy. Longitudinal biopsies may be performed to reduce numbers of mice needed for studies monitoring the evolution of tumor subclonal architecture during experimental therapy.
2007-38296A	Paulsen, Megan	Mice	BLOOD COLLECTION LIMIT	The collection will be from a euthanized pregnant dam including euthanized fetal parts. Additionally, exsanguination/decapitation is a secondary accepted form of euthanasia for mice.
2007-38296A	Paulsen, Megan	Mice	EUTHANASIA METHOD	Decapitation is justified for the studies requiring endocrine, metabolic and undamaged and uncontaminated brain tissue (such as measurement of serum cortisol and hypothalamic signaling). Decapitation is the only euthanasia method (compared to phenobarbital, isoflurane, CO2 inhalation) that does not induce changes in serum biomarkers or brain receptor signaling. Therefore, we feel the best methodology for accurate informative data is to use a combination of CO2 exposure (rather than euthanasia) following by decapitation without anesthetic.
2007-38314A	Morris, Rebecca	Mice	EUTHANASIA METHOD	Early newborn mice that are less than 10 days of age will decapitated post CO2 to ensure complete euthanasia.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2007-38314A	Morris, Rebecca	Mice	SOCIAL HOUSING	Pregnant or expected to be pregnant female breeder mice may need to be housed alone to prevent excess pups. Single housed females breeders will be paired with their mate or another female once possible. Retired female breeders will be placed with other retired female breeders. Retired male breeders will be kept separate to prevent fighting.
2007-38318A	Cardona, Carol	Chicken	BLOOD COLLECTION LIMIT	We need to have enough blood to collect peripheral blood monocytes (PBMCs) or the white cell fraction from whole blood. I'm uncertain how much I will need but plan to start with 2 ml. In the first blood draw, I will evaluate if I can extract sufficient numbers of PBMCs and get accurate interferon measures with 1 ml. If I can, I will reduce the amount of blood that I collect at each timepoint. I anticipate that we will not need an exception and that our blood draws (total of 8 ml) will be under 1% of the birds body weight (850-950g) over 2 weeks. I plan to measure IFN levels in PBMCs and need enough whole blood to extract that fraction. I will evaluate if I can do the measure with less blood and if that is the case, I will collect 2 ml or 1 ml per time, whatever works. I anticipate that we will not need an exception and that our blood draws (total of 8 ml) will be under 1% of the birds body weight (850-950g) over 2 weeks.
2008-38320A	Chen, Clark	Mice	MULTIPLE SURGERY	The first surgery is to implant the tumor, the second is to deliver the drug (Intracranial injections (two surgeries))
2008-38358A	Crawford, Peter	Mice	72 HOUR POST-OP ANALGESIA POLICY	1. An extensive history of this surgery in mice (since 1999) via the NIH Mouse Metabolic Phenotyping Consortium has shown that more that 24 hours of analgesics is not necessary for the well being of the mouse. The mice do not, except in rare cases, exhibit loss of weight, piloerection, unkempt coat, hunched posture. If this occurs additional analgesic will be provided. 2. The studies within this protocol are aimed at assessing metabolism. Keeping the use of analgesics to a minimum is to avoid metabolic alterations not intended by the experimental design is imperative. *Please note that we would like to have a veterinarian assess the initial mice post-surgery to determine if the full 72 hours is required.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2008-38358A	Crawford, Peter	Mice	EUTHANASIA METHOD	A subset of adult mice animals (approximately 40%) will be euthanized by cervical dislocation. This method is selected because does not chemically contaminate tissue (including hypoxia and acidosis), which is critical for metabolic studies involving high resolution chemical profiling of extracts derived from the tissues (e.g., LC/MS metabolomics and magnetic resonance spectroscopy). Moreover, cervical dislocation induces rapid loss of consciousness, and is rapidly accomplished. As stated on p. 49 of AVMA Guidelines for the Euthanasia of Animals: 2013 Edition, '...cervical dislocation is acceptable with conditions for mice.... Personnel should be trained on anesthetized and/or dead animals to demonstrate proficiency.' The PI will be personally responsible for this training. Death will be immediately ensured by bilateral pneumothorax and cardiectomy.
2008-38358A	Crawford, Peter	Mice	SOCIAL HOUSING	After TAC and Jugular vein catheter placement procedures, animals will need to be housed individually for four-eight weeks (TAC) and up to 12 days (catheter placement) to prevent sutures, incisions, and/or catheters from being chewed open by other animals. Thereafter, animals will be euthanized.
2008-38365A	Greising, Sarah	Mice	SOCIAL HOUSING	Mice will be required to be individually housed when assigned to voluntary wheel running.
2009-38418A	Osborn Jr, John	Sheep (Biomedical), Pig (Biomedical)	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	We do not anticipate any weight loss with the administration of this diet, as their food intake is not being limited beyond a normal diet.
2009-38420A	Haskell-Luevano, Carrie	Mice	72 HOUR POST-OP ANALGESIA POLICY	Additionally, post-operative analgesic therapy is contraindicated since provision of analgesics would inhibit the neurochemical changes required to develop the hypersensitive states to be studied.
2009-38447A	Groman, Stephanie	Rat	MULTIPLE SURGERY	For experiments involving drug self-administration, it will be necessary to perform two separate survival surgeries. During the first surgery, replication deficient adeno-associated virus (AAV) will be infused into the target brain region and relevant intracranial implants placed (e.g., optical fiber). Because adequate expression of viral constructs can require 4-8 weeks after viral infusion, jugular catheters will be implanted in separate survival surgery. It is not possible to maintain the integrity of jugular catheters for more than 8 weeks, so we must implant the jugular catheters near the time when optimal viral expression occurs. This will necessitate a second survival surgery. Placing the intrajugular catheters in the same surgery would result in a large attrition of experimental subjects due to loss of catheter patency.
2009-38447A	Groman, Stephanie	Rat	SOCIAL HOUSING	Rats with surgical implants may need to be singly housed after implantation to avoid damage to the implants by cage mates.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2009-38452A	Koewler, Nathan	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	We have never observed moribund mice in the UTI model unless it was due to a technical error such as lack of water over a weekend. If that occurs, we will euthanize the animal and it would be censored from the study. For the sepsis model, mice will need to reach a moribund state before being euthanized in order to measure the protective efficacy of our experimental vaccines.Thus, we will not use death as an endpoint and will accept any additional recommendations by RAR to limit the stress to the mice (e.g.. warming pads, soft bedding, etc.).
2009-38457A	Orr, Harry	Mice	MULTIPLE SURGERY	Bolus injection of antisense nucleuotides has been shown to result in more uniform delivery to all regions of the mouse brain than slower release pump delivery, however antisense nucleuotides degrade over time so multiple bolus injections may be necessary to achieve full therapeutic potential. Our mice recover quickly from this short survival surgery and any additional surgeries will take place an absolute minimum of 4 weeks apart. In a currently ongoing clinical trial for antisense nucleuotides therapy in HD, patients receive intrathecal injection every 3 months. Antisense nucleuotides used in that trial are similar in chemical composition and mechanism of action to the antisense nucleuotides used in our translational studies. (Direct Intracerebroventricular injection) Since this procedure is linked to other procedures in our protocol, it would follow after them at the same occurrence rate. (Stitch Removal) Due to the nature of the osmotic pumps they will start to leach out highly concentrated salts at the end of the 4 weeks. To avoid this and keep the mouse medicated with the agonist during follow up behavior experiments multiple surgeries are required. (Direct Intracerebroventricular Chronic Delivery of CCK receptor agonists with pump change) Since this is not an invasive procedure, using the other eye as a possible secondary injection site would allow for a possible second dosing, or back up location for another injection. (Retro orbital Eye injections)
2009-38457A	Orr, Harry	Mice	72 HOUR POST-OP ANALGESIA POLICY	This is a follow up procedure for the removal of stitches, and is noninvasive. (Stitch Removal) Since this is an injection, and after consulting with RAR vet about post op needs for this procedure, she recommended the eye ointment with an antibiotic. (Retro orbital Eye injections)

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2009-38457A	Orr, Harry	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	The 154KI mice have a premature death phenotype, as mentioned in other sections. We are working on several treatments as well as new mutations, and mice that may or may not have a similar phenotype. To assess if they do we need to allow the mice progress to a moribund state. The new treatments will prolong the life span of the 154 ki mice. The new mutations may stop or delay the premature death of these animals.
2009-38457A	Orr, Harry	Mice	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	Further monitoring of a given mouse is not necessary as the procedure is terminal before 15 minutes pass. (Non-survival perfusion) This procedure will be completed quickly, and will only need one entry. (Intracerebroventricular Viral Injection of the Neonatal Mouse Brain for Persistent and Widespread Neuronal Transduction) The time that it takes for the injections is very minimal, used to keep the mouse still and relaxed. Once the injection happens, then the mouse is placed on recovery. (Retro orbital Eye injections) This is a follow up procedure for the removal of stitches, and is noninvasive. (Stitch Removal)
2009-38457A	Orr, Harry	Mice	EUTHANASIA METHOD	Neonates up to P8 are euthanized by decapitation with surgical scissors as they do not have mature nociceptors and are resistant to hypoxia. P10 through P17 are anesthetized with C02 until they no longer move and decapitated.
2009-38458A	Impelluso, Lynn	Mice	MULTIPLE SURGERY	This is required to study metastatic disese progression in mice. Some cell lines develop metastatic lesions after a few weeks of cell inoculaton. However, by the time metsatasis develop, primary tumor often exceeds clinical endpoints (tumors exceeding 10% of body weight), so animals need to be euthanized often before metastasis are present. One way to avoid this, is to perform primary tumor removal after orthotopic tumors reach 400-600mm^, by doing so, we can observe animals longer and study drug effects on metastatic lesions. In most cases, a cople of surgeries will be perfomed, orthotopic cell implantation followed by tumor removal. And almost all cases, both surgeries are minor surgeries.
2009-38487A	Ostrander, Julie	Mice	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	E2 in drinking water should not have an effect on the well-being of the mouse and is used to supplement estrogen levels needed for tumor cell growth. Once visible tumors form, mice will be weighed to monitor health with the tumor induction. For intraductal tumor growth is very slow and often palpable tumors are not observed within the first 10-12 weeks of tumor induction.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2009-38488A	Kyba, Michael	Mice	MULTIPLE SURGERY	In order to achieve successful engraftment of muscle stem and progenitor cells the muscle has to undergo an injury two days before transplantation to induce an essential injury response in the tissue. Cryo-injury or muscle injection injury will be performed as described in the previous section, pain and distress in the animals will be monitored for 3 days post-procedure. Because the effects of analgesic compounds on muscle regeneration are unknown, and because we want to examine the role of inflammatory cells in skeletal muscle damage/regeneration such as cryo-injury, we cannot use analgesics for this procedure.
2009-38488A	Kyba, Michael	Mice	72 HOUR POST-OP ANALGESIA POLICY	Because the effects of analgesic compounds on muscle regeneration are unknown, and because we want to examine the role of inflammatory cells in skeletal muscle damage/regeneration, we cannot use analgesics for this procedure.
2009-38488A	Kyba, Michael	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	Our objective is not to have any moribund animals, but on occasion, due to unforeseen effects of particular treatments, death is possible, and we would euthanize mice prior to death, i.e. if they should enter a moribund state. However, for the iDUX4pA;HSA strain specifically, we determine moribundity not by body condition but by the irreversible inability of rear leg flexion due to luxation of the patella. The main phenotypical characteristic of the iDUX4;HSA mouse is progressive skeletal muscle loss. Muscular dystrophic processes affect the total body weight of the mice. Affected mice usually are 20%-40% lighter than their littermates. In addition, some mice can be runted to start with, making assessment of body condition based on comparison to littermates unreliable. Despite extensive muscle/weight loss, the affected mice are still mobile, able to eat and drink without prominent signs of pain or discomfort. For this reason, wewill not use weight loss as an endpoint factor in these experiments, and use instead the endpoint of the irreversible inability of rear leg flexion due to luxation of the patella.
2009-38488A	Kyba, Michael	Mice	EUTHANASIA METHOD	Embryos 15 days of gestation or greater will be decapitated.
2009-38488A	Kyba, Michael	Mice	SOCIAL HOUSING	Necessary for housing mice in environmental chambers to study metabolism.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2009-38491A	Smith, Gordon	Other* (USDA)	MULTIPLE SURGERY	Performing a microinjection followed by a cranial window implant as two separate surgeries separated by an interval allows the period of optimal window clarity to begin only once viral expression has reached sufficient levels. Maximizing optical clarity of the cranial window for as long as possible will lead to an improvement in both the quality and quantity of imaging data we can collect from a single animal. The cranial window chamber may become loose or compromised requiring a repair. Because this is an opening to a major body cavity that would be exposed, it would classify as an additional major survival surgery. This is not anticipated as a common occurrence but we need to anticipate for the possibility. Eyelids may be re-opened and re-sutured multiple times in order to monitor visual responses during imaging sessions, while restricting normal visual experience in the home cage.Ferret jills will enter persistent heat if not mated. The high estrogen levels associated with this can lead to numerous health complications. Performing this procedure will allow us to prevent these issues, and utilize jills to provide data from older animals for comparison to data obtained during early development.Transverse sinus injection is most efficacious when performed in early post-natal animals, which is before the developmental periods typically under investigation in this study. Given this, and the rapid growth of animals during this period, it is not possible to implant the cranial window during the same surgical procedure as the injection.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2009-38491A	Smith, Gordon	Other* (USDA)	72 HOUR POST-OP ANALGESIA POLICY	Ferrets (and other carnivores) are particularly susceptible to GI distress with prolonged treatment with NSAIDs. Prior experience has suggested that 48 hours is well tolerated, so a 2-day treatment with meloxicam will be the standard procedure. If pain or distress is noted beyond 48 hours, meloxicam will be continued up to 5 days. If longer treatment is needed, veterinary staff will be consulted and additional treatments my be given based on veterinary recommendation. A major factor in the successful recovery from surgery in young animals is the alertness and activity level of the kit. Kits that are less alert or have lower activity can be rejected by the jill, potentially leading to death. Buprenorphrine SR can reduce alertness levels and lead to weight loss, and will therefore only be given when pain is not well controlled by meloxicam. However, given the efficacy of Buprenorphrine SR in pain management, it is important to have it as an option when needed. Due to the extremely young ages of some of the animals used in this procedure (<P8) the analgesic approaches typically applied in older animals carry increased risk of adverse side effects. Buprenorphine can cause bradycardia and respiratory supression, which are also expected to be more severe and potentially fatal in extremely young animals. Therefore, neither metacam nor buprenorphrine will not be administered in very young animals (<P8) if evidence of unaddressed pain is observed.
2009-38491A	Smith, Gordon	Other* (USDA)	NON-PHARMACAUTICAL GRADE COMPOUNDS	We will make every effort to obtain pharmaceutical grade pancuronium bromide. In some instances, pharmaceutical grade reagents are not available, in which case research grade reagents may be used. Sterilizations of solutions other than virus solutions will be performed by filtration using 0.22um filters. All chemicals are stored according to manufacturer recommendations. Paralytic agents, such as pancuronium bromide and vecuronium, can be prohibitively difficult to obtain in USP grade. In such cases, we will use research-grade compounds. Sterilizations of solutions will be performed by filtration using 0.22um filters. Solutions will be stored according to manufacture recommendations.
2009-38492A	Dehm, Scott	Mice	MULTIPLE SURGERY	Two surgical procedures are necessary to mirror the clinical course of human prostrate cancer. One surgery is necessary to implant tumors at orthotopic or subcutaneous sites in the mouse. The second surgery, castration, is used to mimic androgen depletion therapy. Longitudinal biopsies may be performed to reduce numbers of mice needed for studies monitoring the evolution of tumor subclonal architecture during experimental therapy.

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2009-38492A	Dehm, Scott	Mice	72 HOUR POST-OP ANALGESIA POLICY	The skin lesion of tumor biopsy is small and consider as a minor surgery, according to RAR pain medicine using guidelines, single dose injectable NASID is fulfill the purpose of pain relieve for this procedure.
2009-38499A	Murphy, Sharon	Rat	SOCIAL HOUSING	The animals have to be housed individually in the metabolism cages so that we can collect individual urine samples.
2009-38503A	Bartolomucci, Alessandro	Mice	ENVIRONMENTAL ENRICHMENT	Individual housing is mandated by some of the instrumentation in use for the determination of accurate metabolic responses, such as Indirect calorimetry, locomotor activity or meal pattern analysis, where both energy expenditure and mouse eating behavior can be evaluated accurately only for individual subjects. Mice are also singly housed during the first 3 post surgical days, to allow wound healing and more accurate monitoring of each individual subject recovery. As per RAR practice, male mice can be occasionally isolated due to spontaneous escalation of fighting behavior leading to wounds/injury.
2010-38524A	Chen, Chi	Mice	SOCIAL HOUSING	For experiment 1, mice of all treatment groups will be housed individually in metabolic cage on days 1 though 4. For experiment 2 (including 2.1, 2.2, and 2.3), mice will be placed in metabolic cages only in last day of AIN93G acclimation, day 4 and 7 of the experiment.When not housed in metabolic cage, mice will be group housed.
2010-38529A	Waye, Heather	Reptile (Other)	ENVIRONMENTAL ENRICHMENT	Snakes do not require social housing. The cage does have environmental enrichment, in the form of hides and branches
2010-38531A	Patel, Manish	Mice	TUMOR ENDPOINT CRITERIA	For most ulcerated tumors, the mice will be euthanized. However, if the tumor is ulcerated and is decreased in size as a result of treatment, we will treat those animals using topical treatment on the ulcer itself. In each case, we will consult with veterinary staff about the most appropriate way to treat these mice. If there is no resolution of the ulcer within 5 days of palliative management, the mice will be euthanized.
2010-38534A	Mand, Sandy	Fish (Other), Amphibian (Other), Reptile (Other)	SANITATION FREQUENCY	We use either under-gravel filters where the sediment waste on the gravel is siphoned out monthly or above-tank charcoal filter systems where the charcoal cartridges are changed based on manufacturer's recommendations. We change the bedding material/sand every month or two depending on the condition of the sand. Feces are regularly removed to maintain cleanliness.
2010-38534A	Mand, Sandy	Fish (Other), Amphibian (Other), Reptile (Other)	SOCIAL HOUSING	We have a male leopard gecko. Male geckos fight when housed together and we would prefer not to breed geckos. We also have a ball python that is housed individually. It is only recommended to house ball pythons together for breeding and we are not intending to breed our snake.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2010-38544A	Robinson, James	Mice	TUMOR ENDPOINT CRITERIA	The following conditions will be used as criteria for euthanasia: Tumor size of 2500 cubic millimeter (1000 for immunotherapy exp.) or tumors greater than 10 percent body weight; 20 percent loss of body weight in one week; inability to eat or drink; behavior abnormality; slow, shallow, labored breathing; hunched posture; hypo- or hyper-thermia; diarrhea or constipation (3 days); skin sores (ulcerated tumors), infections; lethargy (for 3 days); impaired mobility; persistent bleeding; paralysis or CNS signs (persistent seizures, spasticity, weakness). The melanomas in our model are treated with doxycycline to suppress oncogene expression when they reach at 1 cm3.Following oncogene inhibition they grow very rapidly for 72 hours before very rapidly and completely regressing. Tumors only become resistant and reoccur with a mean latency of 6 months. Mice are culled when the recurrent tumors reach 1 cm3. Due the initial treatment period tumors may briefly exceed 2cm they are not in pain or showing any signs of distress.
2010-38544A	Robinson, James	Mice	EUTHANASIA METHOD	A painless and instant form of death - used in the UK were C02 is considered considered cruel. If carbon dioxide is not available due to emergence conditions or engineering failures -mice will be culled by cervical dislocation. New born pubs 0-7 days old will be decapitated as Carbon dioxide is not effective for new born pubs
2010-38546A	Cureoglu, Sebahattin	Rat	MULTIPLE SURGERY	The purpose of this experiment is to evaluate treatment of ear infections. The first procedure is to produce the infection. The second procecure 2 days later is the treatment. The treatment is via the tympanic membrane and is considered a relatively non-invasive procedure (not a surgery); however, anesthesia is required to prevent movement. Animals will be euthanized 2 days after treatment.
2010-38552A	Patnayak, Devi	Pig (Agricultural)	EUTHANASIA METHOD	After being held properly, animals will be euthanized by Intravenous administration of barbiturate.
2010-38553A	Jameson, Stephen	Mice	MULTIPLE SURGERY	These studies are necessary for testing how the animals control pathogen infection (testing whether cells that exchange between the parabiotic pairs are functionally distinct from cells that do not exchange between the animals.
2010-38559A	Waye, Heather	Reptile (Other), Amphibian (Other)	ENVIRONMENTAL ENRICHMENT	Snakes do not require social housing. The cage does have environmental enrichment
2010-38564A	Hilakivi-Clarke, Leena	Mice	72 HOUR POST-OP ANALGESIA POLICY	This procedure is not expected to cause pain in the animals after procedure since there is no incision. However, if we observe any signal of pain, Buprenorphine will be administered.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2011-38591A	Thomas, Mark	Mice, Mice	MULTIPLE SURGERY	A subset of animals will receive virus infusion and optical fiber implantation in separate surgeries. This is experimentally necessary because it takes several weeks for AAV genetic payloads to express. For the animals' well being and to maximize experimental success, we minimize the time that it carries fiber implants. Pain and distress will be monitored identically for each individual procedure, and animals will receive the same postoperative care, monitoring, and pain management.
2011-38592A	Thomas, Mark	Rat	MULTIPLE SURGERY	Animals will receive virus infusion and optical fiber implantation in separate surgeries. This is experimentally necessary because it takes several weeks for AAV genetic payloads to express. For the animals' well being and to maximize experimental success, we minimize the time that it carries fiber implants. Pain and distress will be monitored identically for each individual procedure, and animals will receive the same postoperative care, monitoring, and pain management.
2011-38592A	Thomas, Mark	Rat	SOCIAL HOUSING	Animals that receive gastrectomies will need to be single housed to avoid serious negative post-operative health outcomes. Animals in 2BC experiments will need to be single housed as part of the experimental procedure.
2011-38598A	Lee, Anna	Mice	EUTHANASIA METHOD	Decapitation will be used for P0 or E15 mice using sharp scissors. The addition of sedation to these animals can interfere with the success of neuronal culturing experiments
2011-38598A	Lee, Anna	Mice	SOCIAL HOUSING	During the oral drug consumption tests and taste preference tests, mice will be individually housed to be able to measure the amount of consumption for each mouse. The mice will either be group housed again after the tests are over, or euthanized if the experiment is completed.
2011-38600A	[redacted]	Nonhuman Primate (Macaques), Pig (Biomedical)	MULTIPLE SURGERY	Second surgical procedure will be a bilateral nephrectomy (acute) procedure. (Donor: Splenectomy) Animals have previously been implanted using minimally invasive technique with a vascular access port to ensure proper delivery of the planned immunosuppression regimen prior to transplant and facilitate cooperation with ongoing clinical care related to fluid administration and clinical monitoring in the absence of chemical or physical restraint. (Recipient: Kidney transplant and naive kidney nephrectomy)

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2011-38613A	Klein, Amanda	Mice	72 HOUR POST-OP ANALGESIA POLICY	The goal of this study is to access the effects of KATP channel downregulation in chronic pain. Exogenous analgesics may confound the results of our study. Previous reports suggest that administration of opioids or NSAIDs shortly after surgery can affect hormone levels and/or paw withdrawal sensitivity in rodents (Wilson et al., 2016, Pain Res Treatment; Celerier et al., 2006, Anesthesiology). Current clinical theories suggest that blocking or limiting persistent pain immediately after surgery is clearly important in the persistence of chronic pain (Richebe et al., 2018, Anesthesiology).
2011-38628A	Lesne, Sylvain	Mice	SOCIAL HOUSING	Mice that are returned to cages after maze trials can often start fighting, which can make behavioral data not usable. We therefore need to singly house all animals that will be behaviorally characterized. Animals will be acclimated to single housing the week before behavioral tests begin. Thus, animals may be singly housed for up to 12 weeks to accommodate the length of the Restaurant Row Task.
2011-38630A	Adams, Andrew	Mice	MULTIPLE SURGERY	In specific targeted experiments, some mice (up to 10% of all skin graft recipients) will receive a secondary skin graft challenge. This is a common immunological technique to assess the ability of recipient to respond to a second immunological challenge.
2011-38633A	Skinner, Pamela	Mice	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	The water consumption of the mice should not change with the addition of these antibiotics and no weight loss is anticiptated. If a mouse is found to be in distress, an RAR vet or vet tech will be consulted and allowed to treat as needed or the mouse will be euthanized.
2011-38649A	Shimizu, Yoji	Mice	MULTIPLE SURGERY	Wound healing will be carefully assessed in the days following surgery, to include integrity of sutures and wound clips and cohesion and apposition of the entire length of incision. Given the relatively short duration of the proposed experiments, wound dehiscence is not expected. In the event of wound dehiscence we will consult the veterinarian to determine if this is a good candidate pair for repair, or if the experiment should be terminated and the animals euthanized humanely. When surgical repair is advised by the veterinarian, the repair would use the same anesthetics/analgesics/post-care as the initial surgery.
2011-38649A	Shimizu, Yoji	Mice	72 HOUR POST-OP ANALGESIA POLICY	Per veterinarian consult, the use of 72 hour analgesia seemed to be unnecessary in this situation as the surgery is minor. The use of topical analgesia immediately following the procedure was recommended, to reduce the extent of irritation and allow full hemostasis and healing of the small wound.

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2011-38660A	Liang, Yuying	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	SARS-CoV-2 infected mice are expected to lose weight at day 4 and most become moribund at day 7. Death may be delayed in vaccine- or antiviral-treated mice. The differences in the mortality rate and the days of survival are the scientific goals of the experiment. Early termination of mice would invalidate the results of the experiment. As no specific physiologic parameters can be used for euthanasia (mice losing 25% body weight may still be able to recover), death is generally used as an objective outcome of lethal infection. We will, however, evaluate both body weight and the health status conditions of the infected mice, and determine whether they are moribund, for example, 25% body weight loss and signs of neurological damage such as tremor, we will euthanize the mice.
2011-38662A	Krook-Magnuson, Esther	Mice	MULTIPLE SURGERY	Separate surgical procedures are needed for the induction of epilepsy, the implantation of optrodes/electrodes or headbar, and/or the introduction of viruses or tracers. The induction of epilepsy is done via the intracerebral injection of kainate. For the welfare of the animal, this is done under isoflurane anesthesia, but requires rapid removal from anesthesia after the surgical procedure (precluding e.g. the simultaneous implantation of an optical fiber). After a period of weeks, the animal is epileptic (i.e., display spontaneous seizures). Animals are then implanted, and recordings are done during this chronic phase (i.e., weeks after kainate injection), when spontaneous seizures are present. Additionally, the introduction of viruses (in cases where a pure transgenic approach is not feasible) or tracers may need to occur prior to (or sufficiently after) the circuit changes that occur with the induction of epilepsy (and therefore, cannot be combined with the surgery inducing epilepsy). Some viral based approaches (e.g., those using modified rabies) require two separate injections, to allow sufficient expression time (2-6weeks) after the first vector injection before the second occurs. In the case of juxtacellular recordings, the headbar implantation surgery typically occurs day(s) before the juxtacellular recording. This helps ensure the stability of the implant. In order to prevent the skull from being open an unnecessarily long period of time, the craniotomy may be done in a second, brief surgery, which can occur as little as 24hrs after the first.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2011-38662A	Krook-Magnuson, Esther	Mice	72 HOUR POST-OP ANALGESIA POLICY	In cases of surgery for the purposes of epilepsy induction, an exception is necessary as systemic analgesics interfere with epileptogenesis and the neuronal systems studied. For example, cox inhibitors change the excitatory properties of cells in the hippocampus CA1 area and potentiate cannabinoid effects in the hippocampus However, Neopredef will be used peri-operatively and the local anesthetic bupivacaine will be injected prior to and at the site of incision. In cases of surgery that do not include the induction of epilepsy, carprofen will be given acutely; however the use of opioids, including sustained release opioids, remains incompatible with our scientific aims as these alter neuronal activity, including of hippocampal interneurons and behavior. Given that a single dose s.c. analgesic, in combination with local bupivacaine and tetracaine, appears to provide adequate pain relief, after consultation with University Veterinarians, it was determined that the best course of action is to use this approach with increased monitoring and a rescue plan, including supplemental analgesics as required, for intracerebral injection surgeries. For implantation surgeries, where animals are group housed and there is an increased chance for postoperative pain in the days after surgery, three days of post-op analgesia will be given in the drinking water.
2011-38662A	Krook-Magnuson, Esther	Mice	SOCIAL HOUSING	Once implanted, animals must be singly housed. This protects the implant and the animals by preventing gnawing on the implant by cage mates. During chronic recordings, animals must be singly housed to avoid entanglement of cords.
2011-38662A	Krook-Magnuson, Esther	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	We are unable to purchase this anesthetic solution commercially (formerly known under its commercial name Avertin). Therefore, it must be made for use in the lab. Please see attachements section for preparation and storage of this anesthetic solution.
2011-38662A	Krook-Magnuson, Esther	Mice	ENVIRONMENTAL ENRICHMENT	Animals will be implanted and tethered to allow light delivery, and must be housed singly to avoid harming each other or damaging the implants.
2012-38672A	Kim, Do-Hyung	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	Moribund will be a criteria of the experimental assay for EAE (score 5) as described above. This is the most severe effect of EAE analysis we can expect, so to be scored as 5.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2012-38672A	Kim, Do-Hyung	Mice	EUTHANASIA METHOD	Our research requires euthanization by cervical dislocation without anesthsia. Anesthesia and carbon dioxide asphyxiation lead to an increase in catecholamine levels, which in turn stimulate lipolysis in adipose and glycogenolysis in liver. These alterations in lipolysis and blood glucose interfere with the analysis of insulin sensitivity. Immediately following euthanization mice are bled through the orbital plexus. Anesthetics are known to increase catecholamine release which will interfere with our experiments. Blood collection will happen right after cervical dislocation. The mice for tissue collection will be euthanized by cervical dislocation as anesthesia can influence biochemical events in the brain and disturb the analysis of signaling events that occur in the neuron and glial cells.
2012-38674A	Lemos, Julia	Mice	TAIL BIOPSY	Occasionally animals will have to be genotyped post-weaning if we require RAR staff to wean animals as opposed to laboratory staff or if we need to redo the biopsy due to accidental contamination. We will take every measure to minimize post-weaning tail biopsies as they can lead to additional stress and pain to the animals. In all cases we will use QuickStop cauderizing sticks to stop bleeding following tail biopsy.
2012-38674A	Lemos, Julia	Mice	ENVIRONMENTAL ENRICHMENT	A subset of animals will be implanted with fiber photometry probes used to measure the activity of brain cells using optical technology. In a small group of animals, we will assess whether probes remain intact when the animals are group housed. If we find that group housing causes significant damage to the implantation due to chewing/grooming around the area by cagemates, we will move to individually housing these mice post-surgery. These animals will have to be housed individually and with limited environmental enrichment to prevent these implants from being chewed/damaged and prevent the mice from being caught and head restricted by enrichment apparatus. We are also requesting of an exception for a subset of mice that will be used during the sucrose preference test. These animals must singly housed since it becomes impossible within conventional cages to assess individual liquid consumption if there is more than mouse per cage. Finally, we request an exception to account for instances (particularly in stress-exposed males) where there is excessive fighting that is producing physical injury. In those cases, mice may need to be housed individually.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2012-38674A	Lemos, Julia	Mice	SOCIAL HOUSING	While we will try and keep animals group housed, individuals with fiber implantations may need to be individual housed if we observe that mice are chewing on each others implantations, rendering them unusable. While not ideal, we may be forced to individually house mice to prevent additional attrition from the study.
2012-38678A	Klein, Amanda	Mice	MULTIPLE SURGERY	These procedures will allow for a viral vector to be injected intracranially while establishment of a chronic pain model is in place. Animals will be accessed for altertness, eating/drinking, feces/urine, breathing, gait and will be accessed for any changes on a daily basis for at least 3 days following either surgery or until wound healing is complete.
2012-38678A	Klein, Amanda	Mice	72 HOUR POST-OP ANALGESIA POLICY	The neuropathic pain model (SNL) proposed herein will cause some pain. Administration of analgesic drugs, however, would confound our electrophysiological experiments in which we like to determine the effects of KATP channel modulators on peripheral nerve fiber function after injury. (Spinal Nerve Ligation) The goal of this study is to access the effects of KATP channel downregulation in chronic pain and opioid tolerance. Exogenous analgesics may confound the results of our study. Previous reports suggest that administration of opioids or NSAIDs shortly after surgery can affect hormone levels and/or paw withdrawal sensitivity in rodents (Wilson et al., 2016, Pain Res Treatment; Celerier et al., 2006, Anesthesiology). Current clinical theories suggest that blocking or limiting persistent pain immediately after surgery is clearly important in the persistence of chronic pain (Richebe et al., 2018, Anesthesiology). (Intracranial injections)
2012-38686A	Garry, Mary	Mice	EUTHANASIA METHOD	Cervical dislocation will be performed by technically competent staff to ensure quick and complete euthanasia. Decapitation will be used for euthanasia of mouse embryos and neonates up to day 10.
2012-38687A	Nakagawa, Yasushi	Mice	72 HOUR POST-OP ANALGESIA POLICY	This procedure only involves puncture of one point of the skin and skull and is thus minimally invasive. I have consulted RAR to confirm that we do not need analgesics.
2012-38687A	Nakagawa, Yasushi	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	There are no pharmaceutical-grade compound available. Ritodrine has been routinely used for in utero surgeries, especially for early-stage mouse embryos. Without it, the uterine wall has too much pressure and it is very difficult to insert a pipette without causing the leakage of a large amount of amniotic fluid, which will increase the lethality of embryos. We will make sure we only use sterile needle/syringe to take up the reagent each time we use it.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2012-38697A	Iaizzo, Paul	Other* (USDA)	MULTIPLE SURGERY	We are monitoring these animals over their lifetime, these are minimally invasive procedures and the animals are undergoing anesthesia for other biometric monitoring by the DNR. We monitor the animal for approximately 20 minutes after the surgery, however, we need to put him/her back in their den prior to emerging from anesthesia as not to disturb their hibernation pattern. From our loop recorders and other monitoring we have determined that they resume hibernation after the anesthetic has warn off within 2-3 hours. This is very exciting data that we have obtained because they go into a deep hibernation within hours of us leaving the den and gives us confidence that our visit did not effect their hibernation behaviors.
2012-38697A	Iaizzo, Paul	Other* (USDA)	72 HOUR POST-OP ANALGESIA POLICY	We will not be going back to the bear's den and administering analgesia to the bear, the bear will be hibernating.
2012-38697A	Iaizzo, Paul	Other* (USDA)	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	We will not be going back to the bear's den for post-surgical record keeping.
2012-38703A	Bianco, Richard	Rat	72 HOUR POST-OP ANALGESIA POLICY	We are implanting subdermal implants which is a simple skin incision and pocket creation. We are not incising into muscle or a body cavity. Based on observations of rat behavior (including but not limited to, decreased activity, hunched posture, poor grooming, and decrease in food/water consumption, weight loss, and dehydration) we have observed that rats do not appear painful after the initial dose of medications at the time of surgery. Rats will be observed for the first three post operative days, if they do appear painful, we can give them more buprenorphine or carprofen on an "as needed" basis.
2012-38712A	Ashe, Karen	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	Inducing seizures by treating animals with PTZ (as described in the Procedures section) will cause unrelieved distress possibly resulting in death. Both seizure severity and death are measurable metrics of susceptibility to seizures in our mouse model of Alzheimer's disease. Clearly observing and recording these outcomes is necessary to investigate treatments that may reduce seizure susceptibility or genetic pathways that are involved in AD related seizures. Thus, relieving pain or preventing death would be counter productive to this line of investigation. Therefore, animal suffering will be minimized by euthanizing all animals undergoing treatment with PTZ as soon as possible, which will be up to 40 mins after injection with PTZ.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2012-38712A	Ashe, Karen	Mice	EUTHANASIA METHOD	Embryos (~E14-E15)) and Neonates (P1-P4) will be decapitated without anesthesia. Rapid decapitation is the preferred method to sacrifice pups of this age since it is the most rapid method, does not introduce adverse substances or gases that would affect sensitive neonatal neurons, and avoids any discomfort associated with injections. All individuals performing decapitation without anesthesia will be properly trained.
2012-38712A	Ashe, Karen	Mice	SOCIAL HOUSING	Mice receiving stereotaxic surgery will have sutures or wound clips for up to 1 week following surgery, and cannot be group housed since social grooming could interfere with healing and closure of the scalp incision site. Female can be recombined once the wound is fully healed, however males tend to be aggressive if they are recombined and will continue to be singly housed until experiments are complete.
2012-38713A	Bernlohr, David	Mice	EUTHANASIA METHOD	Altered lipolytic activity and metabolites have been demonstrated in tissues and blood after anesthesia and sedation. This euthanasia method will be used when determined to be necessary by the researcher based on experimental goals. It is included here to incorporate flexibility in the protocol. The procedure will NOT be used until the researcher has been properly trained on the technique.
2012-38734A	Pang, Hongbo	Mice	SOCIAL HOUSING	For studies using metabolic cages, we need to request an exception for social housing. In this study, we need to collect urine from individual animals, which is the reason for this request.
2012-38734A	Pang, Hongbo	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	We have used avertin routinely in our previous studies (Pang HB et al, 2014). It is easier to store and use in the lab. Avertin dose for rodents is 225-240 mg/kg IP. The animals will be injected Avertin and then subjected to heart perfusion before major organs are excised. In brief, the Avertin is used with single dose for anesthesia of mice before euthanization. The tissue will be collected after perfusion. Although ketamine/xylazine is suggested to use for anesthesia, ketamine/xylazine is known to cause bradycardia and to affect cardiac function . Isoflurane is good for shorter term of anesthesia, which is not suitable for perfusion procedure in our project. Compared with ketamine/xylazine, the hemodynamic effects of Avertin are less severe, with the milder systemic effects and the reduced mortality rate. This helps our perfusion procedure done more successfully than ketamine/xylazine. In our study, we will collect tumor tissues after perfusion so that the cardiac function parameter will not impact the results of study.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2101-38762A	Czyzyk, Jan	Mice	BLOOD COLLECTION LIMIT	This procedure will be performed in mice with diabetes to measure effects of anti-diabetic therapy. Random checking will involve weekly measurements. For glucose tolerance test mice will be bled at 0, 30, 60, 90 and 120 minutes after glucose intake. Each bleed is 5 microliters only. This is standard GTT assay, which allows for evaluation of severity of diabetes. 1-2 mm of tissue will be cut from the tail tip distal to the bone with sharp scissors, and then blood will be obtained by direct flow or gently massaging the tail.
2101-38763A	Culhane, Marie	Pig (Agricultural), Turkey, Cow (Agricultural)	EUTHANASIA DEATH/MORIBUND ENDPOINT	To assess the efficacy of nitrogen gas-filled high expansion foam for depopulation, animals must be euthanized by this route. In the event that anoxia by nitrogen gas inhalation is unsuccessful, pigs and cattle will be euthanized by penetrating captive bolt, and turkeys will be euthanized by nonpenetrating captive bolt or CO2 asphyxiation.
2101-38768A	Belcher, John	Mice, Mice	72 HOUR POST-OP ANALGESIA POLICY	The major endpoint for our research on sickle cell disease (SCD) is microvascular stasis. We have published numerous papers demonstrating that pro-inflammatory compounds increase stasis and anti-inflammatory compounds inhibit stasis in our SCD mouse models. Thus the interventions that we evaluate for treating SCD are all anti-inflammatory drugs. Use of anti-inflammatory drugs post-surgery will interfere with our measurement of microvascular stasis in our dorsal skin-fold chamber model. Buprenorphine has anti-inflammatory activity (Volker D, Bate M, Gentle R, Garg M. Oral buprenorphine is anti-inflammatory and modulates the pathogenesis of streptococcal cell wall polymer-induced arthritis in the Lew/SSN rat. Lab Anim. 2000 Oct;34(4):423-9). Unfortunately all of the analgesic choices for rats and mice found on the RAR website (http://www.ahc.umn.edu/rar/documents/Analgesiainratsandmice2.11.doc) have documented anti-inflammatory activity that will interfere with the measurement of microvascular stasis in our model.
2101-38768A	Belcher, John	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	The following is our scientific justification for the use of non-pharm grade chemicals. Urethane is widely used as an anesthetic for animal studies because of its minimal effects on cardiovascular and respiratory systems and maintenance of spinal reflexes. Alpha-chloralose is an anesthetic characterized by its ability to maintain animals in physiological conditions though immobilized and anesthetized. In addition, alpha-chloralose induces a loss of consciousness with little influence on either pain response or cardiovascular reflexes. We use highly pure urethane and alpha-chloralose purchased from Sigma-Aldrich as do publications in the literature studying the anesthetic properties of these compounds. We were unable to find any pharmaceutical grade sources of these compounds.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2101-38780A	Mermelstein, Paul	Mice	MULTIPLE SURGERY	A subset of animals will receive virus infusion and optical fiber implantation in separate surgeries. This is experimentally necessary because it takes several weeks for AAV genetic payloads to express. For the animals' well being and to maximize experimental success, we minimize the time that it carries fiber implants. Pain and distress will be monitored identically for each individual procedure, and animals will receive the same postoperative care, monitoring, and pain management.
2101-38791A	McGregor, Christopher	Pig (Biomedical)	SOCIAL HOUSING	The boars will be housed singly so as not to have unwanted litters of pigs. He will be housed singly in the same room with the herd so that he has their company. Animals may also be housed singly if there is a health concern where more monitoring is required.
2101-38797A	Bereiter, David	Rat	MULTIPLE SURGERY	A single microinjection of siRNA is made to block transcription in CFA-treated rats. The effectiveness of siRNA lasts for only a few days and cannot be given at the time CFA injection.
2101-38797A	Bereiter, David	Rat	72 HOUR POST-OP ANALGESIA POLICY	We have received previous permission from IACUC that a single dose of ketoprofen is sufficient for the surgeries we propose. (Intra-cerebral drug administration) This is a single injection and not a surgical procedure. (intra-TMJ injection of Complete Freund's Adjuvant) A 3 day regimen of carprofen would interfere with our TMJ inflammatory model. We will give a single dose on the day of surgery. (Jaw tracking: magnet and electrode placement)
2101-38797A	Bereiter, David	Rat	NON-PHARMACAUTICAL GRADE COMPOUNDS	Exorbitant cost increases effectively makes pharmaceutical grade formulations unavailable. (Thoracotomy) Pharmaceutical grade formulations do not exist (Dorsal brainstem surface exposure (electrophysiology, microdialysis))
2102-38821A	Crooker, Brian	Cow (Agricultural)	EUTHANASIA METHOD	Anesthesia or sedation is generally not needed for iv administration of barbituates to dairy cattle. If the animal is not calm, gentle restraint should be sufficient for iv administration.
2102-38830A	Olin, Michael	Mice	MULTIPLE SURGERY	Pumps will be implanted 3-5 days post tumor inoculation. This allows us the time to image mice to ensure tumor growth. Tumors need to be established prior to use of the SPDT

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2102-38837A	Zhang, Tianshun	Mice	TUMOR ENDPOINT CRITERIA	In order to "reduce and refine" these studies, we would like to keep animals on study that have non-cavitated ulcerations <1cm2. The animals will be treated with collasate ointment and monitored three times weekly by lab staff. Certain cell lines have a tendency to ulcerate the skin before the tumor is an adequate size, ergo if we treat the minor ulcerations we can keep the animals on the study and preserve the data preventing the need to replace or repeat.
2102-38852A	Chen, Xiaoli	Mice	EUTHANASIA METHOD	Our technical person has been working on mice for more than 8 years and has a high degree of mouse handling technical proficiency. In addition, we will combine this method (cervical dislocation) with decapitation
2102-38859A	Zhang, Tianshun	Mice	TUMOR ENDPOINT CRITERIA	Due to the superficial nature of these melanoma tumors, the skin has a tendency to tighten and ulcerate at a very small size. In order to get sufficient data from our study and reduce the need to repeat, we would like to treat the ulceration with collasate ointment, instead of euthanizing the mouse before we can get sufficient data. We will treat any ulceration 1cm3 or smaller with collasate ointment 3 times a week. Any tumors larger than 1cm3 with an ulcer will be euthanized immediately.
2102-38868A	[redacted]	Nonhuman Primate (Macaques)	MULTIPLE SURGERY	In the first, a post to stabilize head position is implanted. Stabilizing head position can improve video recording and monitoring of eye position. After training with gaze fixation is complete, a second surgery is performed in which we make craniotomies and implant recording chambers. Doing the two surgeries limits the amount of time that craniotomies are open before recording begins. That is advantageous as the dura mater within the craniotomy thickens over time, making it increasingly difficult to penetrate the dura for neural recording. It may be possible to complete behavioral training with gaze fixation without stabilizing head position. In that case, we will combine head post and recording chamber implantation into a single surgery. An additional survival surgery may be required if due to error in chamber placement(s), it is not possible for electrodes to reach their intended target brain areas. It may also be necessary to perform an additional survival surgery to either remove the implant, or repair it. It may be advantageous to perform an additional survival surgery to make craniotomies and implant recording chambers in the opposite cerebral hemisphere to acquire additional neural data from trained monkeys. In the case of tasks that take a long period to train, or where the number of neurons successfully recorded from is lower than planned in the initial recordings, continuing neural recording in the opposite cerebral hemisphere can help reach the quantity of neural data needed to meet the experimental objectives of the study, while minimizing the number of animals.

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2102-38870A	Lind, Erin	Mice	SOCIAL HOUSING	Animals with IV catheters typically must be singly housing to prevent damage being done to the back ports by cagemates. However, we will pilot test group housing with the new magnetic VAB caps to determine feasibility and impacts on catheter patency duration.
2102-38885A	Modiano, Jaime	Mice	EUTHANASIA METHOD	Cervical dislocation can be accomplished without additional sedation, but will only be used in exceptional circumstances. Euthanasia solution itself causes sedation, so the same procedure that leads to humane death by euthanasia causes sedation. The animals are not sedated in advance by other methods because the euthanasia solution is injected by the intraperitoneal route, which causes no to minimal, momentary discomfort. The active ingredient in the solution is the equivalent of 86 mg/kg pentobarbital. The process of additional sedation would increase the animal's stress and discomfort far beyond the momentary injection of euthanasia solution. The action of the euthanasia solution is quite rapid and equivalent to other methods of sedation or anesthesia. As needed, euthanasia will be ensured by cervical dislocation.
2103-38887A	Blazar, Bruce	Mice	TUMOR ENDPOINT CRITERIA	Sick mice cannot euthanized. These experiments are based upon treatment-related survival. In addition, the overall goal of these tumor induction experiments is to study the combined effect of GVL and GVHD. We tried correlating GVHD histology to survival and surprisingly, did not find a correlation. It may be useful corollary data providing information as to specific tissue site destruction but it does not correlate to survival. Nor do data from in vitro assays (disparagingly referred to as 96-well plate immunology) correlate to survival. GVHD is a complex pathophysiological process for which there is no good substitute endpoint for survival. However, we certainly understand that we need to minimize animal suffering. One mitigating factor for GVL pathophysiology, in comparison to GVHD, is that individual tumor lines induce death at relatively specific intervals of 2-5 days, whereas GVHD symptoms can go on for 30+ days.
2103-38887A	Blazar, Bruce	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	Sick mice cannot euthanized.We tried correlating histology to survival and surprisingly, did not find a correlation. It may be useful corollary data providing information as to specific tissue site destruction but it does not correlate to survival. Nor do data from in vitro assays (disparagingly referred to as 96-well plate immunology) correlate to survival. GVHD is a complex pathophysiological process for which there is no good substitute endpoint for survival.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2103-38887A	Blazar, Bruce	Mice	EUTHANASIA METHOD	We use cervical dislocation without anesthesia due to the potential depressive effects on the circulation and induction of tissue injury. We have consistently observed that lymph node, spleen and bone marrow cell viability and function are adversely affected in situations in which cells are not rapidly obtained from the animal after euthanasia. Rapid acquisition of cells and tissues after circulation and oxygenation ceases is critical to preserve normal immune responses as measured in vitro by proliferation assays and in vivo by GVHD effects. The data are striking and illustrate that stem cells and lymphocytes are highly susceptible to apoptosis, corticosteroid-induced immune suppression as well as the well-known accumulation of nitric oxide and oxygen radicals that can occur with low circulation and poor oxygenation that will compromise our experiments. Carbon dioxide inhalation prior to cervical dislocation would adversely upset the acid-base balance resulting in acidosis which would be important on a cellular level for in vivo transfer of cells and in vitro assays. When done correctly, cervical dislocation is extremely rapid resulting in an immediate and painless death with minimum stress to the mouse. The technicians, graduate students and post-docs doing this procedure are highly skilled and experienced, each having been trained in the procedure with a skilled person prior to implementation. For training in the technique of cervical dislocation, mice are anesthetized with isofluorane. Only individuals who have become good experienced mouse handlers perform cervical dislocation.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2103-38887A	Blazar, Bruce	Mice	SOCIAL HOUSING	In the event that only 1 male or female is weaned from a litter then the mouse is housed singly. If there is a cage of recently weaned mice, the single new weanling is added to the cage of previously weaned mice but the age and size disparity must be very narrow or the small newly added weanling is bullied by the older, larger mice. With older mice, males cannot be rehoused for any reason due to the high incidence of fighting and truly gruesome injuries. Experimental mice are routinely housed 4-5 per cage at the initiation of the experiment but deaths will occur at various times after transplant leaving 1 mouse per cage until its death or the termination of the experiment. We do not recombine experimental mice once the experiment is underway to preserve data integrity. Combining survivors from different groups would increase the likelihood of mistakes (e.g., injecting mice with the wrong solution, taking wrong mouse for study, recording wrong GVHD scores, death dates or weights) due to misidentification even though mice are ear-punched. Housing mice from different treatment groups in the same cage is a mistake waiting to happen. Also, mice from some groups could be healthier than mice from other groups and combining a sick mouse with new healthier companions can result in bullying and these mice are sick enough without having to contend with bullying. Social housing is preferred for humane reasons but there are circumstances in which the sequelae of social housing are worse than those of single housing.
2103-38889A	Hrabik, Thomas	Fish (Other)	72 HOUR POST-OP ANALGESIA POLICY	Based on previous work we have done, tag implantation takes less than 30 seconds with a small incision with 100% survival. Fish recover within 30 minutes and show no signs of stress after 1 hour. The only stress observed is due to handling the fish. Finally, we add API Stress Coat plus which is not a true analgesic, but has been known to increase slime coat for protection and reduces stress (50 mL StressCoat per 150 gallons water).
2103-38897A	Graves, Steven	Mice	SOCIAL HOUSING	Mice are individually housed only for the duration of the oral drug consumption procedure, otherwise mice will be group housed.
2103-38904A	Blazar, Bruce	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	The exception for death as an endpoint will be pre-determined endpoint for the experiment, typically 100 days post transplant. As stated, control transplanted animals (BM only) are not expected to show signs of GvHD, and as such will typically survive for the term of the experiment. Additionally, if all relevant experimental groups have succumbed to GvHD by, for example, day 60 it would not be meaningful to carry out the remainder of the experiment for the control BM only group. Under such circumstances, remaining animals would be euthanized earlier.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2103-38904A	Blazar, Bruce	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	Mice are euthanized with an avertin overdose for lung dissections. The use of avertin permits for cardiac perfusions to clear the lungs of blood. This is a published method by the Carla Kim lab at the Boston Children's Hospital (PMID: 15960971, 24497554).
2103-38904A	Blazar, Bruce	Mice	SOCIAL HOUSING	In the event that only 1 male or female is weaned from a litter, the mouse is housed singly. To further reduce single housing, if there is a cage of recently weaned mice of the same strain, the single new weanling is added to the cage of previously weaned mice, but the age and size disparity must be very narrow or the small newly added weanling risks being bullied by the older, larger mice. With older mice, males cannot be rehoused for any reason due to their territorial nature resulting in a high incidence of fighting. Experimental mice are routinely housed 4-5 (max 4 males) per cage at the initiation of the experiment but deaths will occur at various times after transplant resulting in attrition to a single mouse per cage until death or the termination of the experiment. We do not recombine experimental mice once the experiment is underway to preserve data integrity and prevent territorial fighting or distress. Combining survivors from different groups would increase the possibility mistakes detrimental to the study such as mixing interventions (injections) or false clinical readings (weight/death). Housing mice from different treatment groups in the same cage will lead to compromised data, which would require repeated experiments at the cost of many additional mice, time and resources. Also, mice from some groups could be healthier than mice from other groups, so that combining a sick mouse with new healthier companion might further result in territorial behavior, added stress.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2103-38904A	Blazar, Bruce	Mice	EUTHANASIA METHOD	Cervical dislocation without anesthesia due to the potential depressive effects on the circulation and induction of tissue injury.Lymph node, spleen and bone marrow cell viability and function are adversely affected when cells are not rapidly obtained from the animal after euthanasia. Rapid acquisition of cells and tissues after circulation and oxygenation ceases is critical to preserve normal immune responses. Stem cells and lymphocytes are highly susceptible to apoptosis, corticosteroid-induced immune suppression as well as the well-known accumulation of nitric oxide and oxygen radicals that can occur with low circulation and poor oxygenation that will compromise our experiments. Carbon dioxide would adversely upset the acid-base balance resulting in acidosis which would be important on a cellular level for in vivo transfer of cells and in vitro assays. Other inhaled anesthetics such as isoflurane can severely impact histology of the lung which is a critical terminal readout that we use following termination. Injected anesthetics such as pentobarbital can cause respiratory distress which would also disrupt lung histology. When done correctly, cervical dislocation is extremely rapid resulting in an immediate and painless death with minimum stress to the mouse. The technicians, graduate students and post-docs doing this procedure are highly skilled and experienced, each having been trained in the procedure with a skilled person prior to implementation. Only individuals who have become good experienced mouse handlers perform cervical dislocation.
2103-38905A	Blazar, Bruce	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	The exception for death as an endpoint will be pre-determined endpoint for the experiment, typically 100 days post transplant. As stated, control transplanted animals (BM only) are not expected to show signs of GvHD, and as such will typically survive for the term of the experiment. Additionally, if all relevant experimental groups have succumbed to GvHD by, for example, day 60 it would not be meaningful to carry out the remainder of the experiment for the control BM only group. Under such circumstances, remaining animals would be euthanized earlier.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2103-38905A	Blazar, Bruce	Mice	EUTHANASIA METHOD	We use cervical dislocation without anesthesia due to the potential depressive effects on the circulation and induction of tissue injury. Lymph node, spleen and bone marrow cell viability and function are adversely affected in situations in which cells are not rapidly obtained from the animal after euthanasia. Rapid acquisition of cells and tissues after circulation and oxygenation ceases is critical to preserve normal immune responses as measured in vitro by proliferation assays and in vivo by GVHD effects. The data are striking and illustrate that stem cells and lymphocytes are highly susceptible to apoptosis, corticosteroid-induced immune suppression as well as the well-known accumulation of nitric oxide and oxygen radicals that can occur with low circulation and poor oxygenation that will compromise our experiments. Carbon dioxide inhalation prior to cervical dislocation would adversely upset the acid-base balance resulting in acidosis which would be important on a cellular level for in vivo transfer of cells and in vitro assays. When done correctly, cervical dislocation is extremely rapid resulting in an immediate and painless death with minimum stress to the mouse. The technicians, graduate students and post-docs doing this procedure are highly skilled and experienced, each having been trained in the procedure with a skilled person prior to implementation. For training in the technique of cervical dislocation, mice are anesthetized with pentobarbital. Only individuals who have become good experienced mouse handlers perform cervical dislocation.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2103-38905A	Blazar, Bruce	Mice	SOCIAL HOUSING	In the event that only 1 male or female is weaned from a litter, the mouse is housed singly. To further reduce single housing, if there is a cage of recently weaned mice of the same strain, the single new weanling is added to the cage of previously weaned mice, but the age and size disparity must be very narrow. With older mice, males cannot be rehoused for any reason due to their territorial nature resulting in a high incidence of fighting.Experimental mice are routinely housed 4-5 (max 4 males) per cage at the initiation of the experiment but deaths will occur at various times after transplant resulting in attrition to a single mouse per cage until death or the termination of the experiment. We do not recombine experimental mice once the experiment is underway to preserve data integrity and prevent territorial fighting or distress. Combining survivors from different groups would increase the possibility mistakes detrimental to the study such as mixing interventions (injections) or false clinical readings (weight/death). Housing mice from different treatment groups in the same cage will lead to compromised data, which would require repeated experiments at the cost of many additional mice, time and resources. Also, mice from some groups could be healthier than mice from other groups, so that combining a sick mouse with new healthier companion might further result in territorial behavior, added stress. Social housing is preferred and broadly implemented for humane reasons however the listed circumstances are exceptions from which the sequelae of social housing are worse than those of single housing.
2103-38914A	Garry, Daniel	Mice	TAIL BIOPSY	Mice will be genotyped by tail snip. If a tail biopsy is taken after 21 days of age, mice will receive appropriate anesthesia (lidocaine).
2103-38914A	Garry, Daniel	Mice	EUTHANASIA METHOD	Cervical dislocation will be performed by technically competent staff to ensure quick and complete euthanasia

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2103-38916A	Saunders, Benjamin	Rat, Mice	MULTIPLE SURGERY	For experiments involving intravenous drug self administration, it will be necessary to perform two separate survival surgeries. During the first surgery, replication deficient adeno-associated virus (AAV) will be infused into the target region, and relevant intracranial implants (optical fibers and/or lenses) will be interested into the target region (s). Because adequate expression of opsins for optogenetic control of neural firing can take up to 8 weeks, jugular catheters (See procedures) will be implanted in a separate survival surgery, 4-8 weeks after the initial virus infusion and implant surgery. It is not possible to maintain the integrity of jugular catheters for more than ~6weeks, and given the required time for adequate viral expression that is necessary for our optogenetics, fiber photometry, and calcium imaging studies, we must implant the jugular catheters near the time when optimal viral expression occurs, necessitating a second survival surgery. Conducting all components in one surgery would result in a large attrition among the experimental subjects due to loss of catheter integrity, and ultimately a waste of resources and requirement of larger groups of experimental subjects. For rats receiving wound clips, after 1 week of recovery they will be briefly anesthetized with isofluorane and the clips removed.
2103-38918A	Ji, Li Li	Mice	PHYSICAL RESTRAINT	The goal of this experiment is due measure if the drug AS18 can prevent or mitigate skeletal muscle atrophy during a two-week immobilization period. In order to induce muscle atrophy, the limb must be immobilized. As detailed in the experimental design section, the microtube will be removed after two weeks and they will be mobile for 5 days prior to sacrifice.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2103-38924A	Ghose, Geoff	Cat	MULTIPLE SURGERY	Excluding the MPTP surgeries, a total of three primary surgical procedures may be performed. 1) placement of the head restraint post, 2) chamber/micro-array placement, and 3) pulse generator implantation. The motivating factors for separating these procedures include: 1) limiting the overall duration of any one surgical procedure, and 2) maximizing the overall integrity and lifespan of the implant. Additional surgeries are required for induction of the parkinsonian state. Response to the MPTP neurotoxin varies across animals and it is considered best practice to approach the desired severity level gradually rather than risk overshooting the behavioral target and inducing an unnecessarily severe parkinsonian state. This typically requires multiple intra-carotid surgical procedures combined, in some cases, with systemic injections. Chamber/headpost repairs may be necessary if either is damaged by the animal. We justify the repairs as they limit the number of animals used in the study. If parkinsonian animals do require additional survival surgeries (e.g. unexpected headcap repair), the RAR veterinary staff will be consulted and a determination will be made as to whether the additional survival surgery is appropriate given the animal's current health status. Placing the stimulating array requires a head position that is not compatible with good ABR electrode placement. Moreover, we want to obtain baseline physiological ABR measurements prior to nerve stimulator implantation to understand the effects of implantation itself.
2103-38934A	Ebner, Timothy	Mice	MULTIPLE SURGERY	For our awake imaging studies and histology experiments, it is essential we obtain both pre and post-TBI imaging data. Both of these experiments requiring an initial survival surgery to affix one of the implants, described above, followed by a second surgical procedure to perform the Controlled Cortical Impact procedure to induce the TBIs. (Brain Window Implantation (Survival)) For this experimental procedure, it is essential that animals serve as their own controls pre and post-TBI. Furthermore, employing an experimental design in which animals serve as their own control reduces the total number of animals needed to accomplish the proposed study. In order to accomplish this, the animals must undergo separate, survival surgeries. Pain and distress post-operatively associated with multiple procedures will be mitigated appropriately as outlined in the individual procedure protocols. (Controlled Cortical Impact (Survival))

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2103-38934A	Ebner, Timothy	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	To our knowledge, there is no pharmaceutical grade urethane available. However, we believe the use of urethane is still justified in our anesthetized, non-survival surgical procedures, as alternative anesthetics have considerable negative effects on physiology of the cerebral and cerebellar cortices. For example, ketamine is well known to block NMDA receptors in the brain, which are key receptors in the neuronal circuitry that we are studying (Bengtsson & Jorntell, 2007). Barbiturates are also known to profoundly depress cerebellar circuitry (Sato, Y. et al., 1993). Additionally, isoflurane over time depresses cerebellar function (Loeb, A.L., et al., 1998), which is not ideal for our long, acute experiments. Therefore, urethane is the best available anesthetic agent for us to use to investigate cerebral and cerebellar function in our studies.
2103-38934A	Ebner, Timothy	Mice	ENVIRONMENTAL ENRICHMENT	Mice with implants are that will be housed in [redacted] are singly housed to prevent the mice from disrupting the integrity of the implants, which could cause the implant to become compromised (either physically or create a non-sterile environment). Mice without implants will be group housed.
2103-38934A	Ebner, Timothy	Mice	SOCIAL HOUSING	Mice will be housed singly during water restriction to ensure accurate water regulation. The mice will be weighed before the initiation of water restriction and this will be the pre-restriction weight (see procedure "Water Restriction"). Mice with implants are that will be housed in [redacted] are singly housed to prevent the mice from disrupting the integrity of the implants, which could cause the implant to become compromised (either physically or create a non-sterile environment). Mice without implants will be group housed.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2103-38938A	Toth, Ferenc	Pig (Biomedical)	MULTIPLE SURGERY	In the proposed research project, we intend to perform a primary surgical procedure during which an intravascular micro catheter inserted through the carotid artery is used to embolize the vascular supply of the femoral head. Monitoring the effects of the primary surgical procedure requires subsequent angiographic studies that also require access to the carotid artery. Thus, the second and potentially third and fourth surgical procedures (performed at least 7 days apart) will entail only a minor cut-down procedure to the carotid artery (alternating the left and the right side) in anesthetized animals to allow insertion of the angiographic catheter and completion of the angiography. These follow up surgeries are expected to be of very short duration (15-20 min) and expected to cause only minimum morbidity, stress, and discomfort. These 2nd, 3rd, and 4th surgical procedures that are limited to surgical access to the carotid artery at the ventral aspect of the next should result in no functional deficit. During and after the surgical procedures the same anesthetic and analgesic procedures will be used as described for the primary surgery.
2103-38940A	Michaeli, Shalom	Rat	NON-PHARMACAUTICAL GRADE COMPOUNDS	Urethane has several advantages, including several possible administration routes, steady and long lasting (6–12 h) surgical level of anesthesia, minimal effects on respiration and cardiovascular system, and muscle relaxation. Although some thalamic and cortical suppression has been identified, several regions are only minimally modulated by urethane, and peripheral stimuli produce reflexes at the central nervous system level that modulate autonomic functions. Urethane has mild effects on multiple ion channels, a feature distinguishing it from many other anesthetics. At an anesthetic concentration, GABAA and glycine receptors are only slightly enhanced (20%–30%), while certain glutamate and α-amino-3-hydroxy 5-methyl- 4-isoxazolepropionic acid receptors are only modestly inhibited (10%–20%)). In addition, the anesthetic concentration of urethane slightly (15%) enhances the function of nAChRs. Urethane at a concentration near the surgical level anesthesia may be more suitable for electrophysiologic measurements and pharmacologic studies than other anesthetics. Functional connectivity under anesthesia of the brain has been shown to be closer to that of an awake animal using urethane in comparison with other most commonly used anesthesia protocols (e.g. isoflurane and medetomidine).
2103-38942A	Sachs, Zohar	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	Mice will be euthanized on the same day they become moribund. Mice are allowed to reach moribund state because in order for our experiments to produce good results, AML should be as prominent in the mouse as possible. Often, this state co-occurs as moribundity. In our MDS mouse strains, we expect the same disease state to occur.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2103-38958A	Pennell, Christopher	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	To determine if mice in our model experience the same toxicities as patients, we request that we are allowed to use 25% weight loss as a criterion for morbidity and euthanasia. If mice can spontaneously recover after losing 20% of their body weight, then our model would not be that great. We wouldn't know this if we had to euthanize them at the 20% weight loss level. However, we think it unlikely they could spontaneously recover after losing 25%. Since one of our goals is to reverse such side effects, we'd like to apply our proposed treatment at a time when the mouse could not otherwise recover.
2103-38958A	Pennell, Christopher	Mice	EUTHANASIA METHOD	Cervical dislocation is rapid and apparently painless. I have over 30 years experience using this method of euthanasia. We propose to develop a new model for clinical side effects of CAR immunotherapy. These side effects are CRS and neurologic adverse effects. Patients rapidly lose weight and experience systemic organ failure due to a sudden and systemic cytokine release. If left untreated, these toxicities are often fatal. To determine if mice in our model experience the same toxicities, we request that we are allowed to use 25% weight loss as one criterion for euthanasia. If mice can spontaneously recover after losing 20% of their body weight, then our model would not be that great. We wouldn't know this if we had to euthanize them at the 20% weight loss level. However, we think it unlikely they could spontaneously recover after losing 25%. Since one of our goals is to reverse toxicity, we'd like to apply our proposed treatment at a time when the mouse could not otherwise recover. However, we recognize that mice may become moribund and require euthanasia prior to losing 25% body weight. Therefore, mice will be euthanized when one or more of the following criteria are met: 1) they have lost 25% of their body weight 2) they score 6 in our clinical scoring system (see below; the weight criterion in this scoring system requires 25% weight loss for the maximum [worst] score) 3) for tumor-bearing mice, when the bioluminescence signal >8E+07 photons/sq cm/sec/steridian (value based on preliminary data)

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2103-38962A	Vulchanova, Lucy	Mice	MULTIPLE SURGERY	1. In some mice, brain injections of viral vectors or neuronal tracers will precede (1-8 weeks) or follow (2-8 weeks) Spared Nerve Injury. The addition of these injections are not expected to exacerbate the level of pain and distress associated with spared nerve injury. The rationale for administering the two survival surgeries in the same animal is that the viral injections will allow us to study and manipulate specific neurons within the circuits that mediate chronic hypersensitivity in the SNI model 2. In some mice that receive a brain injection, it will be necessary to administer a second viral injection in the same location 2-4 weeks after the first injection. Although we originally proposed to administer the two viral injections through an in-dwelling cannula and have approval for this approach, we are concerned that we don't know how the scar tissue that forms around the cannula will affect the distribution of the second vector. Therefore, we would like to compare the dual injection approach to the in-dwelling cannula approach. We do not expect that the second injection will result in additional pain or distress. 3. In some mice that receive a brain injection, it will be necessary to administer a second viral injection in the spinal cord 2-8 weeks after the first injection. Two viral vector injections are needed for monosynaptic gene transfer.
2103-38962A	Vulchanova, Lucy	Mice	72 HOUR POST-OP ANALGESIA POLICY	Post-operative analgesic therapy is contraindicated because the objective of the procedure is to determine whether the experimental treatment causes hypersensitivity. Provision of analgesics would inhibit the neurochemical changes required to develop the hypersensitive states to be studied
2103-38962A	Vulchanova, Lucy	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	Exception is requested for the use of non-pharmaceutical grade urethane for non-survival surgeries. In our experience, this usually produces a very stable and long-lasting (8-16 hours) state of anesthesia, which is the reason for choosing this non-pharmaceutical grade anesthetic agent for these experiments.
2103-38970A	Pacak, Christina	Mice	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	We have used this mouse model for 7 years and have not observed any issues with weight loss or failure to gain from the diet. Mice will be assessed regularly (2x per week). This will include weekly body weight recording

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2104-38974A	Davydova, Julia	Mice, Hamster	TUMOR ENDPOINT CRITERIA	As we stated above, along with the tumor lysis caused by hypoxia, tumor ulceration might be observed in animals receiving subcutaneous tumor cells. Tumor necrosis could be also an indicator of the successful therapeutic effect of the suggested treatment. In some cases, tumor necrosis leads to the ulceration of the tumor. Usually, this is the phenomenon observed in the process of tumor suppressive effect. We would like to observe the rodents with ulcers without antibiotics or analgesia in order to avoid possible effect of those drugs to the tumor response. Thus, pain level C is requested in order to observe the ulcerated tumor without antibiotics or analgesia.
2104-38986A	Lin, Wensheng	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	EAE is a paralytic disease that affects predominantly mobility of the experimental animals. Transient Dehydration, fatigue and muscle waste are expected symptoms when mice reach a score of 3.0 (complete paralysis of hind limbs) and beyond. These mice will receive supplemental nutrition, fluids and care on a twice daily basis. Animals that reach a score of 4.0 (complete paralysis of four limbs) or a moribund state will be euthanized.
2104-38986A	Lin, Wensheng	Mice	EUTHANASIA METHOD	When properly used by skilled personnel with well-maintained equipment, cervical dislocation may result in less fear and anxiety and be more rapid, painless, humane, and practical than other forms of euthanasia. Younger than 14-day-old pups will be will be euthanized by decapitation with scissors. Decapitation results in less fear and anxiety and be more rapid, painless, humane, and practical than other forms of euthanasia. EAE is a paralytic disease that affects predominantly mobility of the experimental animals. Transient Dehydration, fatigue and muscle waste are expected symptoms when mice reach a score of 3.0 (complete paralysis of hind limbs)and beyond. These mice will receive supplemental nutrition, fluids and care on a twice daily basis. Animals that reach a score of 4.0 (complete paralysis of four limbs) or a moribund state will be euthanized.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2104-38986A	Lin, Wensheng	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	Avertin has been the standard anesthetic in much mouse transgenic work. Advantages of Avertin are that it produces short-term (15-20 minutes) surgical anesthesia with good muscle relaxation and moderate respiratory depression, and that the mouse received it will recover within 30-60 minutes. Usually, it takes less than 5 minutes to perform EAE immunization. Moreover, we have used Avertin for EAE experiments for over 10 years (Avertin was approved for EAE experiments in our previous protocols 1209A21055,1507-32810A, and 1806-36038A). It is extremely important to use Avertin for our current and future EAE experiments, so that we make direct comparisons our previous, current, and future EAE work. Therefore, Avertin is selected due to its rapid induction of short-term anesthesia, quick recovery, low complication rate, and continuity of our EAE work.
2104-38986A	Lin, Wensheng	Mice	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	Mice will be deeply anesthetized with intraperitoneal injections of Avertin (425 mg/kg) prior to transcardial perfusion. Depth of anesthesia will be confirmed via lack of toe pinch reflex. Euthanasia is achieved by loss of blood and perfusion.
2104-38998A	[redacted]	Nonhuman Primate (Macaques)	MULTIPLE SURGERY	Second surgical procedure will be a bilateral nephrectomy (acute) procedure. (Donor: Splenectomy) Vascular access is an essential component of supporting animals that have previously been transplanted with either a life-supporting kidney or liver. Implant with a vascular access port is a refined approach to ensure proper delivery of the immunosuppressive drugs, antibiotics or other supportive therapies (e.g. IV fluid rehydration) and facilitates cooperation clinical monitoring in the absence of chemical or physical restraint. (Vascular access port placement)
2104-39021A	Widge, Alik	Rat	72 HOUR POST-OP ANALGESIA POLICY	The animal usually does not feel pain 24 hours post-surgery, but we will monitor the rat everyday for at least 72 hours post-surgery. Analgesics will be given if the rat is still feeling the pain either 48 or 72 hours post-surgery accordingly. We will also consult with area veterinarian if pain is observed. (Electrode/opto-electrode implantation surgery and opsin delivery)
2104-39025A	Widge, Alik	Rat	72 HOUR POST-OP ANALGESIA POLICY	The animal usually does not feel pain 24 hours post-surgery, but we will monitor the rat everyday for at least 72 hours post-surgery. Analgesics will be given if the rat is still feeling the pain either 48 or 72 hours post-surgery accordingly. (Opto-electrode implantation)
2104-39025A	Widge, Alik	Rat	SOCIAL HOUSING	The animals will be housed individually after implantation of the electrodes/optrodes. The animal will have a headstage on the top of their skull and therefore group housing will increase the chance of headstage damage via biting by a housing partner.

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2104-39037A	Cetera, Maureen	Guinea Pig, Mice	TAIL BIOPSY	Ear punch and tail snips at two weeks. Note: Ear punches less than 5mm after weaning. We will only ear punch after weaning if there is a problem with our original genotyping and we have to obtain another sample. All original genotyping will occur before the animal is two weeks old. We will use topical lidocaine for ear punches (Breeding)
2104-39043A	Blazar, Bruce	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	Death is required to understand the effects of some of our experimental therapies on GVHD. In order to understand their effect, death must be used. See additional justification above.
2104-39043A	Blazar, Bruce	Mice	SOCIAL HOUSING	In the event that only 1 male or female is weaned from a litter, the mouse is housed singly. To further reduce single housing, if there is a cage of recently weaned mice of the same strain, the single new weanling is added to the cage of previously weaned mice, but the age and size disparity must be very narrow or the small newly added weanling risks being bullied by the older, larger mice. With older mice, males cannot be rehoused for any reason due to their territorial nature resulting in a high incidence of fighting. Experimental mice are routinely housed 4-5 (max 4 males) per cage at the initiation of the experiment but deaths will occur at various times after transplant resulting in attrition to a single mouse per cage until death or the termination of the experiment. We do not recombine experimental mice once the experiment is underway to preserve data integrity and prevent territorial fighting or distress. Combining survivors from different groups would increase the possibility of mistakes detrimental to the study such as mixing interventions (injections) or false clinical readings (weight/death). Housing mice from different treatment groups in the same cage will lead to compromised data, which would require repeated experiments at the cost of many additional mice, time and resources. Also, mice from some groups could be healthier than mice from other groups, so that combining a sick mouse with new healthier companion might further result in territorial behavior, added stress.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2104-39043A	Blazar, Bruce	Mice	EUTHANASIA METHOD	We are proposing to perform cervical dislocation without anesthesia due to the potential effects of anesthesia on the circulation and the induction of tissue injury. Lymph node, spleen, and bone marrow cell viability and function are adversely affected in situations in which cells are not rapidly obtained from the animal after elective sacrifice. Rapid acquisition of cells and tissues after circulation and oxygenation ceases is critical to preserve normal immune responses as measured in vitro by proliferation assays and in vivo. Stem cells and lymphocytes are highly susceptible to apoptosis, corticosteriod induced immune suppression as well as the well-known accumulation of nitric oxide and oxygen radicals that can occur with low circulation and oxygenation that will compromise our experiments. Carbon dioxide inhalation prior to cervical dislocation would adversely upset the acid-base balance resulting in acidosis. WHEN DONE CORRECTLY, cervical dislocation is extremely rapid resulting in an immediate and painless death with minimum stress to the animal. The technicians and graduate students/postdocs doing this procedure are highly skilled and experienced, each having been trained in the procedure with a skilled person prior to implementation. For training in the technique of cervical dislocation, mice are anesthetized. Only individuals who have become good experienced mouse handlers perform cervical dislocation.
2104-39046A	Osborn Jr, John	Sheep (Biomedical)	MULTIPLE SURGERY	We are developing a model of sheep hypertension. We would like this time to implant the transmitter sheep with DOCA and diet to determine if and to what degree the DOCA/diet creates hypertension. If we are successful creating a hypertension model, 1-2 months later we will perform a renal denervation procedure to assess if hypertension can be resolved. Transmitter replacement or repair is necessary if the original transmitter fails, since blood pressure is the primary measurement in this study.
2104-39046A	Osborn Jr, John	Sheep (Biomedical)	SOCIAL HOUSING	Sheep on special diet will need to be housed with only other sheep on special diet, if no other sheep are currently in RAR that are on this diet than single housing will be necessary. We also perform balance measurements on this diet and the need for single housing is necessary for this. Single housing will also be used to determine food/water intake for diagnostic purposes.
2104-39046A	Osborn Jr, John	Sheep (Biomedical)	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	We do not anticipate any weight loss with the administration of this diet, as their food intake is not being limited beyond a normal diet.

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2104-39056A	Osborn Jr, John	Rat	SANITATION FREQUENCY	In the "servo-control" cages, cleaning of the upper part of the cage can only be performed at the end of each study (approximately 2 weeks) as removing the animal from the cage would not be possible while the study is ongoing. The lower part of the cage is changed out frequently. At the end of each study, the cage is disassembled and cleaned by lab staff following the RAR guidelines.
2104-39056A	Osborn Jr, John	Rat	MULTIPLE SURGERY	Uninephrectomy is required to study the effects of compounds on the left kidney, in isolation from any contralateral right kidney effects. Following uninephtrectomy the remaining left kidney undergoes hypertrophy. After 7-10 days hypertrophy is complete and a catheter can be placed into the outer medulla of the left kidney for compound administration. If the catheter was inserted during the same surgery as the uninephrectomy it's position would be displaced by the compensatory hypertrophy. Prior uninephrectomy is required to study the effects of compounds on the left kidney, in isolation from any contralateral right kidney effects. Following uninephtrectomy the remaining left kidney undergoes hypertrophy. After 7-10 days hypertrophy is complete a catheter can be placed into the outer medulla of the left kidney for compound administration. If the catheter was inserted during the same surgery and the uninephrectomy its position would be displaced by the compensatory hypertrophy. In studies in which iv drug administration will be used as a control for intra-renal drug administration prior uninephrectomy is required as is performed to ensure that these rats are appropriate controls and undergo the same surgical procedures as the rats in which drugs are delivered intra-renally.
2104-39056A	Osborn Jr, John	Rat	SOCIAL HOUSING	Rats in study will need to be single housed, additional enrichment will be provided.
2104-39056A	Osborn Jr, John	Rat	ENVIRONMENTAL ENRICHMENT	Rats will be single housed in metabolic cages. In these studies it is essential the urine collection volumes are accurate and represent all of the urine produced during the collection period. For this reason, we request an exception to the social housing and environment enrichment guidelines. The inclusion of enrichment in the cage, and the group housing of rats would not permit accurate assessment of urine volumes.
2104-39056A	Osborn Jr, John	Rat	NON-PHARMACAUTICAL GRADE COMPOUNDS	Inactin is non pharmaceutical and will be prepared in a manner that makes it compatible for animal use. As such we will take into account sterility, pH, purity and osmolarity when preparing the Inactin. New solutions will be made up daily.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2105-39068A	[redacted]	Nonhuman Primate (Macaques), Pig (Biomedical)	MULTIPLE SURGERY	Second surgical procedure will be a bilateral nephrectomy (acute) procedure. (Donor: Splenectomy) Animals have previously been implanted using minimally invasive technique with a vascular access port to ensure proper delivery of the planned immunosuppression regimen prior to transplant and facilitate cooperation with ongoing clinical care related to fluid administration and clinical monitoring in the absence of chemical or physical restraint. (Recipient: Arterial line placement, native liver hepatectomy, and liver transplant)
2105-39083A	[redacted]	Nonhuman Primate (Macaques)	MULTIPLE SURGERY	Animals will arrive on the protocol with implanted vascular access ports (VAPs). The placement of a central VAP is considered a minor surgical procedure (peripheral limb, not entering a major body cavity), essentially similar to routine catheter placement with the notable exception that the access site is placed underneath the skin. The placement of the portal vascular access port allows cell products to be delivered intraportally using a non-invasive technique, that improves agreement with the clinical situation and moves surgical manipulation of the portal vein outside of the diabetic immunosuppressed phase. VAPs improve safety, and increase animal comfort when intermittent or recurrent venous access is required by avoiding painful 'catheter starts'. VAPs also allow NHPs to participate fully in enrichment programs and social group activities without the restrictions inherent in conventional approaches. The utility of the prevascularized site has been evaluated in small animal models and in the clinic, small animal models have been poorly predictive of clinical success with prevascularized sites. This will be done during the diabetic phase using the intended timing that will be used in the clinical situation to accurately estimate efficacy and safety.
2105-39089A	Schumacher, Robert	Mice	MULTIPLE SURGERY	The cardiotoxin injection followed 24 hours later by cell injection is an essential component of the same project. The first procedure prepares the transplant site for engraftment of the myoprogenitor cells in the host muscle tissue. These procedures have been tested on mice in the [redacted] lab on protocol 2002-37833A. The animals were not observed to have any functional deficits following the procedures. The mice were ambulatory without lameness and were able to eat and drink normally from the chow and water bottle provided at the top of the cage.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2105-39089A	Schumacher, Robert	Mice	72 HOUR POST-OP ANALGESIA POLICY	This identifcal set of surgical procedures in PI Rita Perlingeiro's protocol 2002-37833A under which this myoprogenitor cell product was developed, are Pain Class C procedures with an exception for administration of any analgesics during the peri and post-op periods. These mice have consistently been observed to recover completely with little indication of pain or distress. The scientific justification for withholding analgesics are that the effect of analgesics on muscle regeneration are unknown and that low engraftment of cells was observed when oral ibuprofen analgesia was used. The surgeries are minimally invasive requiring only a small (~0.5cm) incision in muscle and needle injection of cells. The [redacted] lab has been able to use SR-bupprenorphine for analgesia when transplanting mouse cells into mice, but not for this particular application for a human cell xenograft in mice.
2105-39104A	Li, Faqian	Mice	EUTHANASIA METHOD	Fetuses are neither sentient nor conscious prior to birth and thus incapable of actually perceiving pain. When fetuses (mouse>E15) are needed for study, euthanasia of individual fetuses induced by decapitation with surgical scissors is an acceptable physical method of euthanasia according to NIH guide.
2105-39105A	Bianco, Richard	Pig (Biomedical)	MULTIPLE SURGERY	This group is intended to model a clinical scenario in which a pediatric patient undergoes an initial heart surgery and a test/control adhesion prevention product is applied. Following the surgery, the clinical patient will grow necessitating a secondary surgery or reoperation. The investigator wants to model this scenario in the pig model, characterizing the adhesions present after initial application of test/control therapy, and it's efficacy in a second surgical procedure, in comparison to clinical observations.
2105-39112A	Banik, Ratan	Mice, Rat	72 HOUR POST-OP ANALGESIA POLICY	We request not to give analgesics because we need for hyperalgesia to fully develop and analgesics may interfere with this process. IGF antibodies may provide analgesia in experimental animals. If animals are in excessive pain (vocalization, restlessness) and lose 10% of its weight, it will be euthanized. Based on our experience and available data, animals tolerate well this surgical procedure and do not show excessive pain behaviors. (Banik et al 2005, Pain) (Kang et al. 2010), (Banik, Brennan 2009).
2105-39112A	Banik, Ratan	Mice, Rat	EUTHANASIA METHOD	In our hands mice do not undergo extreme distress due to euthanasia. Under our hands rats do not experience stress due to euthanasia.
2105-39119A	Widge, Alik	Rat	72 HOUR POST-OP ANALGESIA POLICY	The animal usually does not feel pain 24 hours post-surgery, but we will monitor the rat everyday for at least 72 hours post-surgery. Analgesics will be given if the rat is still feeling the pain either 48 or 72 hours post-surgery accordingly. (Electrode implantation surgery.)

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2105-39119A	Widge, Alik	Rat	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	We need to weight animal everyday to monitor their weight changes. The weight will be an important indicator on whether we should increase or decrease the daily food distribution to the rats. (Food Restriction)
2105-39119A	Widge, Alik	Rat	SOCIAL HOUSING	The animals will be singly housed during the surgery recovery period so that the animals do not injure each other as they heal or damage the acrylic head cap that is securing the electrodes/opto-electrodes.
2105-39121A	Elmquist, William	Mice	BLOOD COLLECTION LIMIT	Blood collection will be performed post euthanasia.
2106-39156A	Tolar, Jakub	Mice, Rat	EUTHANASIA METHOD	We are proposing to perform cervical dislocation without anesthesia due to the potential effects of anesthesia on the circulation and the induction of tissue injury. Lymph node, spleen, and bone marrow cell viability and function are adversely affected in situations in which cells are not rapidly obtained from the animal after elective sacrifice. Rapid acquisition of cells and tissues after circulation and oxygenation ceases is critical to preserve normal immune responses. The data are striking and illustrate that stem cells and lymphocytes are highly susceptible to apoptosis,corticosteriod-induced immune suppression as well as the well-known accumulation of nitric oxide and oxygen radicals that can occur with low circulation and oxygenation that will compromise our experiments. WHEN DONE CORRECTLY, cervical dislocation is extremely rapid resulting in an immediate and painless death with minimum stress to the animal. The technicians and graduate students/postdocs doing this procedure are highly skilled and experienced, each having been trained in the procedure with a skilled person prior to implementation. For training in the technique of cervical dislocation, mice are anesthetized. Only individuals who have become proficient, experienced mouse handlers perform cervical dislocation. Euthanasia is performed by pentobarbital overdose only in those instances where cervical bleeding compromises tissue quality as in lung collection (mechanistic studies in which lung, and perhaps thymus) tissues are collected at various times after BMT)
2106-39156A	Tolar, Jakub	Mice, Rat	SOCIAL HOUSING	Animals that undergo surgery for the wound models may need to be singly housed post-op as cage mates may interfere with the healing of the surgical area and endanger the health of the animal. Only in these cases would animals need to be separated and housed singly.
2106-39158A	Georgieff, Michael	Mice	EUTHANASIA METHOD	Decapitation without anesthesia or sedation will only be performed on postnatal day (P)0-P3 mice, for generation of our glia cultures.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2106-39159A	Cormier, Robert	Mice, Hamster	SOCIAL HOUSING	Mice. Depending on litter size and informative genotypes there will be situations where a single male mouse will be housed alone as we do not house unrelated males together due to the likelihood they will fight. Unrelated females can be housed together. Another instance where a mouse may be housed singly is if we intend to study changes in their microbiome. As mice are coporophagic in order to assess whether there are differences in the microbiomes of test mice of specific genotypes it is necessary to house them singly. This would apply to both males and females. Hamsters. Similar to mice we generally house males and females from the same litter together separate only by gender. Again, depending on informative genotypes there will be situations where only one animal in a litter of a specific gender is kept for experimental purposes, so they would be housed singly. In hamsters females are far more aggressive and unrelated females definitely cannot be housed together. We follow a similar rule for males even though they are less aggressive than females. Even for related females we have had situations where they start fighting and then the most aggressive female has to be separated into a separate cage. We needed to do that just recently.
2106-39169A	Ervasti, James	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	We strongly feel that our planned use of Avertin is justified for the following reasons. First, Avertin is the most widely used anesthetic in transgenic mouse research and is recommended by The Jackson Laboratory because it is easy to master administration, it is very fast acting and produces minimal obvious discomfort to the animal. In our experience with mouse anesthetics over the last 11 years at the University of Wisconsin and University of Minnesota, we have not experienced the significant post-procedural mortality noted in the Guidelines for the Use of Anesthetics, Analgesics and Tranquilizers in Laboratory Animals web page of RAR (http://www.ahc.umn.edu/rar/anesthesia.html). Our success with Avertin is likely due to the fact that my staff was trained in its use by Dr. Albee Messing, DVM at the University of Wisconsin who routinely uses Avertin in his own research with mice and also to the fact that its mode of administration is easy to master for non-veterinarians. We are also well aware of Avertin's instability and take great pains to administer from fresh stocks prepared as described on the RAR website (http://www.ahc.umn.edu/rar/avertin.html). Finally, as the experiments proposed here build on the results of experiments using Avertin approved in IACUC protocol number 1207A17501 and 1506-32699A, we feel that changing to another anesthesia now could compromise the outcome of our study, which would result in the use of even greater numbers of animals used.

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2106-39180A	Bierle, Craig	Guinea Pig	SOCIAL HOUSING	Guinea pigs will generally be housed in same-sex or breeding pairs. However, animals may be housed individually for 3 reasons: 1) Sexually mature males may be housed individually once the animal has been bred. Young males can be safely housed together if paired at or shortly after weaning, but mature male guinea pigs can become aggressive towards each other if introduced for the first time. 2) GPCMV can be shed in many bodily fluids, including saliva and urine. To avoid unintended infections, we request to isolate animals that are known to be seropositive or that have been experimentally infected. Seropositive or experimentally challenged may housed in pairs if appropriate for an individual experiment or for long-term housing as deemed appropriate by the research staff. 3) Uninfected/mock infected guinea pigs may be housed individually if the animal is a control for an experiment where infected guinea pigs are also housed individually.
2106-39208A	Largaespada, David	Mice	MULTIPLE SURGERY	Amputation is performed on mice that previously received intra-osseous tumor (by surgical procedure). The mice develop primary tumors relatively quickly, but our experimental aim is to achieve metastasis. We believe that the longer the tumor is present the more likely metastasis will occur. We would perform the amputation when the mouse becomes negatively affected by the tumor such that they meet the euthanasia criteria for either size (2 cm3) or because of loss of mobility in the animal.
2106-39210A	Yamamoto, Masato	Mice, Hamster	TUMOR ENDPOINT CRITERIA	When treatment works, some times ulceration is observed on the treated tumor as a result of tumor necrosis. We will observe the small ulceration up to 7 days unless continuous bleeding or infection is observed or reaching other euthanization criteria. We will give ketoprofen 5mg/kg SC q24h when necessary. Pain level C. During ulcer observation period, a) The ulcer will be monitored at least once a day during this observation. b) If there is ulceration or bleeding from tumor, analgesics will be started for the following: bleeding, scratching, or licking/chewing at ulcerated area and if pain medication doesn't stop the signs of pain, animal will be euthanized. c) ulcer size >7mm is another endpoint. d) collasate(R) will be applied by the researchers to all ulcers to prevent infection and cover open ulcers.

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2106-39213A	Alejandro, Emilyn	Mice	SOCIAL HOUSING	The majority of our mice will be grouped: female will be combined up to five, and male up to 4 to promote social. In cases where they are separated due to fighting (common phenotype after High-fat diet treatment), mice under treatment/experiment will be caged singly, and will be provided an igloo for comfort. To assess food intake, mice will be singly house for one week during food consumption measurement, and then recombine if they are female or euthanized immediately for tissue. Male mice singly house will be euthanized when not needed for further study. In some cases, we need to assess energy expenditure using metabolic cages, where they need to be separated or singly house for up to 3-5 days prior to euthanasia. The metabolic cages can efficiently assess metabolic changes per mouse.
2106-39213A	Alejandro, Emilyn	Mice	EUTHANASIA METHOD	Only neonates (day 1) will be euthanized via decapitation.
2107-39236A	Jenkins, Marc	Mice	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	The food consumption of the mice should not change with any of these diets and no weight loss is anticipated. If a mouse is found to be in distress, an RAR vet or vet tech will be consulted and allowed to treat as needed or the mouse will be euthanized. (Amino acid, casein and selenium deficient diets) No impact on the animals health is expected. If a mouse is found to be in distress, an RAR vet or vet tech will be consulted and allowed to treat as needed or the mouse will be euthanized. (SMZ/TMP treated water)
2107-39255A	Ebner, Timothy	Mice	MULTIPLE SURGERY	Based on our initial trials of administering the AAV opsin construct followed by the immediate implantation of the fiber optic, we noticed that we were not producing any expression of the opsin in the targeted region, but only along the shaft of the fiber optic. This was also confirmed in verbal communications with the Esther Krook-Magnuson lab. If the fiber optic is placed immediately after the delivery of the AAV, the AAV will concentrate around the fiber optic before it can be taken up by cells. Therefore, we are requesting to do an initial surgery to first inject the AAV opsin construct. For experiments in chronically epileptic animals, separate surgical procedures are needed for the induction of epilepsy and the implantation of the optical/electrophysiology chamber. The induction of epilepsy is done via the intracerebral injection of kainate (a brief surgery typically lasting less than 30 min). Rapid removal from anesthesia is required for effective epileptogenesis. After displaying spontaneous seizures, the animals are then implanted, and recordings are done during this chronic phase (i.e. weeks after kainate injection), when spontaneous seizures are present.

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2107-39255A	Ebner, Timothy	Mice	72 HOUR POST-OP ANALGESIA POLICY	In cases of surgery for the purposes of epilepsy induction (e.g., intracerebral kainate injection), an exception is necessary as systemic analgesics interfere with epileptogenesis and the neuronal systems studied. For example, cox inhibitors change the excitatory properties of cells in the hippocampus CA1 area and potentiate cannabinoid effects in the hippocampus (Kim & Alger, 2004; Slanina & Schweitzer, 2005). However, Neopredef (topical, contains both an antimicrobial agent as well as tetracaine, a local analgesic) will be used peri-operatively and the local anesthetic bupivacaine will be injected prior to and at the site of incision. This method of pain management has been used successfully in the [redacted] (here at UMN).
2107-39255A	Ebner, Timothy	Mice	ENVIRONMENTAL ENRICHMENT	Mice with implants are that will be housed in [redacted] are singly housed to prevent the mice from disrupting the integrity of the implants, which could cause the implant to become compromised (either physically or create a non-sterile environment). Mice without implants will be group housed.
2107-39255A	Ebner, Timothy	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	Notes on use of non-pharmaceutical grade urethane: To our knowledge, there is no pharmaceutical grade urethane available. However, we believe the use of urethane is still justified in our anesthetized, non-survival surgical procedures, as alternative anesthetics have considerable negative effects on physiology of the cerebral and cerebellar cortices. For example, ketamine is well known to block NMDA receptors in the brain, which are key receptors in the neuronal circuitry that we are studying (Bengtsson & Jorntell, 2007). Barbiturates are also known to profoundly depress cerebellar circuitry (Sato, Y. et al., 1993). Additionally, isoflurane over time depresses cerebellar function (Loeb, A.L., et al., 1998), which is not ideal for our long, acute experiments. Therefore, urethane is the best available anesthetic agent for us to use to investigate cerebral and cerebellar function in our studies.
2107-39255A	Ebner, Timothy	Mice	SOCIAL HOUSING	Mice will be housed singly during water restriction to ensure accurate water regulation. The mice will be weighed before the initiation of water restriction and this will be the pre-restriction weight (see procedure "Water Restriction"). Mice with implants are that will be housed in [redacted] are singly housed to prevent the mice from disrupting the integrity of the implants, which could cause the implant to become compromised (either physically or create a non-sterile environment). Mice without implants will be group housed.

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2107-39261A	Klein, Amanda	Mice	MULTIPLE SURGERY	These procedures will allow for a viral vector to be injected intracranially while establishment of a chronic pain model is in place. Animals will be accessed for alertness, eating/drinking, feces/urine, breathing, gait and will be accessed for any changes on a daily basis for at least 3 days following either surgery or until wound healing is complete.
2107-39261A	Klein, Amanda	Mice	72 HOUR POST-OP ANALGESIA POLICY	The neuropathic pain model, spinal nerve ligation, proposed herein will cause some pain. Using analgesic drugs may antagonize the pain hypersensitivity and spinal neuronal (i.e. central) sensitization that is developed after injury over time. Administration of analgesic drugs post surgery, however, would confound our behavioral experiments in which we like to determine the efficacy of KATP channel agonists/antagonists on neuropathic pain models. (Spinal Nerve Ligation) The goal of this study is to access the effects of KATP channel downregulation in chronic pain and opioid tolerance. Exogenous analgesics may confound the results of our study. Previous reports suggest that administration of opioids or NSAIDs shortly after surgery can affect hormone levels and/or paw withdrawal sensitivity in rodents (Wilson et al., 2016, Pain Res Treatment; Celerier et al., 2006, Anesthesiology). Current clinical theories suggest that blocking or limiting persistent pain immediately after surgery is clearly important in the persistence of chronic pain (Richebe et al., 2018, Anesthesiology). (Intracranial Injections)
2107-39268A	Pang, Hongbo	Mice, Rat	NON-PHARMACAUTICAL GRADE COMPOUNDS	We have used avertin routinely in our previous studies (Pang HB et al, 2014). It is easier to store and use in the lab.
2107-39273A	Subramanian, Subree	Mice, Mice	MULTIPLE SURGERY	The first surgery is for establishing the disease model. The secondary surgery is for treating the diseases.
2107-39283A	LaRocca, Christopher	Mice, Hamster	TUMOR ENDPOINT CRITERIA	As we stated above, along with the tumor lysis caused by hypoxia, tumor ulceration might be observed in animals receiving subcutaneous tumor cells. Tumor necrosis could be also an indicator of the successful therapeutic effect of the suggested treatment. In some cases, tumor necrosis leads to the ulceration of the tumor. Usually, this is the phenomenon observed in the process of tumor suppressive effect. We would like to observe the rodents with ulcers without antibiotics or analgesia in order to avoid possible effect of those drugs to the tumor response. Thus, pain level C is requested in order to observe the ulcerated tumor without antibiotics or analgesia.

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2107-39289A	Graves, Steven	Mice	SOCIAL HOUSING	Instrument training: Mice will be singly housed and placed on a food deprivation schedule for 7-10 days prior to instrument training to reduce their weight to 80-85% of their baseline weight. During instrument training mice will be fed 1.5 -2 g of home chow each day after training. Mice will be singly housed throughout training and testing phases and training and testing will be carried out in Med Associates operant chamber.
2107-39302A	Salfer, Isaac	Cow (Agricultural)	72 HOUR POST-OP ANALGESIA POLICY	Jugular catheterization of cows causes minimal pain and distress and minimal chance of infection, especially if proper sterile technique is used. This procedure has frequently been used by myself and other labs without the need to analgesics during or post-catheterization. The procedure does not lead to pain or distress beyond what would be anticipated with jugular veinipuncture.
2107-39302A	Salfer, Isaac	Cow (Agricultural)	EUTHANASIA METHOD	Anesthesia or sedation is generally not needed for iv administration of barbituates to dairy cattle. If the animal is not calm, gentle restraint should be sufficient for iv administration.
2108-39305A	Liao, Dezhi	Rat, Mice	EUTHANASIA METHOD	We will harvest brain tissues from neonatal rodents younger than 1 week. According to IACUC guidelines, it can be done by decapitation with a pair of scissors.
2108-39309A	Haskell-Luevano, Carrie	Mice	72 HOUR POST-OP ANALGESIA POLICY	Additionally, post-operative analgesic therapy is contraindicated since provision of analgesics would inhibit the neurochemical changes required to develop the hypersensitive states to be studied.
2108-39325A	Chen, Clark	Mice	MULTIPLE SURGERY	For this experimental procedure, it is essential that tumor implantation be performed in the manner that has been established, that is with an intact cranium during the injection process. A subsequent period after tumor implantation with the intact cranium must be provided to allow for adequate establishment of the tumor cells to grow. Therefore, the cranioplasty procedure can not be performed at the time of tumor cell implantation. The tumor cell implantation surgery is minimally invasive and animals recover quickly and do quite well following this procedure. Furthermore, pain and distress post-operatively associated with multiple procedures will be mitigated appropriately as outlined in the individual procedure protocols. The rationale for performing the cranioplasty procedure first, followed by recovery then tumor induction is to allow individual animals to serve as their own controls and therefore minimize the total number of animals required for the experiments.

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2108-39325A	Chen, Clark	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	To our knowledge, there is no pharmaceutical grade urethane available. However, we believe the use of urethane is still justified in our anesthetized, non-survival surgical procedures, as alternative anesthetics have considerable negative effects on physiology of the cerebral and cerebellar cortices. For example, ketamine is well known to block NMDA receptors in the brain, which are key receptors in the neuronal circuitry that we are studying (Bengtsson & Jorntell, 2007). Barbiturates are also known to profoundly depress cerebellar circuitry (Sato, Y. et al., 1993). Additionally, isoflurane over time depresses cerebellar function (Loeb, A.L., et al., 1998), which is not ideal for our long, acute experiments. Therefore, urethane is the best available anesthetic agent for us to use to investigate cerebral and cerebellar function in our studies. The procedure will also be carried out in [redacted]
2108-39326A	Pacak, Christina	Mice	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	We have used this mouse model for 7 years and have not observed any issues with weight loss from the diet. Mice will be assessed regularly (2x per week) but likely do not require weekly recorded weighing.
2108-39327A	Malone, Erin	Cow (Biomedical)	NON-PHARMACAUTICAL GRADE COMPOUNDS	The use of non-pharmaceutical grade potassium chloride and/or magnesium salts is acceptable for euthanasia per AVMA guidelines (2020) and is only used after the animal has been rendered unconscious.
2108-39327A	Malone, Erin	Cow (Biomedical)	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	Cows are undergoing standing surgery so no anesthetic monitoring is indicated (eg Heart rate, respiratory rate monitoring) but response to blocks, drugs used, response to sedation, and issues during surgery are captured on the surgery reports and in the medical records. Surgery reports will include the following: Please include local block performed, response to local blocks and sedation if used, and any additional drugs administered as well as procedure details including suture material. (Right flank exploratory, typhlotomy, omentopexy lab + ultrasound

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2108-39342A	[redacted]	Nonhuman Primate (Macaques)	MULTIPLE SURGERY	There are instances when another surgical procedure will allow us to modify the implants or maintain the implant viability in order to collect the essential data with a maximum of two subsequent surgeries. This can be considered a means to reduce the overall number of animals used . We may perform initial chamber implants without performing the craniotomy so that we can minimize the number of times the animal needs to undergo chamber cleanings and reduce the likelihood of infections in the chamber. In this case, a secondary craniotomy procedure as described above would be performed at a later date. A maximum of four intracranial access chambers will be implanted on an NHP with the typical craniotomy within each chamber being roughly 7 cm^2. Smaller chambers may be used should a chamber only require DBS lead implantation or limited electrophysiological recording access. Typically, all chambers will be affixed to the headcap within a single anesthetized chamber surgery procedure. However, to limit the likelihood of chamber infections and the amount of time each NHP is required to be away from their home cage for chamber cleanings, we may leave the cranium intact within one or more chambers during that initial chamber surgery procedure.Beyond the initial chamber surgery procedure, up to 2 procedures may be required to perform the craniotomies or other headcap repair procedures under general anesthesia. If additional procedures are necessary for the well-being of the animal and viability of the implants, we will consult with the veterinary staff.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2108-39344A	Tolar, Jakub	Mice	EUTHANASIA METHOD	We are proposing to perform cervical dislocation without anesthesia due to the potential effects of anesthesia on the circulation and the induction of tissue injury. Lymph node, spleen, and bone marrow cell viability and function are adversely affected in situations in which cells are not rapidly obtained from the animal after elective sacrifice. Rapid acquisition of cells and tissues after circulation and oxygenation ceases is critical to preserve normal immune responses. The data are striking and illustrate that stem cells and lymphocytes are highly susceptible to apoptosis, corticosteriod-induced immune suppression as well as the well-known accumulation of nitric oxide and oxygen radicals that can occur with low circulation and oxygenation that will compromise our experiments. WHEN DONE CORRECTLY, cervical dislocation is extremely rapid resulting in an immediate and painless death with minimum stress to the animal. The technicians and graduate students/postdocs doing this procedure are highly skilled and experienced, each having been trained in the procedure with a skilled person prior to implementation. For training in the technique of cervical dislocation, mice are anesthetized. Only individuals who have become good experienced mouse handlers perform cervical dislocation. Euthanasia is performed by pentobarbital overdose only in those instances where cervical bleeding compromises tissue quality as in lung collection (mechanistic studies in which lung, and perhaps thymus) tissues are collected at various times after BMT).
2108-39344A	Tolar, Jakub	Mice	SOCIAL HOUSING	Animals that undergo surgery may need to be singly housed post-op as cage mates may interfere with the healing of the surgical area and endanger the health of the animal. Only in these cases would animals need to be separated and housed singly.
2108-39356A	Niedernhofer, Laura	Mice	EUTHANASIA METHOD	Culling purposes only. Preformed only on pups < 3 days.
2108-39358A	Gordon-Evans, Wanda	Dog, Cat	SOCIAL HOUSING	Postoperatively, the dogs or cats may damage the others incision and so should be housed separately.
2108-39371A	Pennell, Christopher	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	We wish to understand how the central nervous system is adversely affected following CART19 cell transfer and how this can lead to moribundity and death. We will sacrifice mice at various times post-CART19 cell transfer to assess changes in brain tissues using histology, flow cytometry, and genetic analyses. We need to harvest tissue from moribund mice to have an endpoint comparison.
2108-39371A	Pennell, Christopher	Mice	EUTHANASIA METHOD	Cervical dislocation is rapid and apparently painless. I have over 30 years experience using this method of euthanasia.
2108-39375A	Porter, Robert	Turkey, Chicken, Ducks and Quail	EUTHANASIA METHOD	The workshop participants work with live birds and would not have anesthesia available at their farms.

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2108-39378A	Harris, Reuben	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	We aim to study the aggressiveness (growth and metastasis) of the tumor, and we will therefore have to monitor the animals until they have become visibly compromised (complications defecating, tumor ulceration, meets endpoint tumor size or otherwise specified by RAR Veterinary staff) and/or morbidity. When this is applicable, the animals will be monitored daily for signs of compromise/moribundity. If RAR veterinary staff require euthanasia of moribund mice, we will follow through in the allowed time.
2109-39391A	Provenzano, Paolo	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	For survival studies, and in particular preclinical drug trials, mice reaching the moribund state is considered an endpoint. This is applicable to mice with pancreas cancer. Animals are followed closely for signs and symptoms of advanced malignancy and are euthanized when they become moribund; it is our express aim not to let them progress to death for both humane and scientific reasons. Thus, we monitor the animals for general behavior and activity level; the development of severe cachexia, a cardinal manifestation of advanced pancreas cancer; and/or large palpable abdominal masses (> 2 cm). If these symptoms occur the mouse will be euthanized. It is further noteworthy that in our preclinical trials we carefully documents these symptoms in order to carefully identify the positive or negative effects of therapy on these hallmarks of pancreas cancer. We note also that abdominal distension can develop and results from the accumulation of peritoneal ascites and is also a metric of therapeutic efficacy. We note further from extensive experience with patients that ascites itself is not painful and does not necessarily imply impending demise. Nevertheless, we do follow animals daily after the development of ascites. When the animals become moribund or develop severe procedure-related complications that cannot be treated, they will be euthanized per protocol and tissues recovered for histological analyses. Hence, not all mice at endstage will experience significant complications.
2109-39391A	Provenzano, Paolo	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	Avertin as opposed to an injection of Ketamine/Xylazine and an injection of Yohimbine makes Avertin our preferred choice. Additionally, ketamine/xylazine altered the course of pancreatic cancer as outlined in our protocol
2109-39413A	Widge, Alik	Rat	72 HOUR POST-OP ANALGESIA POLICY	The animal usually does not feel pain 24 hours post-surgery, but we will monitor the rat everyday for at least 72 hours post-surgery. Analgesics will be given if the rat is still feeling the pain either 48 or 72 hours post-surgery accordingly. We will also consult with area veterinarian if pain is observed. (Electrode implantation surgery)

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2109-39415A	Sachs, Zohar	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	Mice will be euthanized on the same day they become moribund. Mice are allowed to reach moribund state because in order for our experiments to produce good results, AML should be as prominent in the mouse as possible. Often, this state co-occurs as moribundity. In our MDS mouse strains, we expect the same disease state to occur.
2109-39424A	Rothwell, Patrick	Mice	MULTIPLE SURGERY	We are requesting exceptions for two different series of experiments in Project 1, where conditional ACE knockout mice will receive stereotaxic injection of a virus expressing Cre recombinase. This virus takes 2-8 weeks for full expression, genetic recombination, and turnover of existing protein. Thus, it is necessary to wait 2-8 weeks after intracranial virus injection before beginning opioid exposure, including surgical implantation of pumps for opioid administration in Experiments 1.2 and 1.3. It is not scientifically feasible to perform intracranial virus injection and pump implantation during the same surgical procedure, as there would be insufficient virus expression at the time points to be analyzed. This procedure will only be performed in mice that have already had one surgical procedure, when the incision requires repair. (Resuturing (Survival))
2109-39424A	Rothwell, Patrick	Mice	SOCIAL HOUSING	Animals implanted with fiber-optic light guides are housed singly to avoid interactions (cooperative grooming, biting, clawing) from other animals that could decrease the viability of the implant.
2109-39427A	Lund, Troy	Mice	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	Manipulating animals immediately post transplant causes stress and risk for infection, therefore, we do not weigh them.
2109-39442A	Verma, Vivek	Mice	SOCIAL HOUSING	Breeder male mice need to be housed singly since they become aggressive and tend to fight bitterly with other male mice housed together. In experimental groups, mice will be housed in a group of 5/cage. However, during the course of experiments, as and when mice are euthanized (upon meeting their endpoint criteria), sometimes a single mouse left in that particular treatment may have to be housed singly.
2109-39442A	Verma, Vivek	Mice	EUTHANASIA METHOD	Cervical dislocation will be performed on mice that have been euthanized by CO2. This process is the secondary method to make sure that mice have been actually euthanized.
2109-39444A	Simone, Donald	Rat	EUTHANASIA METHOD	Rats will be given Euthasol 100 mg/kg only.

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2109-39451A	El-Ashry, Dorraya	Mice	TUMOR ENDPOINT CRITERIA	MDA231 cells grow quickly (and even more quickly when injected with CAFs), and they are more susceptible to ulcerations. As we have begun to perform these resections we have noticed this happening. We understand that these ulcerations increase the chance of infection before they can be resected, however, as they are occurring with a fairly high frequency, we are losing a good portion of our mice and thus significantly lowering our number of animals per experimental group. If it gets too low, then we may have to repeat the experiment which in turn would cause us to have to use more mice than we originally planned for. This would be costly and would defeat the purpose of trying to reduce the number of animals used. We are trying to get these animals resected as quickly as possible before ulcerations occur, but there are many to do, we cannot reserve the isoflurane machine every day, and we can only perform the surgery on one mouse at a time. These complications slow us down so that we cannot resect them as soon as we notice ulcerations beginning.
2109-39454A	Garry, Daniel	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	DMD knockout model animals will have an end point of animal death without intervention in both the treated and untreated study groups. The aim of the study is to determine the length of increase in disease model animals with the treatment and thus the treated and untreated animals will be allowed to survive as long as possible to determine survival times.
2109-39454A	Garry, Daniel	Mice	EUTHANASIA METHOD	Cervical dislocation will be performed by technically competent staff to ensure quick and complete euthanasia. Decapitation will be used for euthanasia of mouse embryos and neonates up to day 10. Mouse neonates up to 10 days of age will be euthanized by methods according to NIH publication Guidelines for Euthanasia of Rodent Fetuses and Neonates (revisid 6/22/16, Website: https://oacu.oir.nih.gov/animal-research-advisory-committee-guidelines). Decapitation will be performed by new disposable razorblades, which will be disposed of at the end of the procedure, or replaced more frequently as needed.
2109-39465A	Cvetanovic, Marija	Mice	SOCIAL HOUSING	When group housed, mice with implanted canula ad pump tend to open the wound and scratch the area around the canula and pump for each other. This can lead to injury and infection. For these reasons mice are single housed after the surgery.
2109-39465A	Cvetanovic, Marija	Mice	EUTHANASIA METHOD	This will be used only for study of calcium signaling. Mice are decapitated with surgical scissors without any anesthetic, as anesthetic has been shown to alter glial calcium signaling.

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2110-39470A	Bazzaro, Martina	Mice	EUTHANASIA METHOD	Pups will not be sedated even though at day 1 or two post natal they are quite lethargic, barely move and are very easy to handle. Another reason we prefer no sedation is because when using neurons sedation can affect brain function and skew the experiments.
2110-39472A	Gaertner, Wolfgang	Rat	SOCIAL HOUSING	Animals may remain pair housed until the day of surgery. Once the procedure is complete and animals have recovered from the surgical procedure, they will be housed singly when returned to [redacted] We would like to monitor food intake, and fecal and urine out put to ensure they are recovering normally from surgery. They can be returned to pair housing after it is clear animals are eating, drinking, and ambulating normally.
2110-39473A	Salfer, Isaac	Cow (Agricultural)	EUTHANASIA METHOD	Anesthesia or sedation is generally not needed for iv administration of barbituates to dairy cattle. If the animal is not calm, gentle restraint should be sufficient for iv administration.
2110-39484A	Kuo, Sidney	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	Urethane is used alone or in combination with other drugs to produce anesthesia in laboratory animals. One of the key advantages in utilizing urethane is that it provides an extended period of anesthesia with minimal physiological changes. The long lasting and stable anesthesia induced by intravenous administration of urethane produces minimal related cardiovascular and respiratory depression. Another positive characteristic of urethane is that is produces a much deeper degree of analgesia than many other anesthetics.
2110-39487A	Salfer, Isaac	Cow (Agricultural)	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	Standard protocol for calf studies are biweekly body weights which is adequate to detect response differences.
2110-39489A	Kotz, Catherine	Mice	EUTHANASIA METHOD	Some of the animals in this study will be decapitated without anesthesia, as chemically uncontaminated tissue is required for gene expression analysis proposed here. Animals will be fasted for 6h prior to decapitation. Following decapitation, brain and blood other tissues are quickly removed, then placed into microtubes and frozen and stored for assays at -80°C. Guillotine to be used will be maintained in clean condition and with sharp blades; initial training would occur on anesthetized or dead animals.
2110-39489A	Kotz, Catherine	Mice	SOCIAL HOUSING	Mice will be group-housed when possible. Mice having SPA measurements and/or indirect calorimetry will also require individual housing to obtain individual measures of locomotion, feeding, sleep, and energy expenditure.
2110-39493A	Greising, Sarah	Mice	PHYSICAL RESTRAINT	This procedure is a moderate restrain. As such the animals are still able to move about the small area, but is it merely restricted from the standard cage size.
2110-39495A	Costalonga, Massimo	Mice	TAIL BIOPSY	The exception we request to the biopsy procedure is the use of isoflurane anesthesia for tail snips over 21 days. This would only be done in the rare occasion that a second biopsy sample is needed due to inconclusive results from the earlier tail snips.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2110-39502A	Townsend, DeWayne	Mice	MULTIPLE SURGERY	Ovariectomy or orchiectomy will be performed early in life and is expected to be completely healed in mice that will subsequently undergo additional surgical procedures, most commonly osmotic pump placement. See the experimental design section for more information.
2110-39502A	Townsend, DeWayne	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	Several of our assay create a significant cardiac injury. This injury can result in a moribund state. In some animals this period of moribundity is temporary and the mice will eventually recover. In order to separate mice that will ultimately survive from those with terminal dysfunction mice are allowed to remain in a persistent moribund state. During these times, mice are monitored frequently greater than 3 times per day. Mice remaining in a moribund state at more than 2 observations will be euthanized immediately.
2110-39503A	Hoeppner, Luke	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	Protocol XIX, #5: A survival analysis will be carried out separately each cohort. Death or moribundity will be used as an endpoint because all mice (regardless of vehicle or STAT3 inhibitor treatment group) will experience respiratory difficulty and using death/moribundity as an endpoint is the only way to distinguish when the STAT3 inhibitor treatment is having an effect. Best efforts will be made to avoid death and euthanize when moribundity is observed. Mice will be checked at least twice a day for signs of moribundity. We expect to see LPS-induced moribundity or death within 7 days post-LPS injection based on the survival analysis conducted in our prior publication (Vohra, Hoeppner, et al, Am J Physiol Lung Cell Mol Physiol 2012, PMID: 22003095). If moribundity or death isn't observed within 7 days post-LPS injection, we will euthanize the mice after 7 days post-LPS.
2110-39503A	Hoeppner, Luke	Mice	SOCIAL HOUSING	For reduction of the number of surplus animals, female may need to be separated from males once pregnancy is confirmed and single housed until giving birth to avoid second pregnancy. Additionally, genetically modified mice may need to be single housed after genotyping if only one mouse in cage is needed to keep for next breeding.
2110-39509A	Hoeppner, Luke	Fish (Zebra fish)	NON-PHARMACAUTICAL GRADE COMPOUNDS	Scientific Justification for the use of non-pharmaceutical grade MS-222. Non-pharmaceutical grade MS-222 is widely used for anesthesia of zebrafish embryos and adults throughout the zebrafish research community. Zfin.org, a commonly used online resource for zebrafish investigators, lists the Sigma-sourced, non-pharmaceutical grade MS-222 in the protocol for making MS-222 (https://zfin.org/zf_info/zfbook/chapt10.html#wptohtml63). A variety of recent zebrafish publications also state in their methods sections that they utilize non-pharmaceutical grade MS-222 obtained from Sigma, which is >98% pure, for anesthesia of zebrafish.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2110-39514A	[redacted]	Nonhuman Primate (Macaques)	PRIMARY ENCLOSURE SIZE/SPACE	Although a rare situation, space allocation (i.e., caging size) may temporarily be reduced during the quarantine period for larger animals that may normally be allocated more than one standard primate cage. There are multiple rationales for this change. First, it will help to ensure the safety of the affected animal post-treatment as isolating the animal to a single cage makes it more readily accessible to caretakers and, in the case of animals afforded a quad-bank arrangement, limits their ability to fall from significant heights during the acute post-treatment period. Second, the inclusion of a second cage bank in the treatment room would further limit the workable space in the room and pose a risk to the caretaker and cleaning personnel.
2110-39514A	[redacted]	Nonhuman Primate (Macaques)	SANITATION FREQUENCY	Disposal of waste is handled by lab staff, with all items placed in yellow waste bags and treated as chemotherapy waste per our SOP. To minimize the risk of exposure, waste is not removed from the room until after the quarantine period, following treatment of the room with the bleach solution or vapor. An exception to daily removal of excreta and food waste is required while an animal is in quarantine isolation following injection of the 1-methyl-4-phenyl-1,2,3,6- tetrahydropyridine (MPTP) neurotoxin. Because such removal significantly increases the risk of potential exposure to humans working with the quarantined animal(s), it is necessary to minimize the movement of items that have been in the animal's cage and thereby exposed to said animal's excreta. Movement can produce aerosols as the food particle and any bedding dust are disturbed, yielding a source of potential exposure to the human worker. Foods that can spoil within the time-frame of the IMHA will not be given.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2110-39514A	[redacted]	Nonhuman Primate (Macaques)	MULTIPLE SURGERY	There are instances when another surgical procedure will allow us to modify the implants or maintain the implant viability in order to collect the essential data with a maximum of two subsequent surgeries and reduce the overall number of animals used in our studies. We may perform initial chamber implants without performing the craniotomy so that we can minimize the number of times the animal needs to undergo chamber cleanings and reduce the likelihood of infections. In this case, a secondary craniotomy procedure would be performed at a later date. A maximum of four intracranial access chambers will be implanted on an NHP with the typical craniotomy within each chamber being roughly 7 cm^2. Smaller chambers may be used should a chamber only require DBS lead implantation or limited electrophysiological recording access. Typically, all chambers will be affixed to the headcap within a single anesthetized chamber surgery procedure. However, to limit the likelihood of chamber infections and the amount of time each NHP is required to be away from their home cage for chamber cleanings, we may leave the cranium intact within one or more chambers during that initial chamber surgery procedure. Beyond the initial chamber surgery procedure, up to 2 procedures may be required to perform the craniotomies or other headcap repair procedures under general anesthesia. If additional procedures are necessary for the well-being of the animal and viability of the implants, we will consult with the veterinary staff.
2110-39514A	[redacted]	Nonhuman Primate (Macaques)	SOCIAL HOUSING	All animals will be pair housed with the exception being if there are odd number of animals, attrition of a partner, or if a pair does not work and there are no other animals available for pairing. In all cases, however, the animals will have ready access (visual, smell, etc.) to other animals in the colony space.
2110-39519A	Costalonga, Massimo	Mice	TAIL BIOPSY	The exception we request to the biopsy procedure is the use of isoflurane anesthesia for tail snips over 21 days. This would only be done in the rare occasion that a second biopsy sample is needed due to inconclusive results from the earlier tail snips.
2110-39519A	Costalonga, Massimo	Mice	EUTHANASIA METHOD	AIM#2: As instructed by the inspector during the 2015 review, 17d gestation fetuses must be decapitated before disposal. The oral candidiasis cortisone-induced mouse model we are studying may induce 25% weight loss at day 5 after inoculation of C. albicans. The experiment is only 5 days long and in mice that on day 4 are at 25% wight loss will be euthanized. It is not anticipated that the estrogen-induced candidiasis mouse model will have similar weigh loss effects.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2110-39521A	Pravetoni, Marco	Rat, Mice	MULTIPLE SURGERY	This study requires the implantation AND explantation of an osmotic minipump. Explantation is required for two reasons. 1) If the pump remained in the rat, drug would continue to be released and would affect assay results. 2) Removal of the pump allows us to record the weight of the pump to get an accurate description of how much drug was administered within the time-frame studied (doing so following termination of the animal would add extra time for drug delivery). Signs that will prompt additional analgesia Any signs of pain, discomfort or illness such as reluctance to move, distress vocalization when touched, ruffled coat, or reduced food intake. If the aforementioned signs are present, consult the veterinarian.
2110-39521A	Pravetoni, Marco	Rat, Mice	BLOOD COLLECTION LIMIT	Animal will be euthanized by this method and will not survive this blood collection.
2110-39521A	Pravetoni, Marco	Rat, Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	We are assessing vaccines in their prevention of opioid overdose. One endpoint of overdose is death, so assessing overdose to the point of death is important in order to determine if the vaccines will be effective in preventing overdose-related death
2110-39523A	Toth, Ferenc	Pig (Biomedical)	MULTIPLE SURGERY	We intend to perform a primary surgical procedure during which an intravascular micro catheter inserted through the carotid artery is used to embolize the vascular supply of the femoral head. Monitoring the effects of the primary surgical procedure requires subsequent angiographic studies that also require access to the carotid artery. Thus, the second and potentially third and fourth surgical procedures (performed at least 7 days apart) will entail only a minor cut-down procedure to the carotid artery (alternating the left and the right side) in anesthetized animals to allow insertion of the angiographic catheter and completion of the angiography. These follow up surgeries are expected to be of very short duration (15-20 min) and expected to cause only minimum morbidity, stress, and discomfort. These 2nd, 3rd, and 4th surgical procedures that are limited to surgical access to the carotid artery at the ventral aspect of the next should result in no functional deficit. Upon completion of the angiography, the carotid artery access will be closed using simple continuous suture pattern with 4-0 or 5-0 polypropylene. If the closure fails, the carotid artery will be double ligated proximal and distal to the access incision, as it has been done during the previous procedures. During and after the surgical procedures the same anesthetic and analgesic procedures will be used as described for the primary surgery.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2110-39525A	Davydova, Julia	Pig (Biomedical)	MULTIPLE SURGERY	The piglet would undergo a septectomy, making the left and right atrial chambers a single chamber, which may create a hypoxic state for the piglet. We also want to band the pulmonary artery (PA) to increase the pressure on the right ventricle (RV). Our rationale is that the piglet would have time to compensate for these smaller, but still significant changes, prior to the arterial switch procedure occurring.
2110-39538A	Herschhorn, Alon	Mice, Rabbit	BLOOD COLLECTION LIMIT	For the first three months the amount of blood needed for weekly antibody titer tests may exceed blood collection limits. Fluid replacement will be performed as needed; after each blood draw that exceeds the maximum recommended collection volume the removed volume will be replaced with warm 0.9% saline solution.
2111-39547A	Slosky, Lauren	Mice	SOCIAL HOUSING	Animals with implanted devices (e.g., jugular catheters and vascular access buttons) will be singly housed for their own safety, to preserve the integrity of the exterior portion of the implanted device, and to facilitate acquisition of self-administration behaviors.
2111-39549A	Osborn Jr, John	Pig (Biomedical)	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	We do not anticipate any weight loss with the administration of this diet, as their food intake is not being limited beyond a normal diet.
2111-39551A	Osborn Jr, John	Mice	MULTIPLE SURGERY	Some surgeries must be performed separately to establish, for example, baseline blood pressures. The DOCA model requires several surgeries to establish the model. Adverse effects of multiple surgeries will be minimized by waiting an adequate amount of time between surgeries and careful daily monitoring of animals to be sure that a full recovery is achieved between surgeries. Pain medication will be delivered 3 days post op at a minimum. Distress will be minimized by additional soft bedding during recovery.
2111-39551A	Osborn Jr, John	Mice	SOCIAL HOUSING	Single housing will be needed for telemetry animals as stated previously.
2111-39551A	Osborn Jr, John	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	We want to use Urethane and Ketamine/Inactin as different anesthetics during our nerve recording prep. We believe that the anesthesia is having a large effect on our data so testing different anesthetic methods (all previously published) will assist in interpreting our data.
2111-39559A	Mand, Sandy	Fish (Zebra fish)	SANITATION FREQUENCY	We use the Pentair Z-hab system for most of the fish, fish that are not housed on the Zhab system will have daily 10% water changes and excess detritus will be removed from the bottom of the tank.
2111-39559A	Mand, Sandy	Fish (Zebra fish)	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	Fish will be considered recovered once they are moving in the recovery tank. This should take less than a minute. If the fish is not recovering well, we will use a transfer pipette to move water over the gills.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2111-39564A	Finger, Erik	Pig (Biomedical)	MULTIPLE SURGERY	Kidney harvest and autotransplantation require two separate surgical events for the test group, as evaluation of the novel cryopreservation and nanowarming therapy requires a harvested kidney to be treated for a period up to 48 hours prior to transplantation into the animal in which it was harvested. Following kidney harvest, surgical sites will be repaired and closed and the animals will be treated with analgesics and monitored by postoperative staff. The same is true following transplantation of the cryopreserved kidney into the same animal from which it was harvested. If the animal presents pain or distress following either operation, additional analgesics will be administered, and the animal will be examined by RAR veterinarians. We will consider euthanasia to minimize pain and distress if animals do not respond to analgesics. The control group can be autotransplanted in a single surgical procedure and anesthesia event.
2111-39576A	Liu, Liang	Mice	MULTIPLE SURGERY	Skin biopsy will be performed up to 3 times. There are 3 weeks or more between any survival surgery. Maximum of 3 survival surgeries per animal. These are minor survival surgeries. The expected duration of anesthesia for any one of these surgeries is less than 30 minutes.
2111-39576A	Liu, Liang	Mice	SOCIAL HOUSING	If the bandage has to be changed because of an infection, we will anesthetize the mice with isoflurane to ensure swift removal and fast changing of the bandage. If an infection develops, the infected mouse will be moved to its own cage to recover.
2111-39583A	Endres, Marcia	Cow (Agricultural)	FOOD/FLUID RESTRICTION RECORDKEEPING	Food will be provided daily by the cooperator farm owner.
2111-39583A	Endres, Marcia	Cow (Agricultural)	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	We are not restricting daily food or fluid consumption.
2111-39587A	Williams, Jesse	Mice	EUTHANASIA METHOD	This method will be used only for caesarian section procedures where we will be retrieving live pups from pregnant dams. Sedation may decrease the likelihood of survival of the pups. The Pi and Lab manager has both been previously trained in cervical dislocation method. Death will be ensured by secondary opening of the thoracic cavity and removal of vital organs- heart and lungs.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2111-39594A	[redacted]	Nonhuman Primate (Macaques)	MULTIPLE SURGERY	In cases where the chamber is implanted at the same time as the head holder, a second surgery is required to perform a craniotomy. In these procedures it is absolutely vital to have a fully sealed and aseptic chamber since the implant is chronic. We thus need to wait for proper healing of the chamber to occur to test for potential contamination before the microdrive is attached. In addition, posts and chambers may loosen over time and require tightening or reattachment. It is not likely that repositioning the chamber will be required for these experiments but this additional surgery can also be justified if the animal is in not in any pain, distress or presents any functional deficits
2111-39594A	[redacted]	Nonhuman Primate (Macaques)	SOCIAL HOUSING	Pair housing of these animals could potentially cause injury to the hands or fingers during altercations. Any injury to the arm/hand would put our research at risk. A single injury to a hand or arm could nullify years of training, data collection, and future funding because data must be duplicated across both limbs before the research can be considered for publication. Also, pair housing could result in damage to the recording chambers, which could be catastrophic to the animal's health. Therefore, pair house is challenging in these animals. Two of these animals were pair-housed but they became aggressive towards each other and are now separate. The third animal is not likely to be suited to pair-housing, however if a suitable cage mate was available, pair-housing would be attempted.
2111-39594A	[redacted]	Nonhuman Primate (Macaques)	FOOD/FLUID RESTRICTION RECORDKEEPING	Food and water are provided by both RAR and the [redacted] as detailed in the attachment: Primate SOP Food and Water.
2111-39600A	Wilson, Robert	Pig (Biomedical)	MULTIPLE SURGERY	Additional survival procedures are required for direct visualization of the stent. The animal must be anaesthetized in order to do these checks. It is essential that the stents are checked weekly to ensure the placement is still correct and to monitor the performance of the stent. Additional survival procedures are required for direct visualization of the stent to assess stent placement and performance. The animal must be anaesthetized in order to do these checks.
2111-39600A	Wilson, Robert	Pig (Biomedical)	72 HOUR POST-OP ANALGESIA POLICY	If biopsies are not taken, this is a minimally invasive procedure. The PI would like to avoid the potential side effects of unnecessary analgesics and antibiotics.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2111-39600A	Wilson, Robert	Pig (Biomedical)	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	If biopsies are not taken, this is a minimally invasive procedure where the stents are viewed with a bronchoscope. Request exception to the 3 days of post op monitoring provided by RAR veterinarian staff for weekly checks that do not involve biopsies. One daily in-person wellness-check will be completed by an APIC staff member each weekday throughout the study. If necessary, APIC staff will complete one daily in-person wellness-check on weekend days until the animal is 3 days post op.
2111-39610A	Kerlin, Aaron	Mice	SOCIAL HOUSING	Biting or scratching from cagemates can scratch or damage the cranial window (impairing dendrite imaging) or clear dental cement (impairing optogenetics). Animals without an implant will not require an exception. Animals that are housed singly will be provided with extra enrichment that does not interfere with the study, such as a hut, extra bedding and/or a chewing block.
2111-39618A	Kitange, Gasper	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	The studies proposed in experiment 5 will evaluate the intracranial efficacy of therapies. The survival time will be the days from the treatment to moribund state. The moribundity is preferably used as the experimental endpoint because such approach will closely reflect the expected observations in patients, if the therapy evaluated will be translated to clinical use in human subjects.
2111-39627A	Kara, Prakash	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	A pharmaceutical grade is not available. As detailed in the SOP, urethane is prepared in a fume hood with PPE. After weighing the powder, e.g., 4 g, it is placed in a 50 mL Falcon centrifuge tube and distilled water is added for a total volume of 40 mL. The tube is clearly labeled and stored on a lab shelf away from sunlight.
2111-39628A	Hall, Victoria	Bird (Other), Chicken	SANITATION FREQUENCY	These birds are housed in permanent outdoor enclosures which cannot be washed and sanitized in commercial systems. Areas are either sprayed down with water hoses or scrubbed using water and Envirocare disinfectant as needed (observation of surface conditions).
2111-39628A	Hall, Victoria	Bird (Other), Chicken	ENVIRONMENTAL ENRICHMENT	Requesting an exemption to social housing. Raptors are not social animals. They are predators and, as such, present risk to each other in a group housing situation. They do receive environmental enrichment.
2112-39630A	Khasabov, Sergey	Mice	SOCIAL HOUSING	Mice after chronic cannula implantation will be housed one animal per a cage, because animals in a groups could remove a cannula from each others.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2112-39640A	Osborn Jr, John	Rat	MULTIPLE SURGERY	Some surgeries must be performed separately to establish, for example, baseline blood pressures. The DOCA model requires several surgeries to establish the model. Adverse effects of multiple surgeries will be minimized by waiting an adequate amount of time between surgeries and careful daily monitoring of animals to be sure that a full recovery is achieved between surgeries. Pain medication will be delivered 3 days post op at a minimum. Distress will be minimized by additional soft bedding during recovery.
2112-39640A	Osborn Jr, John	Rat	ENVIRONMENTAL ENRICHMENT	Exemption from social housing when transmitters are implanted.
2112-39640A	Osborn Jr, John	Rat	NON-PHARMACAUTICAL GRADE COMPOUNDS	We want to use Urethane and Ketamine/Inactin as different anesthetics during our nerve recording prep. We believe that the anesthesia is having a large effect on our data so testing different anesthetic methods (all previously published) will assist in interpreting our data.
2112-39641A	Gallaher, Dan	Rat	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	We have been informed that once a day recording is sufficient. (Blood collection from the retro-orbital sinus.) We have been informed that recording anesthesia use each day used is sufficient. (Blood collection by cardiac puncture) Since this is non-survival surgery, we have been asked to record anesthesia use only daily. (laparotomy and opening of thoracic cavity) Since this is non-survival surgery, we have been asked to record anesthesia use only daily. (Laparotomy and opening of the thoracic cavity)
2112-39641A	Gallaher, Dan	Rat	SOCIAL HOUSING	Food intake must be measured in each animal individually, as a food intake measurement is necessary for the calculation of iron absorption, which is the primary end point of the study. Enrichment will be provided to every animal in the form of a plastic colored box (a "rodent retreat" - which we introduced to the University of Minnesota), and a Nylabone to chew on. Further, I strongly encourage students to handle the rats as much and as often as they can as a further source of enrichment, and to accustom the rats to handling.

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2112-39642A	[redacted]	Nonhuman Primate (Macaques)	MULTIPLE SURGERY	The placement of a vascular access port is considered a minor surgical procedure (peripheral limb, not entering a major body cavity), essentially similar to routine catheter placement with the notable exception that the access site is placed underneath the skin. VAPs improve safety, and increase animal comfort when intermittent or recurrent venous access is required by avoiding painful 'catheter starts'. VAPs also allow NHPs to participate fully in enrichment programs and social group activities without the restrictions inherent in conventional approaches. Animals may subsequently be instrumented with hepatic portal access if they are intended for enrollment on an islet transplantation protocol that delivers islets using the standard intraportal route. In this situation, instrumentation allows animals to complete all surgical manipulation prior to induction of the disease state. Animals have previously been instrumented with a central vascular access port. Portal vascular access is used to eliminate a surgical procedure for drug administration, biologics administration (e.g. islets, vector, etc) during the period where the animal is already burdened by disease. Moreover, chronic access to the portal vein eliminates multiple laparotomies necessary for repeat biologics administration necessitated by various therapeutic approaches, therefore we consider this instrumentation a refinement
2112-39645A	Lesne, Sylvain	Mice	MULTIPLE SURGERY	One surgery is to perform AAV injections and the other is to perform the subsequent cranial window surgery. These are essential components of the same project. There will be no additional pain or distress due to having an additional survival surgery and only animals that are deemed healthy post the initial surgery will move onto the next one. We don't predict that there would be any functional deficit incurred on the mice undergoing both surgeries.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2112-39645A	Lesne, Sylvain	Mice	SOCIAL HOUSING	In the event that mice will be subjected to the Barnes Maze (BCM), then the Y-maze, then the Novel Object Recognition task (NOR) - it is possible that a given mouse could be singly housed for 4 weeks time. 2 weeks for the (BCM), and 2 weeks total for the Y-maze (1 day protocol) and (NOR) tasks. Again, the (NOR) task is a two week test when you consider a week of acclimation (with a ping pong ball) followed the next week by 4 days of habituation and testing. This sequence of tasks will depend on whether the Y-maze and (NOR) pilot tests provide usable data. Historically, our transgenic mice display and increase in fighting during behavioral tasks when removed, tested, and then returned to their shared home cage. Additionally, once fighting under this paradigm begins, it generally repeats itself for the rest of the testing period rendering the data uninterpretable. Therefore, we have asked for our behavior animals to be singly housed during the behavior testing period so that we do not have to encounter this issue, have cleaner data, and not have to use so many mice to get the data we need - as noisy data, due to fighting, only creates a situation where we need to test more mice.
2112-39671A	Patterson, Ned	Dog	MULTIPLE SURGERY	As these are clinical patients, and live at home with their owners if the device does not help or the owners do not want to keep it in at study endpoint the device will be explanted. Or if the owner chooses to withdraw the dog from the study before the 2 year endpoint or there is device infection or other adverse effect of the the device it will be explanted anytime within the 2 years study frame. (Intracranial Surgical Implantation of EEG seizure device via 4 Burr holes.) Justified in the implantation surgery procedure. (Explantation of the device.)
2112-39671A	Patterson, Ned	Dog	EUTHANASIA METHOD	Will be done by the attending VMC DVM or regular DVM, and in clinical practice is often done with and IV placed and no sedation.
2112-39682A	Ruan, Hai-Bin	Mice	SOCIAL HOUSING	1. Mice housed together share the same microbiota in their gut (Spor et al, Nature Reviews Microbiology 9: 279-290, 2011). In projects that we will perform fecal microbiota transplantation, mice will be individually housed to avoid sharing microbiota. The will be singly housed starting one week before the transplantation. At the end of experiments, mice will be subjected to other procedures or sacrificed for tissue collection. 2. The BioDaq and the CLAMS systems used to measure food intake and indirect calorimetry are designed for individual animals per cage. Therefore, mice will be singly housed one week before the experiment for acclimation. At the end of experiments, male mice will be singly housed while female mice will be group-housed in the catch room for other procedures.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2112-39692A	[redacted]	Nonhuman Primate (Macaques)	MULTIPLE SURGERY	Prior to training an animal to control his eye position, a head post is implanted in an aseptic surgical procedure to permit monitoring of eye position (below). The animals is then trained to perform the task while maintaining fixation on a small spot on a video display under head restraint, and with some tasks to make specific eye movements to visual targets. This fixation control is necessary to insure that portion of the retina on which the stimuli fall is not an uncontrolled variable. Up to 12 months of training may be needed before an animal performs sufficiently well to allow us to collect neurophysiological data. When all training is complete, the animal undergoes another recovery surgery to implant an recording chamber. Implanting chambers in separate surgeries is sometimes scientifically justified because they have a limited useful lifetime. The multiple surgeries are needed for the scientific objectives of the experiments, and are related components of the research project. The stepwise surgical preparation of the animal also subjects the animals to a small number of short surgeries, rather than one prolonged and more traumatic surgery. Additional recovery surgeries are sometimes needed to repair implants. Surgeries will only be conducted with prior approval of the the veterinary staff.
2112-39694A	Kotz, Catherine	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	The main goal of this study is to test whether senolytics prevent morbidity and mortality following exposure to pathogens. Accordingly, there is a possibility that untreated NME exposed mice (especially old mice) might succumb to death due to infection.
2112-39694A	Kotz, Catherine	Mice	SOCIAL HOUSING	For the measurement of SPA animals will be housed individually in the open field chamber.
2112-39694A	Kotz, Catherine	Mice	EUTHANASIA METHOD	Some of the animals in experiment 1 & 2 will be decapitated without anesthesia, as chemically uncontaminated tissue is required for gene expression analysis proposed here. Following decapitation, brains and other tissues are quickly removed and placed into ice-cold saline. Tissue samples are then placed into microtubes and frozen in liquid nitrogen; stored for assays at -80°C. Guillotine to be used will be maintained in clean condition and with sharp blades; initial training would occur on anesthetized or dead animals.
2112-39694A	Kotz, Catherine	Mice	ENVIRONMENTAL ENRICHMENT	The open field chamber floor is perforated, and no bedding or nesting materials will be present, to avoid these items from interfering with beam brakes, which effects physical activity readings and data accuracy.
2112-39700A	Lee, Michael	Mice	SOCIAL HOUSING	Females that are pregnant will be separated to minimize cannibalism by other adults.

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2112-39700A	Lee, Michael	Mice	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	Once the animal is under deep anesthesia, they are euthanized within 10 minutes. (Intracardial Purfusion) The mice are euthanized within 5 min of deep anesthesia. (Intracardial Perfusion (Extended Euthanasia))
2201-39709A	Goldschmidt, Stephanie	Dog	MULTIPLE SURGERY	This is not a research procedure, but a procedure for treatment of the primary tumor that will be performed in tandem to the lymph node removal. The additional procedure that is part of the project is the removal of the lymph nodes at the time of oncologic surgery. For oncologic principles the lymph nodes will be removed prior to the primary oncologic surgery.
2201-39709A	Goldschmidt, Stephanie	Dog	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	The patients do come home the following day with post op pain medications and the owners reach out to me with any concerns on healing. Owners are instructed on how to watch for post op pain concerns and signs of infection. As this is not the traditional record keeping utilized by IACUC we most likely will need a exception. It is in the patients best interest to be home with the owner rather than in the hospital to minimize anxiety and stress.
2201-39717A	Collister, John	Rat	MULTIPLE SURGERY	The multiple surgeries required in this study cannot be combined into one due to the severity and length of the individual procedures and recovery time required for the health of the animals. Specifically, the first surgery in the study requires a stereotaxic device, which would impede the success of the other surgeries and requires a different anesthetic regimen. The second procedure requires an extended recovery to allow for compensatory renal adaption. The third surgery requires that the first two surgeries, plus the collection of data over the control period, are already completed.
2201-39717A	Collister, John	Rat	ENVIRONMENTAL ENRICHMENT	This study tracks very precise measurements of blood pressure and heart rate over a long period of time and environmental enrichment would act as an external variable possibly affecting these measurements. Additionally, food intake is measured and chewing/gnawing enrichment may have an affect on the eating habits of the animals.
2201-39717A	Collister, John	Rat	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	Food and fluid are not being restricted, and we strive to avoid any unnecessary handling of the rats. Food and fluid intake are measured and recorded daily, as well as urine output. However, upon noticing any unusual hydration status or behavioral changes, rats will be weighed, and if the status persists or the weight of the animal is outside of what is expected, the area veterinarian will be called.

Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2201-39717A	Collister, John	Rat	SOCIAL HOUSING	This protocol requires the experimental use of radio telemetry measurements of blood pressure. Each animal is instrumented with a transmitter whose signal is transmitted to a specific receiver next to its cage. Because of this numerous animals cannot be housed together or there will be interference between the radio signals between the animals causing inaccurate data collection. Therefore this necessitates the use of individual housing at this time in metabolic cages
2201-39727A	Wilson, Robert	Rabbit	MULTIPLE SURGERY	A second survival procedure will only be done if necessary to confirm vessel patency. Second survival procedure will not occur less than 3 days after initial device implant. A second survival procedure will only be done if the device has no signal 2x consecutively and function cannot be confirmed with either ultrasound or fluoroscopy. Additional survival procedures are necessary to reduce the number of animals needed.
2201-39727A	Wilson, Robert	Rabbit	SOCIAL HOUSING	Rabbits will need to be individually housed to prevent damage to the implanted devices.
2201-39728A	Salfer, Isaac	Cow (Agricultural)	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	Standard protocol for calf studies are biweekly body weights which is adequate to detect response differences.
2201-39730A	Toth, Ferenc	Goat	EUTHANASIA METHOD	Barbiturate overdose will be performed by an experienced investigator with a single venipuncture. Administering a sedative before the barbiturate overdose would only prolong the stress the animal experiences and would require an additional venipuncture.
2201-39760A	Pravetoni, Marco	Mice	BLOOD COLLECTION LIMIT	Animal will be euthanized by this method and will not survive the decapitation and subsequent blood collection
2201-39770A	Lee, Michael	Mice	SOCIAL HOUSING	Females that are pregnant will be separated to minimize cannibalism by other adults.
2201-39770A	Lee, Michael	Mice	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	Once the animal is under deep anesthesia, they are euthanized within 10 minutes. (Intracardial Purfusion) The mice are euthanized within 5 min of deep anesthesia. (Intracardial Perfusion (Extended Euthanasia))
2201-39770A	Lee, Michael	Mice	EUTHANASIA METHOD	Primary neuronal/glial cell cultures will also be established from newborn pups (p0-2 days old) as we have done (Singh et al., Acta Neuropathol., 2019). The pups will be removed from the dam and immediately moved to procedural room/area. The newborn mouse pups will be euthanized by decapitation using a sharp scissors that are exclusively used for this purpose and maintained according to IACUC guideline. Based on the AVMA guidelines, decapitation is an acceptable form of euthanasia, particularly when harvesting uncontaminated tissue.

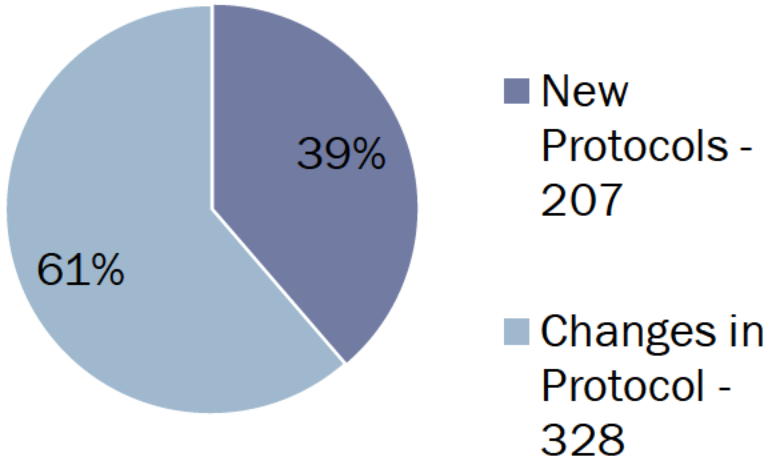
Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2202-39790A	Lee, Michael	Mice	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	Once the animal is under deep anesthesia, they are euthanized within 10 minutes. (Intracardial Purfusion) The mice are euthanized within 5 min of deep anesthesia. (Intracardial Perfusion (Extended Euthanasia))
2202-39790A	Lee, Michael	Mice	SOCIAL HOUSING	Breeding females will be separately housed when they are pregnant
2202-39802A	[redacted]	Nonhuman Primate (Macaques)	MULTIPLE SURGERY	Prior to training an animal to control his eye position, a head post is implanted in an aseptic surgical procedure to permit monitoring of eye position (below). The animals is then trained to perform the task while maintaining fixation on a small spot on a video display under head restraint, and with some tasks to make specific eye movements to visual targets. This fixation control is necessary to insure that portion of the retina on which the stimuli fall is not an uncontrolled variable. Up to 12 months of training may be needed before an animal performs sufficiently well to allow us to collect neurophysiological data. When all training is complete, the animal undergoes another recovery surgery to implant an recording chamber. Implanting chambers in separate surgeries is scientifically justified in some cases because they have a limited useful lifetime. The multiple surgeries are needed for the scientific objectives of the experiments, and are related components of the research project. The stepwise surgical preparation of the animal also subjects the animals to a small number of short surgeries, rather than one prolonged and more traumatic surgery. Additional recovery surgeries are sometimes needed to repair implants. Surgeries will only be conducted with prior approval of the the veterinary staff.
2202-39832A	Bianco, Richard	Sheep (Biomedical)	MULTIPLE SURGERY	As described in procedure, goal is to evaluated autologous stem cells in vascular graft after in vitro differentiation. In Vitro harvest and differentation take upto 2 weeks. The fat is harvested from each animal, isolated, and coated on graft's lumen surface prior to being implanted back in the same animal. Hence this require two procedures on each animal. (Adipose Fat Harvest) As described in study design, animals are implanted with engineered graft coated with autologous stem cells. To evaluate presence of cells on the graft surface, optical coherence imaging will be utilized, which require access into vascular lumen. The frequency of every 2 weeks allows for insertion site to heal. (Angiogram and/or OCT survival)

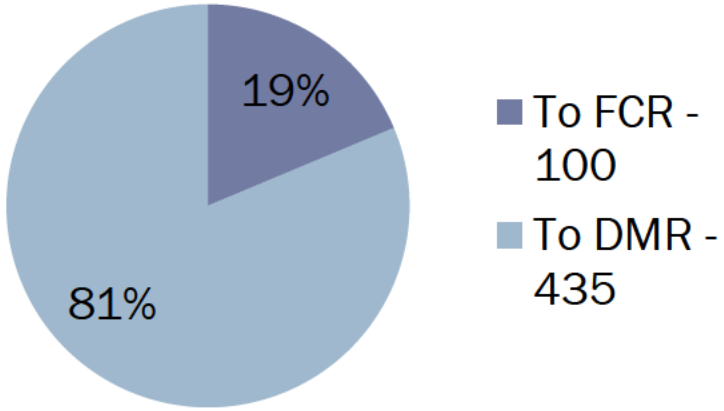
Protocol ID	Principal Investigator	Species	Guideline	Exception Request with Justification
2203-39863A	Bold, Tyler	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	One of the most important ways to monitor how mice respond to M. tuberculosis is to monitor for moribundity. Members of my group closely monitor mice infected with M tuberculosis in [redacted] We check each cage daily and examine mice for signs of moribundity such as: - Hunched posture - Sunken eyes, with or without discharge - Respiration that has increased, decreased, or appears labored - Decreased or no intake of food - Ruffled hair coat, erection of hair or fur, lack of grooming behavior - Unsteady gait or lameness not induced by experimental manipulation

IACUC RESEARCH SUBMISSIONS

OCTOBER 1, 2021 – MARCH 31, 2022

TOTAL SUBMISSIONS: 535



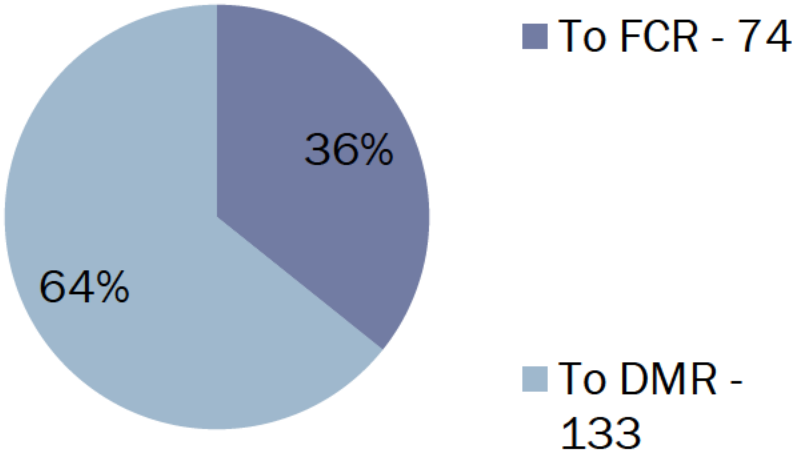


TOTAL SUBMISSIONS – 535

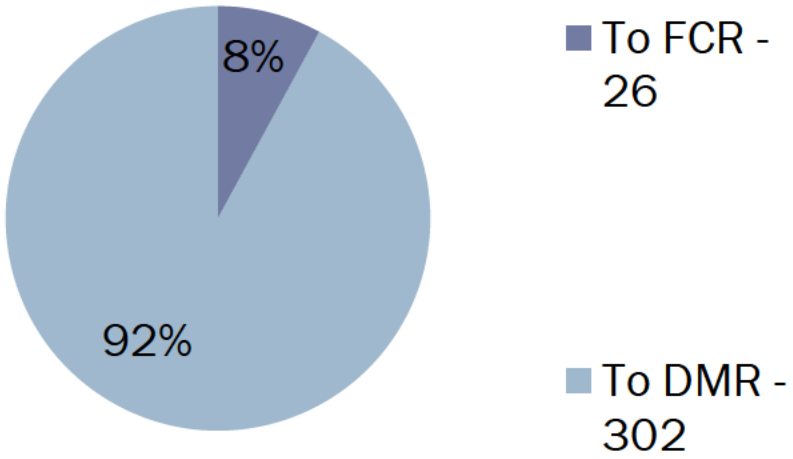
BY SUBMISSION TYPE

OCTOBER 1, 2021 – MARCH 31, 2022

NEW PROTOCOLS – 207



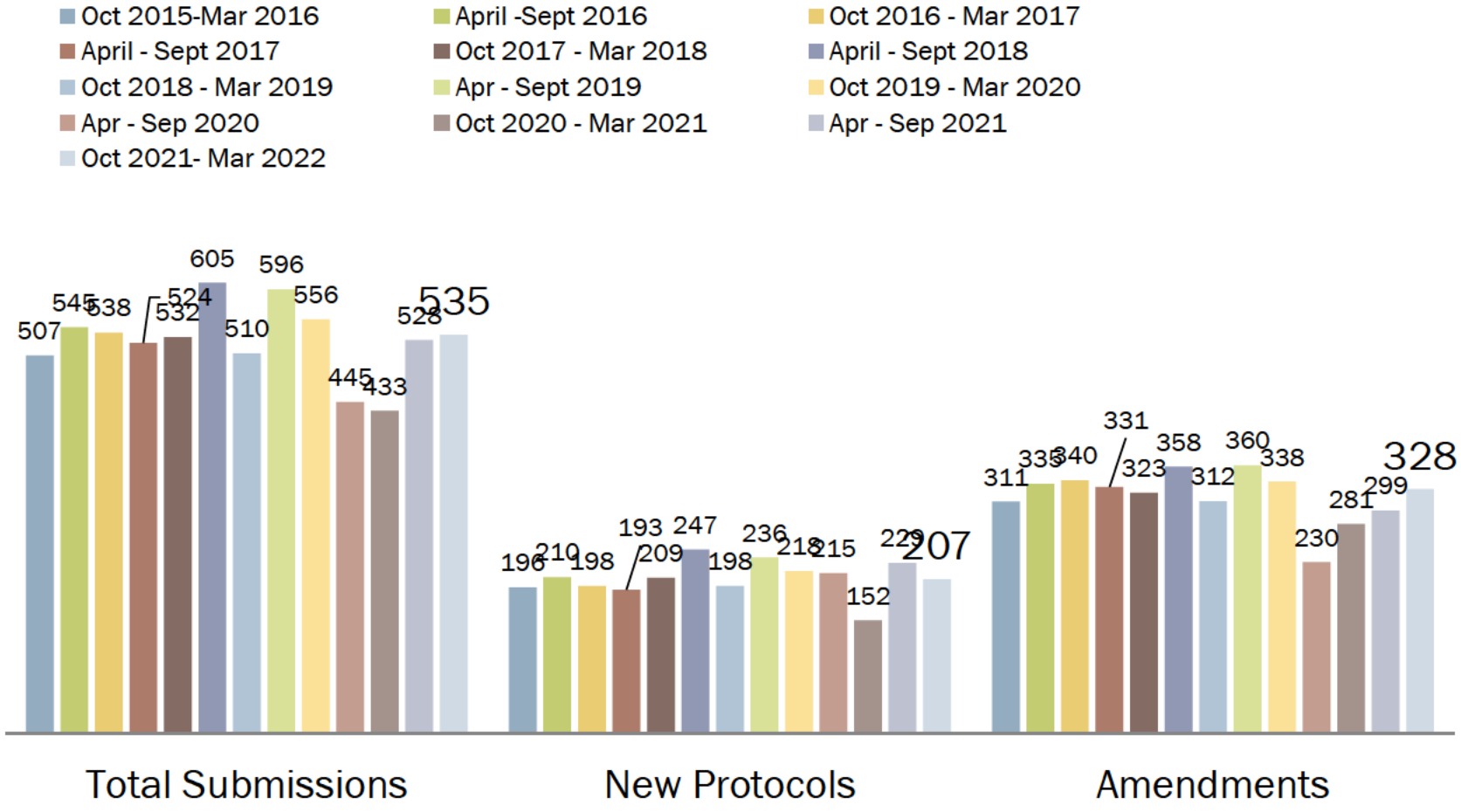
AMENDMENTS – 328



TOTAL SUBMISSIONS – 535

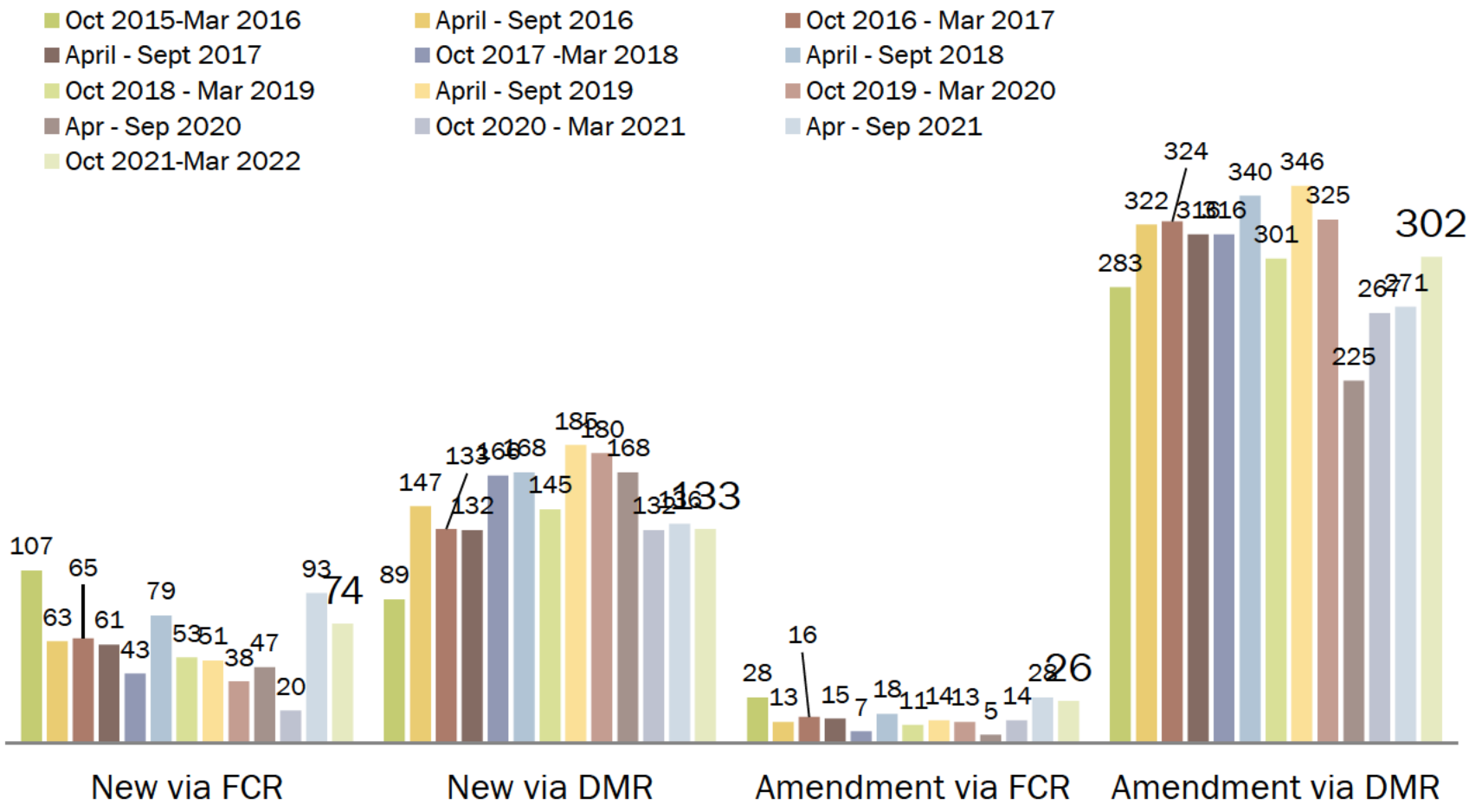
BY SUBMISSION TYPE

OCTOBER 1, 2021 – MARCH 31, 2022

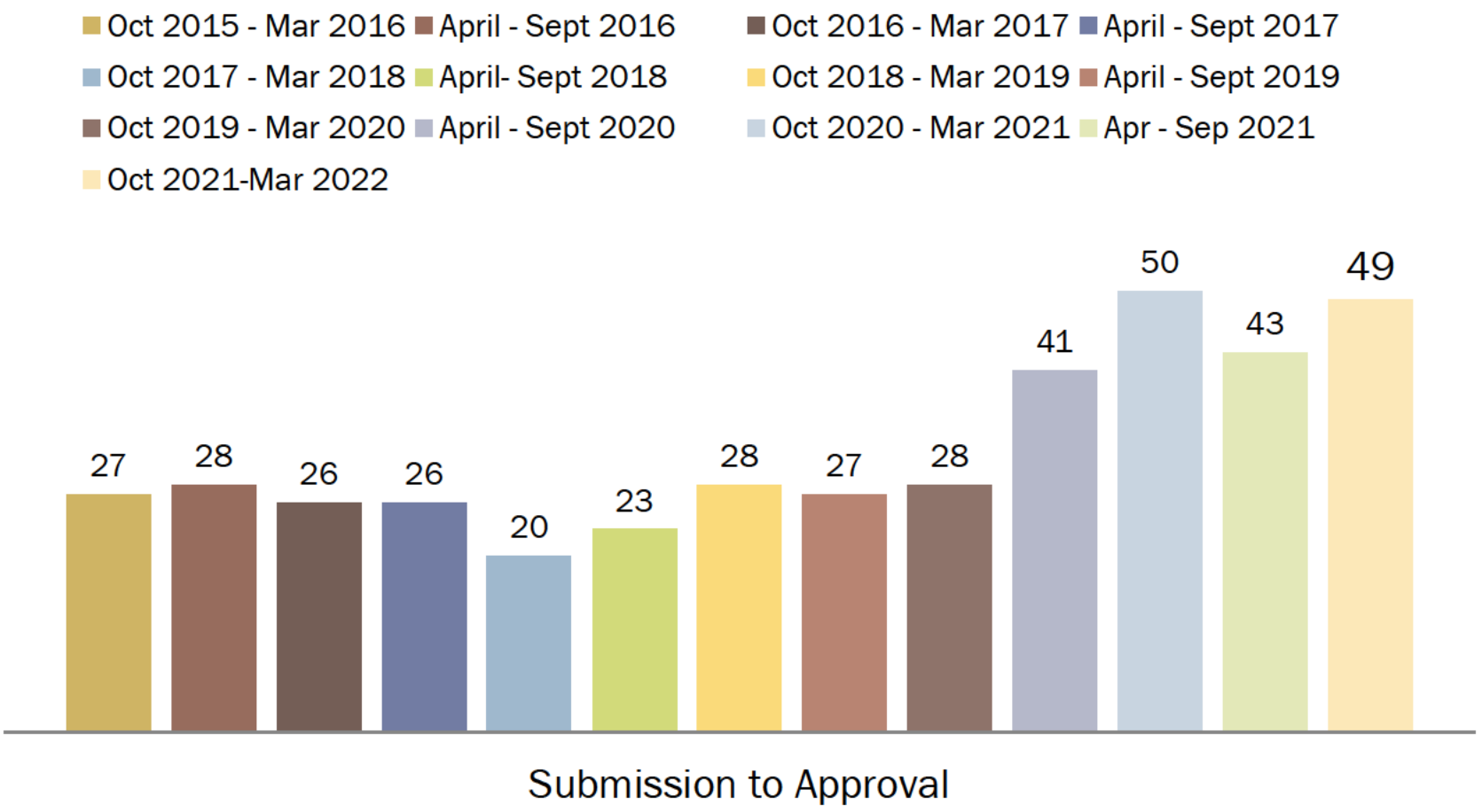


SUBMISSION COMPARISON – TOTALS BY TYPE

OCTOBER 2015– MARCH 2022



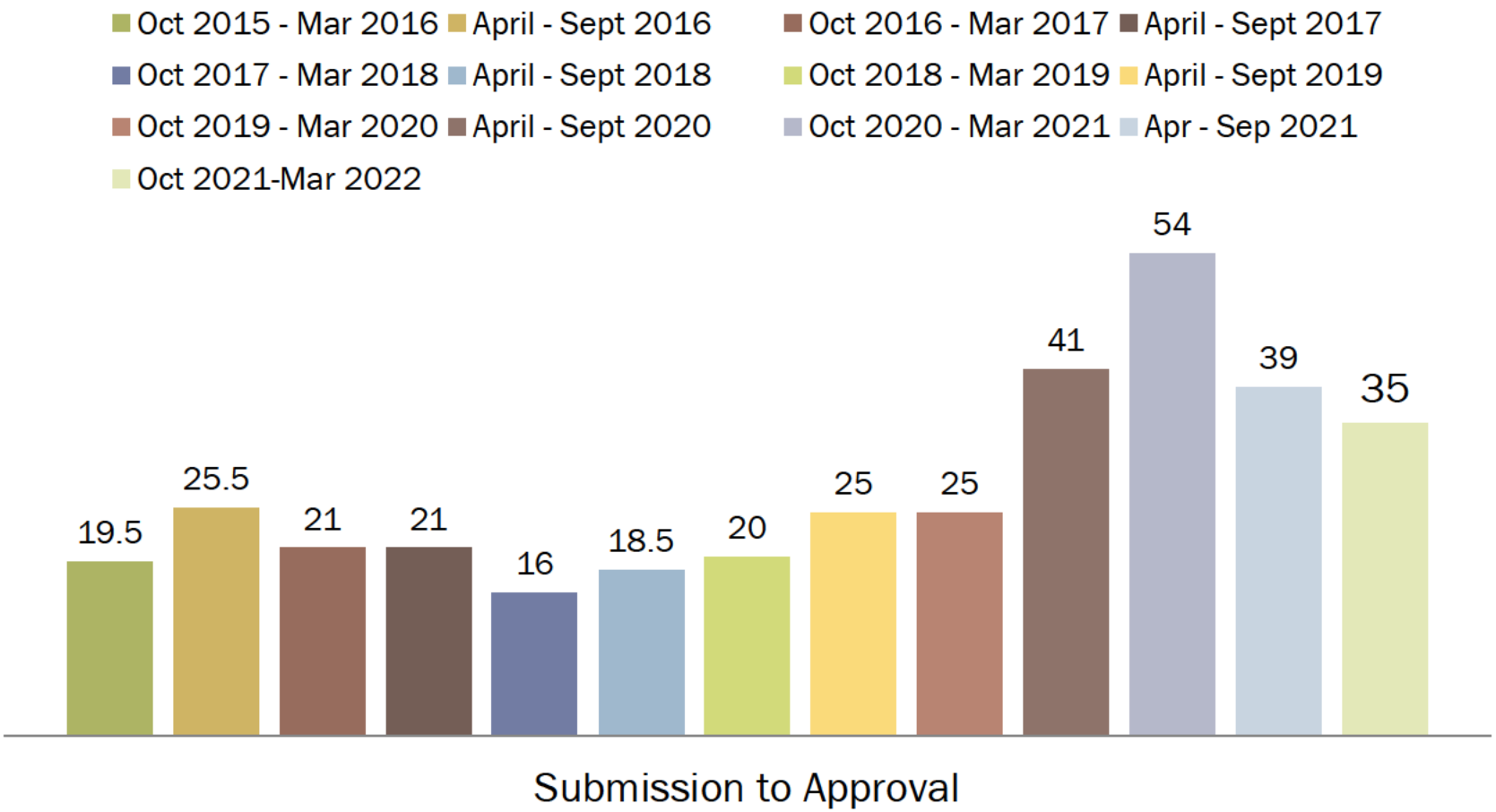
SUBMISSION COMPARISON –
TOTALS BY TYPE AND REVIEW PROCESS
OCTOBER 2015 – MARCH 2022



TIME COMPARISON – FCR NEW PROTOCOLS

OCTOBER 2015– MARCH 2022

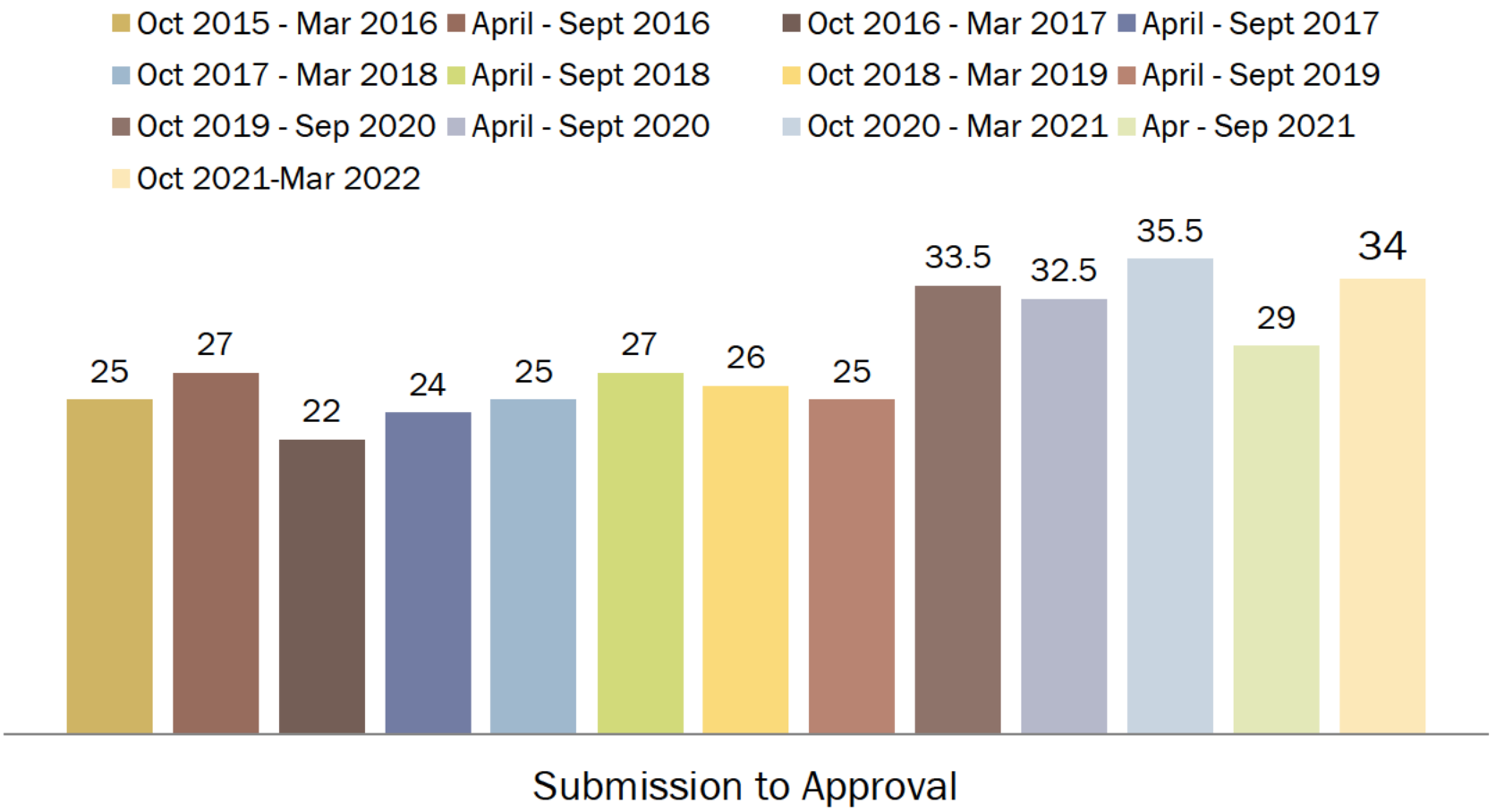
INCLUDES VET PANEL TIME, IF APPLICABLE



TIME COMPARISON – FCR AMENDMENTS

OCTOBER 2015–MARCH 2022

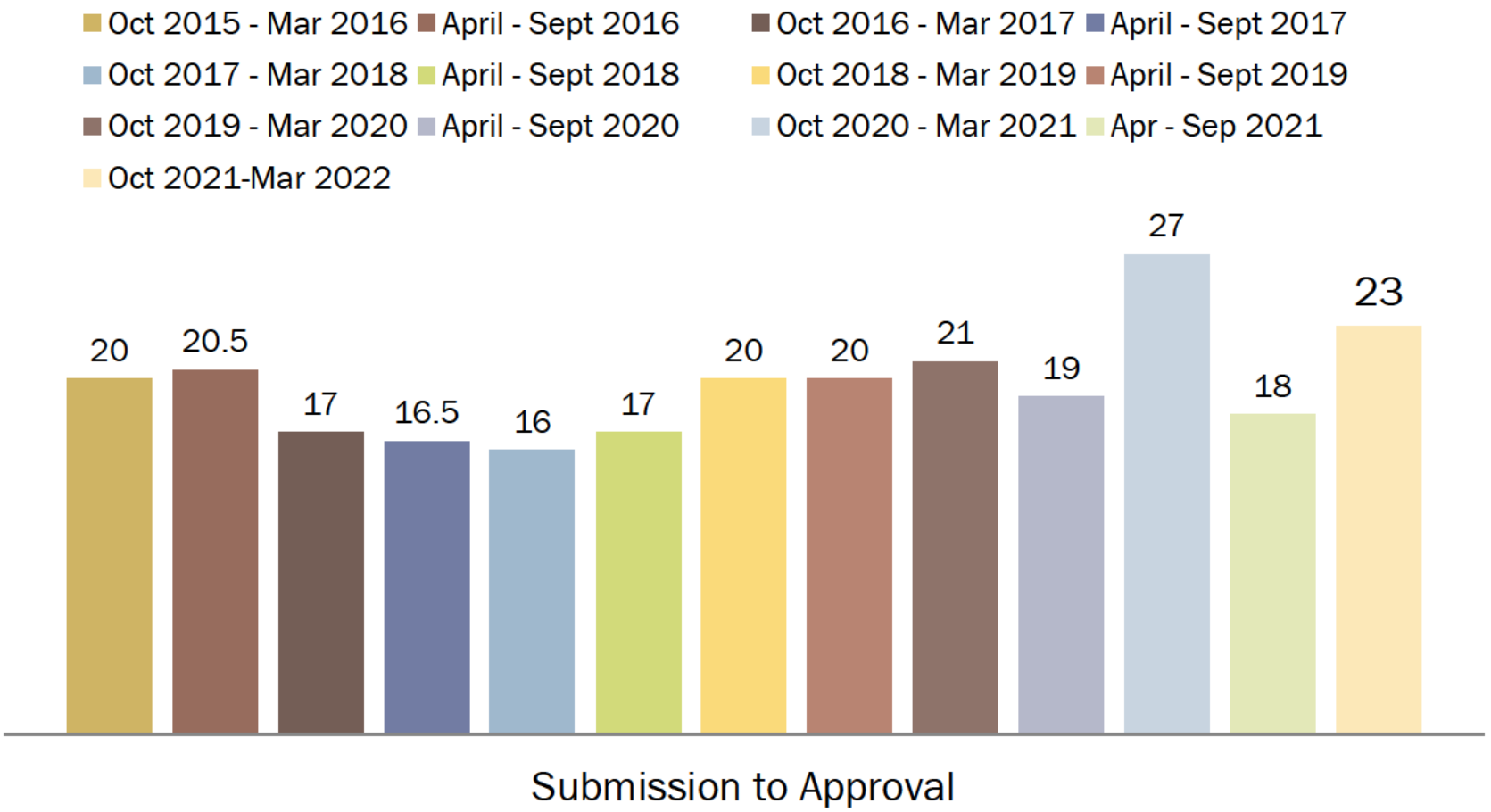
INCLUDES VET PANEL TIME, IF APPLICABLE



TIME COMPARISON – DMR NEW PROTOCOLS

OCTOBER 2015– MARCH 2022

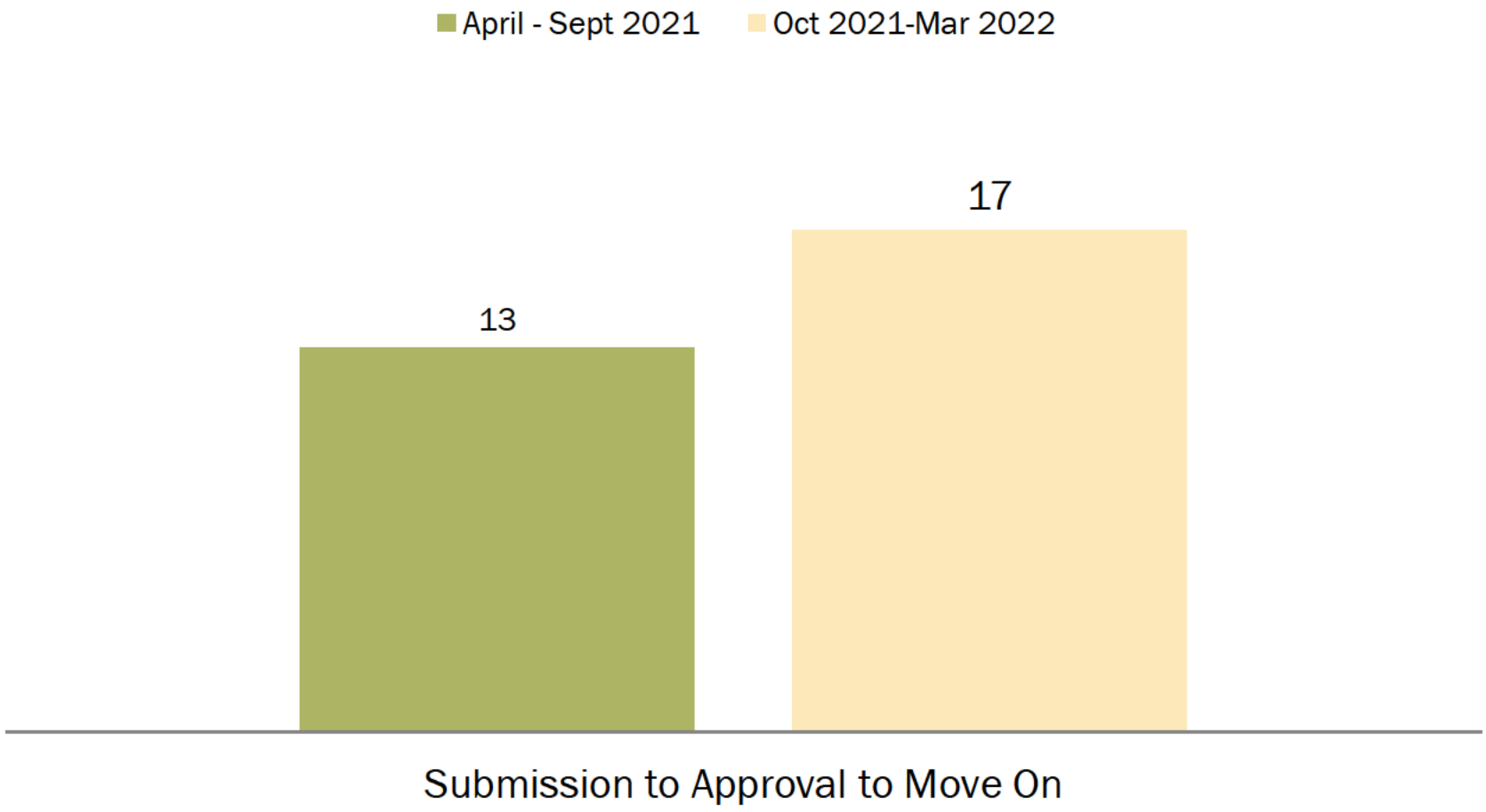
INCLUDES VET PANEL TIME, IF APPLICABLE



TIME COMPARISON – DMR AMENDMENTS

OCTOBER 2015– MARCH 2022

INCLUDES VET PANEL TIME, IF APPLICABLE



TIME COMPARISON – VET PANEL

APRIL 2021– MARCH 2022

EXPIRED/SUSPENDED, EXTERNAL ANIMAL HOUSING, AND INCOMING ANIMAL TEMPORARY PROTOCOLS
10/1/2021 – 3/31/2022

Holding Protocol
Lynn Impelluso, 421756
2108-39357A (9/4/2021 – 9/3/2024)
Report Period: 10/1/2021 – 3/31/2022

PI	Protocol ID	Species	Number of Animals	Expiration Date	New Protocol ID	Transfer Approval Date
Khasabov, Sergey	1811-36514A	Mouse	48	11/26/2021	2112-39630A	2/18/2022
Ruan, Hai-Bin	1811-36529A	Mouse	482	1/2/2022	2112-39682A	1/20/2022
[redacted]	1807-36193A	Monkey	5	2/21/2022	2202-39802A	3/10/2022
[redacted]		Rat	6	3/22/2022	NA	None
[redacted]		Rat	2	3/22/2022	NA	None

*Disciplinary Action: Non-Compliance (Richard W Bianco, IACUC Chair)

External Animal Housing Protocol (See Note)
Lynn Impelluso
1808-36233A
10-1-20 - 3-31-21

PI	Company Name	Protocol ID	Species	Number/Animals
Impelluso, Lynn	Boston Sci	1808-36233A	Dog	0

Incoming Animal Temporary Protocol
Lynn Impelluso
2108-39317A
8-16-21 – 8-15-24

Incoming PI	Date of Arrival	Number of Animals Housed	Species	New Protocol #
None	9/17/2020	0	None	None