May 29, 2019

Chris Cramer, Ph.D.
Vice President for Research and Institutional Official
419 Johnston Hall
101 Pleasant Street SE
Minneapolis, MN 55455

Dear Dr. Cramer,

Attached is the official Spring 2019 Semiannual Report of the Institutional Animal Care and Use Committee. The IACUC concluded its semiannual evaluation of the institution's animal care and use program on April 23, 2019 using the Guide for the Care and Use of Laboratory Animals (Guide), the Guide for the Care and Use of Agricultural Animals in Agricultural Research and Teaching (Ag Guide), the refined OLAW checklist, and as applicable, the Animal Welfare Act Regulations as the basis for its evaluations. The IACUC met to discuss the results of semiannual inspections, conduct a Program Review, and evaluate other features of the animal care and use program.

The IACUC inspected all animal facilities and holding areas and many research laboratories; additionally, post-approval monitoring was conducted by IACUC compliance officers and committee members. Significant and minor deficiencies were documented. All of these deficiencies have been corrected at the time of this report. Please see the attached reports for details of each area inspected.

Please see the program review meeting notes for further detail on the issues discussed by the IACUC during this program review session.

Thank you for your continued support of IACUC activities.

April 23, 2019 Program Review

Please sign in below

Name	Signature
Cynthia Lee	
BRIAN A CROOKER	
Jim Perry	
Ilana Cohen	
Megan McCoy	
Ben Clark	
Paul Lindstrom	
Jennifer Borgert	
[redacted]	[redacted]
Jodi Ogilvie	
Margaret Luesse	
Tricia VanLe Molbert	
Dan Montonye	
Jen Hubbard	
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Felicia Bayatan	

Peggy Norris	Peggy Norris
Kristin Pilon	
MELANIE GRAHAM	
Minnie Pollard	
Marilyn Bennett	Marilyn D Bennett
Keith Barker	
Sarah Waldemar	Sarah W. Waldemar
GEOFF GROSS	
Laura Hocum Stone	
DON MARTIN	
CHRIS CRAMER	
Dezhi Liao	
Christine Sivula	
Bob Schumacher	
FRANCES LAWRENZ	

DISCUSSION GROUPS / 2019 PROGRAM REVIEW

4/23/2019

GROUP 1	GROUP 4
BEN CLARK	MEL GRAHAM
ILANA COHEN	KRISTIN PILON
JEN HUBBARD	CHRISTINE SIVULA
KEITH BARKER	CHRIS CRAMER
GROUP 2	**GROUP 5**
BRIAN CROOKER	FELICIA BOYNTON
PEGGY NORRIS	PAUL LINDSTROM
DON MARTIN	MEGAN MCCOY
GEOFF GHOSE	MIMIE POLLARD
LAURA HOCUM-STONE	ROBERT SCHUMACHER
GROUP 3	
JENNIFER BORGERT	MARILYN BENNETT
JIM PERRY	[redacted]
DAN MONTONYE	MARGARET LUESSE
	FLOATING/NO GROUP
TRICIA VAN EE MOLBERT	DEZHI LIAO SARAH WALDEMAR
CYNTHIA LEE	[redacted] FRANCES LAWRENZ
	JODI OGILVIE

Spring 2019 Semiannual Program Review
April 23, 2019

Voting Member Attendees:

Brian Crooker, Jim Perry, Ben Clark, Peggy Norris, Melanie Graham, Mimie Pollard, Don Martin, Dezhi Liao, Christine Sivula, Bob Schumacher

Alternate Member Attendees and Guests:

Cynthia Lee, Ilana Cohen, Megan McCoy, Paul Lindstrom, Jennifer Borgert, [redacted] Jodi Ogilvie, Margaret Luesse, Tricia Van Ee Molbert, Dan Montonye, Jen Hubbard, [redacted] Felicia Boynton, Kristin Pilon, Marilyn Bennett, Keith Barker, Sarah Waldemar, Geoff Ghose, Laura Hocum-Stone, Chris Cramer, Frances Lawrenz

1. **Agenda:**
    - Inspection Summary – pg 2-4
    - IMHA Summary – pg 5
    - PAM Frequency Reduction Implementation Plan – pg 5
    - IACUC Office Administrative Summary – pg 6-7
    - Program Discussion Summary (from FCR Meetings) – pg 8-14
    - IMHA and AG SOP Subcommittee Update – pg 15-32
    - eProtocol Updates – pg 32
        a. Form updates
            i. IMHA
            ii. Breeding
            iii. Health and Monitoring
            iv. Continuing Review
            v. DEHS
            vi. Broken links
    - Protocol Content Requirements – pg 32-33
        a. Gender justification for animal subjects
        b. Surgical procedures at the vet hospital
        c. Use of non-pharm grade compounds
        d. Oversight for cephalopod research
    - Emergency power and notification for power outages – pg 33
    - Cumulative Experience Subcommittee – pg 33
    - OLAW Checklist – pg 33-42
    - Appendices
        a. Inspection Dates (pg 44-46)
        b. IMHA List and Justifications (pg 47-79)
        c. Reduced PAM (pg 80)
        d. Complete Inspection Report Summary (pg 81-156)
        e. Approved Protocol Exceptions (pg 157- 213)
        f. Administrative Summary and Graphs (pg 214-231)
        g. Expired and Incoming Holding Protocols (pg 232)
        h. Repeat Significant Findings (pg 233-234)

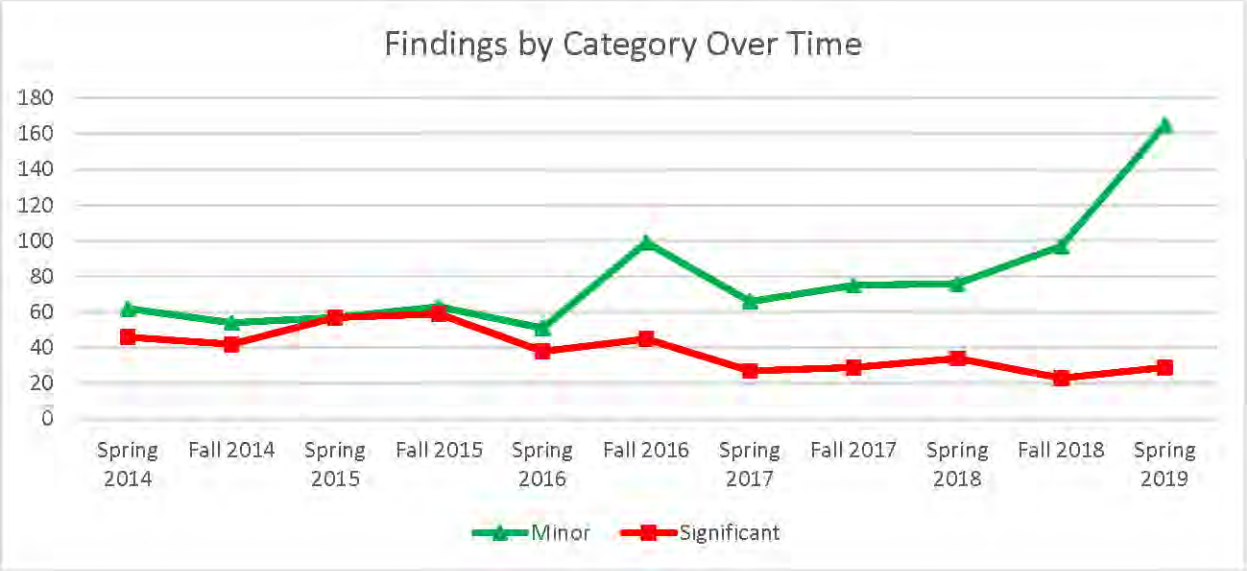
2. Inspection Summary

The Institutional Animal Care and Use Committee Senior Compliance Officer, Kristin Pilon, presented the Spring 2019 IACUC inspection report.

There were 287 inspections resulting in 194 findings for this six-month cycle. There were 165 Minor Findings and 29 Significant Findings. 10% of the Significant Findings (3) were reported to OLAW.

- 3 reports sent to OLAW
- 190 laboratory areas that had no findings
- 6 repeat findings with two repeat significant findings (one the same and one different).
- 15 notes to file
- 15 veterinary recommendations
- 47 laboratories that qualified for reduced post approval monitoring frequency

	Spring 2019 October 2018—March 2019	**Fall 2018 April 2018—September 2018**
Significant	29	23
Minor	165	97
Total	194	120



NOTE: Additional data and graphs located in appendices

Last year at this time the Committee was informed that we would no longer have the First Notice self- imposed category in formal reports and instead, items in this category have either been readjusted to Minor findings or are now part of our informational/educational email that is sent to Principle Investigators outside of the formal inspection report to be more in line with regulatory categories. These educational items continued to be tracked to see if there are any items trending in recurrence so that we can address them as a whole. Over this six month cycle, there were 132 items which would have been tracked in the first notice category.
As indicated per the Fall 2018 Program Review, any first notice graphs or items will be no longer tracked as part of program review data. There are two graphs in the appendices that will indicate when we dropped the First Notice Finding designation for reference.

There was an increase in percentage in total findings this six-month cycle from last six month cycle (62% increase—120 findings noted in the Fall 2018 cycle with 194 findings this six month cycle). The increase can be attributed to both the seven self-reports that came into the IACUC office, which accounted for the significant findings increase as well as the adjustment in minor findings since we have eliminated the first notice findings designation.

At the time of Program Review, all minor findings were resolved but one significant finding remained unclosed. The committee discussed this finding and voted to either have the fish tank in Duluth dismantled or a protocol submitted by 5/3/19.

There was an increase (26%) in significant findings this past cycle (29 findings found during this six-month period and 23 findings noted during the Fall 2018 six-month reporting period).
Of these 29 significant findings noted during this six-month cycle, 8 of them (28%) came from either self- reports or outside reports of non-compliance that came into the IACUC whereas 21 findings came from our standard inspection process during the last six months. Additionally, there were two investigators with repeat (one the same and one different) significant findings noted on their most recent inspections. An email was sent to each of these investigators offering guidance and help to better improve compliance in their laboratories.

The area for which we saw the greatest increase in significant findings this six month cycle includes a 75% increase where analgesics were not given after surgical or anesthetic procedures as outlined in the protocol (four finding of this type noted Fall 2018 with seven findings noted this six month cycle). We had one finding each in the following categories: the euthanasia method utilized was not approved, anesthetic was not used when performing procedures but protocol indicated that anesthetic would be used, and controlled substances were not properly stored. In each of these categories there were no findings in the Fall 2018 cycle.
Additionally, the one significant area for which we saw the greatest decrease in findings was the use of expired anesthetics/analgesics or euthanasia solutions. We had six of these types of findings in Fall 2018 with one one finding this six month cycle (83% decrease)

Of these significant findings, eighteen of the twenty-nine finding could be considered animal welfare issues (62%).

There was a 70% increase noted in the Minor Findings category for this six-month reporting cycle (97 findings noted in Fall 2018 with 165 findings noted this Spring 2019 cycle). The

following categories that saw the greatest increase were the following: Protocol not followed (PNF, 49 findings of this type noted this six month cycle with 27 noted during the Fall 2018 cycle (81% increase), Ag findings (15 noted this six month cycle with 0 noted in Fall 2018), Aseptic technique not practiced (18 findings of this type this six month cycle with one seven noted in Fall 2018, a 157% increase) and IACUC Policy not followed (37 findings this cycle versus only 21 findings in Fall 2018 a 76% increase). Some of this increase can be attributed to the first notice finding adjustment to minor finding categorization. To help decrease the aseptic technique findings category, the IACUC inspection team and administrative staff will be alerting laboratory staff as to the RAR hands on courses that are available, one being on aseptic technique in the hopes that this will lower this findings category.

Within the program review documents, findings have been defined by type (IACUC (163), DEHS (1), OHS (12) and Ag (17), DEHS-CS (1) as well as from what inspection/report they were identified or came from (PAM (69), Second Surgery (45), Initial Surgery (1), Initial surgery/semi-annual (5), Semi-annual (23), PAM/Semi-annual (14), Second Surgery/semi-annual (10), Ag (17), Self-Report (7), Outside Report (3)).

As stated previously, we had 287 inspections during this six-month period. These inspections have been categorized as to type performed with 100 Post Approval Monitoring (PAM) Inspections, 16 combined PAM/semi-annual, 54 Second Surgery inspections, 12 Second Surgery/Semi-annual inspections, 80 semi-annual inspections and 17 Ag inspections conducted over this six-month period. Additionally, as part of our reduced PAM inspections we had 5 initial surgery inspections and 6 initial surgery/semi-annual inspections.

There was a slight decrease (11%) in the number of laboratories that had no findings from the Fall 2018 six-month cycle versus this Spring 2019 cycle (213 to 190 respectively).

There was a significant increase in the number of repeat findings found during inspections this last six month cycle (500%). There were five repeat findings in the minor category with one significant repeat finding for a total of six findings. There was only one minor repeat finding during the Fall 2018 cycle.

An overview of the Notes to File was given. These 15 Notes to File were reported on a monthly basis during a full committee review meeting to confirm that these changes should not have required a submission from the PI. These Notes were obtained either through a submission to the IACUC office or through an inspection of the laboratory for which additional information was noted but did not change the procedures that were originally reviewed and approved by the IACUC.

There were fifteen veterinary recommendations this reporting period.. These recommendations are changes to protocol for which the veterinary team approves while an amendment is submitted by the PI in cases where the change will be for the betterment of the animal. These veterinary recommendations were reviewed during the same time the monthly findings report and notes to file are discussed.

3. Current IMHA Summary

An overview of the IMHA spaces with justification for housing was presented to the IACUC at this program review. We have 115 PIs that have requested and approved housing of animals outside of Research Animal Resources in our tracking database. There are 68 different areas.

4. PAM Frequency Reduction Implementation Plan (OVPR Risk Recalibration Initiative)

Reduced Post Approval Monitoring frequency was initiated in April 2012, after that Spring Program Review.

There were 116 PIs that did not qualify for reduced post approval monitoring inspections and had their post approval monitoring (PAM) or combined PAM/Semi-annual inspections completed due to not meeting our standard qualifications of reduced frequency. There were 47 PIs/laboratories that were due for post approval monitoring inspections but who did not receive their inspections as they qualified for reduced frequency (so either did not have an inspection or if surgery was conducted in the laboratory, only had a surgery portion of the visit and the PAM portion was not conducted). Additionally, there were 50 PIs that were due for PAM but either did not receive an inspection as they did not have any active studies, were put on hold (inactivation) due to no response at continuing review or had put their studies on hold due to limited funding or performing solely data analysis.

As background, post approval monitoring inspections are normally conducted yearly for all PI's who are currently performing experimental procedures on animals. The only PI's that do not currently receive yearly PAM inspections include: Fisheries and Wildlife studies except those that house animals on campus, Client Owned animal studies and Agricultural studies. The proposal includes reduction of PAM visit to every other year for those areas that meet the following criteria:

- No significant findings within the last two years
- No concerns or complaints made of the laboratory through RAR, RAR veterinarians, outside entities or through compliance staff concerns
- No repeat findings on most recent inspection
- No minor findings noted from most recent inspection other than ROHP non-compliance
- No additions of a different species to be used in the laboratory (either on original protocol or through a new submission)

If any of the above are noted, the laboratory would go back onto yearly PAM visits until all criteria are again met.

Laboratories that are considered "Euthanasia and Tissue Harvest" would be able to go onto this schedule if above criteria are met. Our office will continue to perform mandatory semi-annual inspections of laboratories that conduct either non-survival or survival surgical procedures for compliance. Those laboratories in good standing would receive twice yearly inspections of surgical areas and procedures, records, aseptic technique, anesthetics/analgesics used, euthanasia methods, endpoints, ROHP compliance, etc…but would NOT receive a PAM inspection portion during these visits.

5. IACUC Office Administrative Summary

Dr. Ben Clark, IACUC Office Assistant Director, briefly referred the committee to a report on the statistics related to protocol processing time (see Appendix F for graphs). The processing time increased slightly from a year ago, while the general number of submissions decreased from the previous 6 months.

Administrative Statistics for Spring Program Review 2019:

- Total FCR submissions October 2018 - March 2019: 64
- Total DMR submissions October 2018 – March 2019: 446
- Review Outcomes:

FCR
Number of new protocols: 53
Number of new protocols that received stipulations: 49
Number of new protocols that were approved as submitted: 2
Number of new protocols that were deferred: 2

Number of amendments: 11
Number of amendments that received stipulations: 7
Number of amendments that were approved as submitted: 2
Number of amendments that were deferred: 2

DMR
Number of new protocols: 145
Number of new protocols that received stipulations: 126
Number of new protocols that were approved as submitted: 18
Number of new protocols that were sent to FCR: 1

Number of amendments: 301
Number of amendments that received stipulations: 187
Number of amendments that were approved as submitted: 113
Number of amendments that were sent to FCR: 1

- Median Approval Times for submission from April, 2018 – September 2018

FCR

New Protocols:
Days from receipt of submission to meeting: 13
Days from meeting date to initial letter sent: 2
Days from stips sent to responses received: 4
Days from submission to approval: 23

Amendments:
Days from receipt of submission to meeting: 11
Days from meeting date to initial letter sent: 2
Days from stips sent to responses received: 11.5
Days from submission to approval: 18.5

DMR:

New Protocols:
Days from receipt of submission to agenda assignment: 2
Days from agenda assignment to all reviews received: 9
Days from reviews received to first letter sent: 3
Days from stips sent to responses received: 6
Days from submission to approval: 27

Amendments:
Days from receipt of submission to agenda assignment: 2
Days from agenda assignment to all reviews received: 8
Days from reviews received to first letter sent: 2
Days from stips sent to responses received: 1.5
Days from submission to approval: 17

6. Program Discussion Summary from FCR Meetings

Dr. Ben Clark, IACUC Office Associate Director, briefly presented a document summarizing items discussed at IACUC Meetings over this reporting period (see below). During the discussion, members requested that IBC and DEHS attend the discussion period to provide the committee with more background regarding how their processes intersect with the IACUC.

Compilation of IACUC Discussion Notes October 2018 – March 2019

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

OCT. The committee discussed a U Reports that was received on 9/25 as a follow up to the previous concern regarding genetically modified piglets on the St Paul campus in May. There were concerns regarding how this was reported to the committee and how the results from the initial complaint were reported to the complainant. The committee will meet with a representative from U Reports to discuss these concerns.

OCT. The committee discussed the discrepancy between IRB and IACUC members. IRB members receive pay for their activity on the IRB while other committees such as IACUC and IBC do not provide their members with pay. The committee will discuss this further at an upcoming meeting.

NOV. The committee was updated on the U Report system by University Compliance Office including: the triage process, correspondence between U Reports personnel and the reporter, and the questions provided on the U Report form. The following (see below) U Reports samples and forms have been posted to the IACUC Members website.

- UReport Triage Process Flowchart
- UReport Communications
- Sample UReport Questions Asked of Reporter

DEC. The committee discussed IACUC member compensation in response to a report that the IRB membership received financial compensation to their departments for their service on the IRB. The reimbursement to IRB members is meant to offset lost clinical fees. Other committee's such as IBC do not receive a salary and most other research institutions do not provide a salary to their IACUC members. In addition, OLAW guidelines state that unaffiliated IACUC members should not receive a salary, which would mean that any monetary IACUC compensation could not be distributed among all members. As such, the IACUC will not be moving to a pay model.

JAN. The committee reviewed the SOP for relaxing the requirement for listing trainees and visiting trainers on training protocols. Edits were suggested to clarify that visiting trainers do not need to be listed on the training protocols. Edits will be made before finalization.

FEB. The committee reviewed revisions for an approved policy "Policy for Participants in Animal Procedure Training Sessions". The committee had additional edits and suggested that we communicate the new policy with the VMO.

- **PROTOCOL DISCUSSION AND REVIEW**

DEC. The committee discussed reviewing the "Tumor Induction" procedure section. Reviewers were reminded to look for the following during their review of this section:

- Tumor studies often require an "Administration of Biological Agents" procedure in addition to account for cell lines that may be provided. Make sure this is included to ensure that cells introduced to a colony will not introduce infectious agents that may be transmitted to other animals in the vivarium.
- Orthotopic implantation often requires a surgical procedure to access the site in addition to the "Tumor Induction" procedure. Make sure that a separate "Surgery" procedure is also included in these cases to ensure the requisite information for surgery is completed.
- Check to make sure that the endpoints listed are consistent with the experimental design and euthanasia section. Oftentimes there is confusion regarding the tumor endpoint criteria and how it impacts death as an endpoint or taking animals to a moribund state.

JAN. The committee discussed reviewing the "Other" procedure section. Reviewers were reminded to consider the following aspects when reviewing this section:

- "Other" can be used to describe any procedure, however, it is important to ensure that all the requisite information is included. Certain sections such as "Administration of Biological Agents", "Surgery", and "Tumor Induction" have significant content that is unlikely to be captured by the investigator if they use "Other" to outline the specifics for these types of procedures. This section is best suited for procedures such as "Imaging" or specific "Behavioral" assays that may differ from those described on our provided "Behavior" procedure.

JAN. The committee reviewed their expectations for the "Health and Monitoring" section. It was noted that in the past only likely study specific items were to be included in this section. Known complications with common procedures such as dehiscence could potentially be identified elsewhere in the protocol. Ben will work with Felicia and Christine to consider ways to include this information within the specific procedure details sections and report back to the committee.

- **ANIMAL, ENVIRONMENT, HOUSING, AND MANAGEMENT**

NOV. The committee discussed an animal that is on a Parkinson's disease study. During a semi-annual inspection, it was noted that the animal may need to have an accelerated endpoint due to the severity of the Parkinson model. The animal will receive additional visits from the institutional veterinarian and the area veterinarian, and in addition, the committee may request a meeting with the PI at a future meeting to learn more about the ongoing study and future endpoints. The committee will be updated at the next meeting.

NOV. The committee discussed an animal that is on a Parkinson's disease study. During a semi-annual inspection, it was noted that the animal may need to have an accelerated endpoint due to the severity of the Parkinson model. The committee delegated a subcommittee to discuss accelerating the animal's endpoint with the PI and lab. The committee will be updated regarding the outcome of the meeting with the PI at future meetings.

DEC. Personnel came to discuss power outage that occurred in Saint Paul over the summer and improving how these occurrences are managed. The IACUC and the group discussed how to

improve the notification system and evaluating the back-up power available to animal facilities. Currently, each building and department have a contact that is to be notified in the event of a power outage. Facilities Management will coordinate a future meeting after collecting additional information regarding the available back-up power for buildings on campus. These meetings will likely occur in Jan/Feb of 2019 and the committee will be updated at this time.

DEC. The committee was updated on a PRRS outbreak in Waseca. The area has been stabilized and the committee had no additional comments.

JAN. The committee was updated regarding an NHP that had an accelerated endpoint due to a headpost that had become loose making further behavioral assays impossible. The animal was used for a terminal surgery allowing staff to receive important training in surgical procedures. The committee has no additional concerns.

JAN. The committee discussed the Booker Bill being introduced to congress. If passed, committee review by a separate central government committee would be required to receive federal funds for any study using NHPs. As outlined in the bill, the constituency of this committee would not require inclusion of any scientists that utilize animal models. The committee voted to ask the IO to endorse a letter provided by NABR that warns against passing the Booker bill as it would negatively impact biomedical research and future health care advances.

JAN. The committee was updated on a NABR report summarizing USDA inspections for 2018. Overall there was a dramatic decrease in the number of findings identified and reported during USDA inspections. This is at least partly due to the new approach adopted by the USDA to encourage self–reports from institutions and a more cooperative relationship between institutions and the USDA to help ensure animal welfare in research. The UMN has mirrored this approach in our own animal research program.

MAR. The committee discussed a flood that occurred [redacted] on the weekend of 2.16.19. No animals were harmed, but some were relocated. Facility repairs are underway and near completion. The committee had no additional concerns and considers the matter closed.

- **SELF-REPORTS and OUTSIDE REPORTS**

OCT. The committee received a self-report in which a newt escaped from a tank. The lab has implemented the following preventative measures: a) making sure the lid is tightly closed, b) checking the lid at the end of the day, and c) re-training of all the staff for proper tightening of the tank lid and re-emphasizing the importance of closing the lid properly. The committee considers the matter closed.

OCT. The committee received a self-report describing a calf that was dead at the bottom of the hay feeder at the [redacted] Cause of death was likely someone dropping a round bale on him in the feeder using the skid steer and somehow did not notice it when it happened.
To prevent this from happening again in the future the students have been trained to complete these steps when filling feeders:

1) Allow the bale ring to become completely empty prior to filling with a new bale/clean anything left underneath by moving the feeder to a different spot then move back
2) Push all animals into the barn and COUNT the number of head to be sure no one was left outside prior to entering the pen with equipment.
3) Bales must be placed ON END like a cylinder to prevent shifting in the feeder
4) If the bale appears to be sitting in the ring at an angle where it is not completely flat, adjust it and/or the feeder so it lies flat with the concrete/ then remove the strings
5) Allow calves back outside once equipment has been completely removed from the pen and the feeders have been filled and checked for safety.

They have also added an area on the feed sheets for those who FILL hay feeders to sign off on. This should help identify who used the skid steer to fill the feeders and when. There is still a check box students will use each feeding stating they have observed there is adequate amount of hay in the feeder, even if they don't fill it.

In addition to this, all work-study students at Crookston will undergo re-certification to drive the skid steer this week prior to anymore use. [redacted], Lab Services Coordinator, will complete the certification with the students before they are cleared to operate the skid steer for job related tasks or feeding.

The committee will remind other agricultural sites to ensure that policies and training is in place to avoid similar incidents. The committee considers the matter closed.

NOV. The committee reviewed a self-report in which flooding occurred in pens housing poultry due to a connection break between the water hose and waterer in one pen. Water also ran into an adjoining pen. The water levels were roughly 6 inches deep and no birds drowned, however, there was mortality in the original affected pen and researchers had to cull and euthanize several birds with broken wings in the original pen and the one adjoining pen. The broken wings likely occurred because the birds were frightened of the running water and may have tried to move to different parts of the pen to avoid the water. The remaining 10 pens were unaffected. The committee had no additional comments and consider the matter closed.

NOV. The committee reviewed a self-report in which one healthy cow died shortly after calving apparently due to asphyxiation associated with being caught in stall and bloating. While the event was unfortunate the committee did not identify any wrongdoing and considers the matter closed.

NOV. The committee was updated on a report received by the IACUC office on horses used for training veterinary students. The concern was that some of the mares used for rectal palpations had become more resistant to handling potentially due to over-use . The compliance supervisor and the area veterinarian went to observe the horses and did not identify any welfare concerns. Review of animal use records showed that there was no over-use of the animals. As there are no additional palpitation labs this semester, the area veterinarian will continue to work with the course director next semester to ensure that there are no animal welfare concerns during the next session.

NOV. The committee was updated on a report that the IACUC office received regarding a PI that may be housing animals over 24 hours in their lab without an approved IMHA. The lab was visited and the PI was informed that any animals in the lab must not stay in the lab over 24 hours until an IMHA has been approved. The PI said that no animals were housed over 24 hours and the

animals in the lab would be euthanized that day. Office staff will follow up with the PI to discuss an amendment to create an IMHA. The committee had no additional comments.

NOV. The committee was updated on an outside report to RAR regarding some animals used for a spay and neuter class. The area veterinarian visited the animals and did not identify any animal welfare concerns and all animals appeared to have recovered. An official report was not filed, and the committee considers the matter closed.

DEC. The committee was updated on an animal that was on a Parkinson's disease study that required an accelerated endpoint due to the severity of the Parkinson model. The lab had worked with a subcommittee delegated by the IACUC to adjust the animal's schedule on the study. The animal was euthanized according to the revised study plan.

JAN. The committee was updated on an animal welfare concern reported from Grand Rapids in which animal personnel exhibited aggressive handling while loading cattle onto a trailer. The person's animal use has been suspended and IACUC leadership will interview those involved and collect additional information to be brought back to the committee.

JAN. The committee was updated on a self-report in which a lab sedated the wrong sheep for a study. The error was recognized before any additional procedures were done and the sheep was returned to housing. Staff have been retrained on the importance of confirming the ID number when acquiring animals for procedures. The committee considers the matter closed.

FEB. The committee was updated on an animal welfare concern in Grand Rapids where methods inconsistent with UMN approach to animal care were used during loading of animals to a trailer. Use of animals has been suspended for the staff member identified, and the leadership group is following up with the parties involved. The committee recommended that additional training be provided. The leadership group will continue to collect more information regarding the incident and will update the committee at the next meeting.

FEB. The committee reviewed a self-report in which a large animal lab course did not follow the procedures as outlined in their protocol. All animals did not receive anesthetics and analgesics for a jugular catheter placement. All animals did receive full exams and considered to be healthy. In the future course directors will review the protocol before lab to ensure that a similar event does not occur again. The committee considers the matter closed.

FEB. The committee discussed an event in which RAR did not follow the analgesic and antibiotic regimen due to a miscommunication on the weekend treatment sheet. While the animal did not receive its final dose of carprofen, opiods were provided and the animal was not observed to be painful by vet technicians over the weekend. The lab voiced concerns about repeated miscommunication between RAR and their expectations for treatment of animals. As such, RAR will work with the lab to improve the communication in general with the lab and specifically regarding the weekend treatments for animals to ensure that similar events do not occur again.

FEB. The committee was updated on an animal welfare concern in Grand Rapids where methods inconsistent with UMN approach to animal care were used during loading of animals to a trailer. Use of animals has been suspended for the staff member identified, and the leadership group is following up with the parties involved. Following additional interviews with those involved use of animals has been permanently revoked from the person identified and employment with the UMN has been terminated.

FEB. The committee discussed further an event in which RAR did not follow the analgesic and antibiotic regimen due to a miscommunication on the weekend treatment sheet. While the animal did not receive its final dose of carprofen, opiods were provided and the animal was not observed to be painful by vet technicians over the weekend. The lab voiced concerns about repeated miscommunication between RAR and their expectations for treatment of animals. As such, RAR will work with the lab to improve the communication in general with the lab and specifically regarding the weekend treatments for animals to ensure that similar events do not occur again. New forms will be created as needed.

FEB. The committee reviewed a self-report in which staff left the room during euthanasia and while animals were still in the CO2 chamber. The staff member in question will be retrained as to the importance of being mindful during euthanasia procedures. The committee had no additional concerns and considers the matter closed.

FEB. The committee reviewed a self-report in which staff did not successfully euthanize an animal via cervical dislocation. The lab has discontinued the use of cervical dislocation and will seek additional training by the area veterinarian before use of cervical dislocation is reinstated. The lab will also submit an amendment with a secondary method to ensure euthanasia. The committee had no additional concerns and considers the matter closed.

FEB. The committee reviewed a self-report in which fish in Crookston died during routine cleaning of the main aquarium. The hose filling the water in the temporary tank was inadvertently moved so there was not sufficient water in the tank. The lab will work with veterinary staff to improve their SOPs to ensure that this does not happen again. The updated SOPs will be included in the approved IACUC protocol and sent to the IACUC for review before implementation or ordering additional fish.

FEB. The committee reviewed a self-report in which RAR sentinels had pups. The pups will be used for training or be used as future sentinels. The committee had no additional concerns and considers the matter closed.

MAR. The committee reviewed a self-report in which 22 adult zebrafish died in a biology lab course due to bleach contamination in a water carboy. To address the failure the following has been implemented:

- The task of smelling the system water and embryo water carboys has been added to the lab opening checklist that the TAs go over each morning.
- All carboy sterilization will take place in the zebrafish facility (115 BioSci) away from any students.
- Sterilization of the carboys will take place after every semester, thus preventing most or all algae growth in the carboys.
- The bleach bottles have been moved out of the student lab rooms so there is no possibility that it could be added and left unlabeled in the student lab room.

The committee had no additional concerns and considers the matter closed.

MAR. The committee reviewed a self-report in which staff did not successfully euthanize an animal via cervical dislocation. The lab has discontinued the use of cervical dislocation and will

seek additional training by the area veterinarian before use of cervical dislocation is reinstated. The lab will also submit an amendment with a secondary method to ensure euthanasia.

MAR. The committee reviewed a self-report in which mice were used on the wrong study. Mice received orthotopic injection of cancer cells which is approved on one of the PI's other protocols. No additional procedures had been done to the mice and these mice will be transferred to the appropriate protocol. The committee had no additional concerns and considers the matter closed.

MAR. The committee reviewed a self-report in which a barn flooded in Crookston on March 9th when a pipe broke. The animals were removed from the area and the facilities have been repaired. There were no animals injured or any follow-up health concerns. The committee had no additional concerns and considers the matter closed.

MAR. The committee reviewed new SOPs to address a self-report in which fish in Crookston died during routine cleaning of the main aquarium. The hose filling the water in the temporary tank was inadvertently moved so there was not sufficient water in the tank. The lab worked with veterinary staff to improve their SOPs to ensure that this does not happen again. The committee was satisfied with the SOPs and they will be included in the approved IACUC protocol and sent to the IACUC for final review before implementation or ordering additional fish. The committee had no additional concerns and considers the matter closed.

MAR. The committee discussed a request to clarify the roles and reporting line for lab staff member in an NHP lab. It was recommended that a conflict of interest document be finalized to account for the arrangement.

7. IMHA and AG SOP Subcommittee Update:

The subcommittee met multiple times during the past six months to investigate the current UMN requirements for IMHAs and Ag SOPs. The subcommittee evaluated the UMN's required submission forms, review process, and general definitions for these housing options and documents. It also reviewed the operating procedures for University of Pittsburgh to help identify ideas for areas of improvement in our own process. Below are some potential recommendations for improvement. We will provide more information at program review to discuss with the rest of the IACUC.

IMHA:

To better align with the regulatory requirements, UMN IMHA questions in eProtocol were compared to AAALAC requirements and the subcommittee drafted potential revisions (see below). The general theme of the revisions, was to provide the investigator with the information or a contact to acquire the information that was needed for each response. In addition, the subcommittee recommended that the review of the IMHA information in eProtocol be done by administrative staff and that the committee establish a better definition for what would constitute an IMHA.

eProtocol IMHA Questions:

Note: Highlighted items were not previously requested in the IMHA section of the old eProtocol form. Red text indicates proposed supplemental text.

eProtocol Question	AAALAC Program Description basis for question
Please provide contact information for the personnel responsible for care of animals in the IMHA.	Needed to schedule with or contact lab regarding questions or concerns about IMHA
Describe the general design (number of rooms, storage areas, etc.) and size of the IMHA.	Information requested in Appendix 17: - Building - Rooms - Person Responsible - Species Used - Approximate area devoted to housing - Maximum period of stay - Purpose/ Rationale/ Justification - Construction features and finishes
Provide an explanation and rationale for the need for this Investigator Managed Housing Area.	Information requested in Appendix 17:

Note: "Convenience" or "cost" is not an appropriate justification.	- Building - Rooms - Person Responsible - Species Used - Approximate area devoted to housing - Maximum period of stay - Purpose/ Rationale/ Justification - Construction features and finishes
How long will animals be maintained in this IMHA? Provide maximum duration (e.g. 2 weeks, 2 months, indefinite)	Information requested in Appendix 17: - Building - Rooms - Person Responsible - Species Used - Approximate area devoted to housing - Maximum period of stay - Purpose/ Rationale/ Justification - Construction features and finishes
If RAR provides the cages, pens, etc. used to house the animals, identify the type of cages, pens, etc. requested. (Note - cage rental fees may apply.) **NOTE: POTENTIALLY, REQUIRE ONLY IF RAR CAGES ARE USED OR REMOVE ENTIRELY**	*"II. ANIMAL ENVIRONMENT, HOUSING and MANGEMENT* *B. Animal Housing (all terrestrial, flighted, and aquatic species)* 1. *Primary Enclosures* *Note: A description of primary enclosures used (e.g., cages (conventional, individually-ventilated cage systems (IVCS), etc.), pens, stalls, pastures, aviaries, tanks) should be included in Appendix 13."* a. *Describe considerations, performance criteria and guiding documents (e.g. Guide, Ag Guide, ETS 123 and/or other applicable standards) used by the IACUC/OB to verify adequacy of space provided for all research animals, including traditional laboratory animal species, agricultural animals, aquatic species, and wildlife when reviewing*

	biomedical, field and agricultural research studies.
Describe the enclosures (i.e. cages, pens, crates, etc.) to be used. Give dimensions or square footage, materials, general design features, etc. Include descriptions of lots and pastures (size, fencing, etc.) if applicable. **NOTE: POTENTIALLY, REQUIRE ONLY IF RAR CAGES ARE NOT BEING USED**	*"II. ANIMAL ENVIRONMENT, HOUSING and MANGEMENT* *B. Animal Housing (all terrestrial, flighted, and aquatic species)* 1. *Primary Enclosures* *Note: A description of primary enclosures used (e.g., cages (conventional, individually-ventilated cage systems (IVCS), etc.), pens, stalls, pastures, aviaries, tanks) should be included in Appendix 13."* Appendix 13 requests the following regarding enclosures: - Species - Dimensions of enclosure - Maximum number of animals/ enclosure - Guiding document used to determine space standards - Enclosure composition and description (include descriptors such as open-topped, static microisolator, IVCS)
Do you need an exception to the enclosure size policy? **NOTE: POTENTIALLY, REQUIRE ONLY IF RAR CAGES ARE NOT BEING USED**	Update link *""II. ANIMAL ENVIRONMENT, HOUSING and MANGEMENT* *B. Animal Housing (all terrestrial, flighted, and aquatic species)* *1. Primary Enclosures* *b. Describe space exceptions to the guiding documents (Guide, Ag Guide, ETS 123, and/or applicable standards), indicating the references, considerations and performance criteria used (e.g., by the IACUC/OB) to verify adequacy of*

	space provided for all animal species covered by the program. [Guide, pp. 55-63]"
If requesting exception, please provide scientific justification and explain:	See above
Describe method of animal identification (pen/cage card, ear tag, tattoo, etc.) and whether it includes species, strain, sex, age and source, IACUC approved protocol number, and the name and phone number of the principal investigator and additional contact personnel (if needed) **Change to:** Confirm that all animals will have posted cage cards and USDA regulated species will have individual identification posted	*"II. ANIMAL ENVIRONMENT, HOUSING and MANGEMENT* *C. Animal Facility Management* *2. Population Management* *a. Identification* *Describe animal identification methods for each species (e.g., microchips, cage/tank cards, collars, leg bands, tattoo, ear tags, brands)* *b. Breeding, Genetics, and Nomenclature"*
Describe means by which animal activity specific information/records (food/water restriction, surgery/sedation, etc.) are accessible to husbandry, veterinary, and IACUC personnel **Change to:** Confirm that animal specific information/records are accessible to husbandry, veterinary, and IACUC personnel	*"C. Clinical Care and Management* *3. Clinical Record Keeping [Guide, p. 115]* ***a.*** *Describe the procedure for maintaining medical records and documenting treatment of ill animals including: clinical laboratory findings, diagnoses, treatments, medical progress records, etc. Identify the species for which individual records are maintained and where such records are kept."*
Describe procedures for providing emergency weekend and holiday care. (Animals must be observed every day, including weekends and holidays.)	*II. ANIMAL ENVIRONMENT, HOUSING and MANGEMENT* *C. Animal Facility Management* *1. Husbandry* *h. Weekend and holiday care*

TO BE COMBINED WITH VETERINARY CARE QUESTION	*- Describe procedures for providing weekend and holiday care. Indicate who (regular animal care staff, students, part-time staff, etc.) provides and oversees care and what procedures are performed* *- Indicate qualifications of weekend/holiday staff if not regular staff* *- Describe procedures for contacting responsible animal care and/or veterinary personnel in case of an emergency.* *C. Clinical Care and Management* *2. Emergency Care [Guide, p. 114]* *a. Describe the procedures to ensure that emergency veterinary care is continuously available for animals during and outside of regular work hours, including access to drugs or other therapeutics and equipment.*
Describe how training in animal health observations and husbandry procedures is provided to personnel and how adequacy of training is assessed **REMOVE QUESTION**	*E. Pain and Distress [Guide, pp. 120-121]* *2. Describe training programs for personnel responsible for monitoring animal well-being, including species-specific behavioral manifestations as indicators of pain and distress.*
Describe the procedure for daily observation of animals for illness or abnormal behavior and the method for reporting observations (written or verbal) to the principal investigator	*II. ANIMAL ENVIRONMENT, HOUSING and MANGEMENT* C. Animal Facility Management *1. Husbandry* *h. Weekend and holiday care*

CHANGE TO THE FOLLOWING AND POTENTIALLY COMBINE WITH VETERINARY CARE QUESTION Confirm that daily observation of animals for illness or abnormal behavior is recorded and reported to PI and veterinary staff if adverse conditions develop.	*- Describe procedures for providing weekend and holiday care. Indicate who (regular animal care staff, students, part-time staff, etc.) provides and oversees care and what procedures are performed* *- Indicate qualifications of weekend/holiday staff if not regular staff* *- Describe procedures for contacting responsible animal care and/or veterinary personnel in case of an emergency.* *C. Clinical Care and Management* *2. Emergency Care [Guide, p. 114]* *a. Describe the procedures to ensure that emergency veterinary care is continuously available for animals during and outside of regular work hours, including access to drugs or other therapeutics and equipment.*
Describe the nutritional program and feed provided. Include the type, brand, or source of food, the nutrient content of the food, and how and where the food will be stored. Indicate whether or not the feed will be provided by RAR. (Note: You will be billed for RAR feed.) **POTENTIALLY, REQUIRE DETAILS ONLY IF RAR IS NOT PROVIDING FEED**	*II. ANIMAL ENVIRONMENT, HOUSING and MANGEMENT* *C. Animal Facility Management* *1. Husbandry* *a. Food* *- List type and source of food stuffs* *- Describe feed storage facilities, noting temperature, relative humidity, and vermin control measures, and container (e.g., bag) handling practices, for each of the following:* • *vendors (if more than one source, describe each)*

	• *centralized or bulk food storage facilities if applicable* • *animal facility or vivarium feed storage rooms storage containers within animal holding rooms*
Describe the source of water for the animals, how it will be provided, and if not continuous, the frequency with which fresh water will be provided. **POTENTIALLY, REQUIRE DETAILS ONLY IF RAR IS NOT PROVIDING DRINKING WATER**	*II. ANIMAL ENVIRONMENT, HOUSING and MANGEMENT* *C. Animal Facility Management* *1. Husbandry* *b. Drinking water* *- Describe the water source, treatment or purification process, and how it is provided to the animals (e.g., bowls, bottles with sipper tubes, automatic watering, troughs, ponds, streams).* *- Describe methods of quality control, including monitoring for contaminants* *- If automatic water delivery systems are used, describe how they are maintained and sanitized.*
Describe bedding (Include type, how used, how and where stored, frequency of changes) and indicate whether or not this will be provided by RAR. (Note: You will be billed for RAR bedding.) **POTENTIALLY, REQUIRE DETAILS ONLY IF RAR IS NOT PROVIDING BEDDING**	*II. ANIMAL ENVIRONMENT, HOUSING and MANGEMENT* *C. Animal Facility Management* *1. Husbandry* *c. Bedding and Nesting materials* *- Describe type(s) and how used for various species.* *- Describe bulk bedding storage facilities, if applicable, including vermin control measures.*

	- Describe quality control procedures, including monitoring for contaminants
IMHAs are expected to provide environmental enrichment and social housing per IACUC guidelines. Do you need a modification or exemption/exception to this guideline? Please select at least one check box below. a. Requesting a modification, please provide scientific justification and explain: b. Requesting an exemption/exception, please provide scientific justification and explain:	Update link *II. ANIMAL ENVIRONMENT, HOUSING and MANGEMENT* *B. Animal Housing* *2. Environmental Enrichment, Social, and Behavioral Management* *a. Environmental Enrichment* *- Describe the structural elements of the environment of primary enclosures that may enhance the well-being of animals housed (e.g., resting boards, privacy areas, shelves/perches, swings, hammocks).* *- Describe nonstructural provisions to encourage animals to exhibit species typical activity patterns (e.g., exercise, gnawing, access to pens, opportunity for exploration, control over environment, foraging, denning, burrowing, nesting materials, toys/manipulanda, browsing, grazing, rooting, climbing).* *b. Social Environment [Guide, p. 64]*
Describe nonstructural provisions to encourage animals to exhibit species typical activity patterns (e.g. exercise, gnawing, opportunity for exploration, control over environment, foraging, denning, burrowing, nesting materials, toys/manipulanda, etc.). **COMBINE WITH QUESTION ABOVE, TO BE ASKED ONLY IF AN EXCEPTION TO ENVIRONMENTAL ENRICHMENT AND SOCIAL HOUSING IS REQUESTED**	Update link *II. ANIMAL ENVIRONMENT, HOUSING and MANGEMENT* *B. Animal Housing* *2. Environmental Enrichment, Social, and Behavioral Management* *a. Environmental Enrichment* *- Describe the structural elements of the environment of primary enclosures that may enhance the well-being of animals housed (e.g.,*

	resting boards, privacy areas, shelves/perches, swings, hammocks). *- Describe nonstructural provisions to encourage animals to exhibit species typical activity patterns (e.g., exercise, gnawing, access to pens, opportunity for exploration, control over environment, foraging, denning, burrowing, nesting materials, toys/manipulanda, browsing, grazing, rooting, climbing).*
IMHAs are expected to pair or group house social species. Do you need an exception to this guideline? a. If requesting an exception, please provide scientific justification and explain: **REMOVE AND HAVE CONTENT INCLUDED IN THE ABOVE QUESTION**	Update link *II. ANIMAL ENVIRONMENT, HOUSING and MANGEMENT* *B. Animal Housing* *2. Environmental Enrichment, Social, and Behavioral Management* *b. Social Environment [Guide, p. 64]* *- Describe institutional expectations or strategies for social housing of animals* *- Describe exceptions to these expectations (e.g., veterinary care, social incompatibility) and other typical justification approved by the IACUC/OB for housing animals individually* *- Describe steps taken with isolated or individually housed animals to compensate for the absence of other animals (interaction with humans, environmental enrichment, etc.).*
Describe steps taken with isolated or individually housed animals to compensate for the absence of other animals (e.g. interaction with humans, environmental enrichment, etc.).	See above

POTENTIALLY REMOVE AND/OR COMBINE WITH ABOVE QUESTION ON SOCIAL HOUSING/ENVIRONMENTAL ENRICHMENT	
Sanitation will be performed by: a. If lab/staff, will sanitization conform to RAR Policy on Sanitization? b. If requesting an exception, provide proposed sanitization plan and justify need for exception	Update Link to RAR Policy
Describe how effectiveness of the sanitation procedures is monitored. **CHANGE TO:** Confirm that effectiveness of the sanitation procedures is monitored through biological assay or other methods at least every 6 months	*II. ANIMAL ENVIRONMENT, HOUSING and MANGEMENT* *C. Animal Facility Management* *1. Husbandry* *e. Sanitation [Guide, pp. 69-73]* *Cleaning and Disinfection of the Micro- and Macro-Environments* *Note: A description of the washing/sanitizing frequency, methods, and equipment used should be included in Appendix 14 (Cleaning and Disinfection of the Micro- and Macro-Environment) and Appendix 15 (Facilities and Equipment for Sanitizing Materials).* *1) Describe any IACUC/OB approved exceptions to the Guide (or applicable regulations) recommended sanitation intervals.* *Assessing the Effectiveness of Sanitation and Mechanical Washer Function* *2) Assessing the Effectiveness of Sanitation and Mechanical Washer Function*

	a) *Describe how the effectiveness of sanitation procedures is monitored (e.g., water temperature monitoring, microbiological monitoring, visual inspections)*
All IMHAs housing non-farm animals used in biomedical research should have nonporous easily sanitizable surfaces in the housing and support areas (e.g. food/bedding storage area). Please indicate areas that are not easily sanitized and describe how these areas are maintained. **POTENTIALLY REMOVE**	
Describe the program for monitoring for and controlling pests (insects, rodents, etc.), indicate agent(s) used, where applied, and who oversees the program and applies the agent(s). **CHANGE TO:** Confirm that a tin cat or other method is used for pest control	*II. ANIMAL ENVIRONMENT, HOUSING and MANGEMENT* *C. Animal Facility Management* *1. Husbandry* *c. Bedding and Nesting materials* *- Describe bulk bedding storage facilities, if applicable, including vermin control measures.*
Describe the handling, storage, frequency of disposal, and final disposal location for soiled bedding, refuse, and animal carcasses **INCLUDE OHS CONTACT INFORMATION**	*II. ANIMAL ENVIRONMENT, HOUSING and MANGEMENT* *C. Animal Facility Management* *1. Husbandry* *e. Sanitation [Guide, pp. 69-73]* *Bedding/Substrate Change*

	- *Describe frequency of contact and non-contact bedding change for each species and enclosure type (solid-bottom or suspended) or pen.* - *Describe any IACUC/OB approved exceptions to frequencies recommended in the Guide or applicable regulations and the criteria used to justify those exceptions.* - *Note the location where soiled bedding is removed from the cages/enclosures and where clean bedding is placed into the cages/enclosures.*
Will surgery, euthanasia, or necropsy be conducted in the vicinity of, or adjacent to, locations where animals are being housed? a. Indicate whether a biosafety cabinet or fume hood will be used for these procedures and, if not, explain the management practices which will minimize the impact of these activities on the nearby housed animals. **POTENTIALLY REMOVE**	Not found directly in the AAALAC PD
Description of Veterinary Care Management Practices. a. Describe provisions for veterinary care and supervision. b. If veterinary care is not provided by RAR, identify regularly attending veterinarian or clinic. c. Describe procedures for providing veterinary emergency weekend and holiday care. d. Will there be an emergency veterinarian. e. List common clinical signs or circumstances that would initiate a call to the veterinarian.	*II. ANIMAL ENVIRONMENT, HOUSING and MANGEMENT* C. Animal Facility Management *1. Husbandry* *h. Weekend and holiday care* *- Describe procedures for contacting responsible animal care and/or veterinary personnel in case of an emergency.* *C. Clinical Care and Management*

	2. Emergency Care [Guide, p. 114] *a. Describe the procedures to ensure that emergency veterinary care is continuously available for animals during and outside of regular work hours, including access to drugs or other therapeutics and equipment.*
If this is an IMHA with continuously housed albino rodents, describe methods used to ensure that light exposure meets the recommendations in the Guide and/or that management practices are in place to mitigate light exposure **POTENTIALLY REMOVE**	Page 48 and 141 in the Guide "Dual-level lighting may be considered when housing species that are sensitive to high light intensity, such as albino rodents; low-intensity lighting is provided during the light phase of the diurnal cycle, and higher-intensity lighting is provided as needed (e.g., when personnel require enhanced visibility)." Pg 141
Describe room ventilation rates (air changes per hour), whether room air exhaust and supply are 100% outside air or recycled to/from other building areas **PROVIDE EXPECTED CONDITIONS, INCLUDE FM CONTACT, AND REVISE QUESTION TO READ "CONFIRM THAT …"**	Appendix 11 • the source(s) of air and air recirculation rates if other than 100% fresh air And *II. ANIMAL ENVIRONMENT, HOUSING and MANGEMENT* A. Animal Environment 2. *Ventilation and Air Quality* a. Describe the methods and frequencies of assessing, monitoring, and documenting the animal room ventilation rates and pressure gradients (with respect to adjacent areas).

	b. Describe ventilation aspects of any special primary enclosures using forced ventilation c. If any supply air used in a room or primary enclosure is recycled, describe the percent and source of the air and how gaseous and particulate contaminants are removed.
Describe the procedures for monitoring animal facility mechanical systems and notifying appropriate personnel in the event of a significant failure that occurs outside regular work hours **PROVIDE EXPECTED CONDITIONS, INCLUDE FM CONTACT, AND REVISE QUESTION TO READ "CONFIRM THAT …"**	Appendix 11 *how room temperature, ventilation, and critical air pressures are monitored and maintained in the event of a system or component failure, including notifying appropriate personnel in the event of a significant failure that occurs outside of regular working hours and/or other management systems used to respond to alerts or failures*
Describe the emergency power backup systems available for critical services (e.g. the HVAC system, lighting, ventilated caging systems, or life support systems for aquatic species) **PROVIDE EXPECTED CONDITIONS, INCLUDE FM CONTACT, AND REVISE QUESTION TO READ "CONFIRM THAT …"**	*IV. Physical Plant* *D. Emergency Power and Life Support Systems* *Note: Complete a Heating, Ventilation, and Air-Conditioning (HVAC) Summary (**Appendix 11**) and Lighting Summary (**Appendix 16**) for each Location described in the Summary of Animal Housing and Support Sites (**Appendix 2**).* *Power [Guide, p. 141]* *For each Location, Centralized Animal Facility, and Satellite Housing Facility, provide a brief description of the following:* • *Availability of emergency power and if so, what electrical services and equipment are maintained in the event the primary power source fails.*

	• *History of power failures, noting frequency, duration, and, if emergency power was not available, steps taken to ensure the comfort and well-being of the animals present and the temperature extremes reached in animal rooms during the failure.*
Describe the mechanical system status and safety features of the temperature control for the IMHA. Note: If temperature control is provided by reheat coil, the valves controlling reheat coils should fail in the closed position to prevent space overheating and animal loss with valve failure. If temperature control is by steam coils, there should be a high-temperature cut-off system to prevent space overheating and animal loss with valve failure **PROVIDE EXPECTED CONDITIONS, INCLUDE FM CONTACT, AND REVISE QUESTION TO READ "CONFIRM THAT …"**	Appendix 11 *In the text box below, provide a general description of the mechanical systems used to provide temperature, humidity and air pressure control. Include details such as:* • *the source(s) of air and air recirculation rates if other than 100% fresh air* • *treatment of air (filters, absorbers, etc.)* • *design features such as centralized chilled water, re-heat coils (steam or hot water), individual room vs. zonal temperature and relative humidity control, the use of variable air volume (VAV) systems and other key features of HVAC systems affecting performance* • *features that minimize the potential for adverse consequences to animal well-being (such as re-heat coils that fail closed or that are equipped with high-temperature cut-off systems), and* • *how room temperature, ventilation, and critical air pressures are monitored and maintained in the event of a system or component failure, including notifying appropriate personnel in the event of a significant failure that occurs outside of regular working hours and/or other management systems used to respond to alerts or failures.*
IMHAs continuously housing traditional laboratory animals used in biomedical research or as breeding colony animals should not be equipped with exterior windows. If windows are	

present, describe management practices regarding temperature and photoperiod control, as well as potential security risks	
Describe any planned environmental conditions of the IMHA that deviate from the standards provided in The Guide for the Care and Use of Laboratory Animals, The Guide for the Care and Use of Agricultural Animals in Agricultural Research and Teaching, or the Guidelines for Use of Fishes in Research. Include the rationale/justification, duration of exposure, and method of monitoring animal welfare	***C. Satellite Animal Housing Facilities*** *In addition to the Appendices summarizing Heating, Ventilation, and Air-Conditioning (Appendix 11) and Lighting Systems (Appendix 16), summarize animal housing areas that are not centrally-managed or maintained in (Appendix 17), "Satellite Animal Housing Areas.* ***1.*** *Describe the process used by the IACUC/OB to authorize, provide oversight of, and ensure compliance with Guide standards for the housing of animals outside of centrally-maintained facilities. Include a description of Attending Veterinarian access and physical security"*
Description of Aquatic Species Facilities Management Practices a. What standards for acceptable water quality have been established b. How will chlorine, chloramines, chemical, and reactive bio-products be removed or neutralized prior to use in aquatic systems c. Indicate water type (e.g. fresh, brackish, or marine) d. Indicate water circulation (e.g., static, re-circulated, constant flow, or some combination of these). If applicable, indicate water exchange frequency and amount by percentage e. Provide a key word for filtration employed, (biological, chemical, mechanical, etc.) and type (e.g. mechanical-beat filter) f. If a bio filter is used, describe type and size	II. ANIMAL ENVIRONMENT, HOUSING and MANGEMENT A. Animal Environment 3. Life Support Systems for Aquatic Species - Provide a general description of institutional requirements for enclosures using water as the primary environmental medium for a species (e.g., aquatics). - Provide a general description of overall system(s) design, housing densities, and water treatment, maintenance, and quality assurance that are used to ensure species appropriateness. Note: Facility-specific tank design and parameter monitoring frequencies should be summarized in Appendix 12 (Aquatic Systems Summary).

g. Water Quality Monitoring- indicate the frequency (e.g. daily, weekly, monthly or other sampling frequency; continuous/real time, or none, if applicable) of monitoring and method of control for each of the following parameters: Temperature, Salinity, pH, NH4, NO2, NO3, Dissolved O2, Total Dissolved gases, other (please list, e.g. alkalinity, total hardness, conductivity, chlorine/chloramine, etc.) h. If nets are used to transfer aquatics animals, describe how they are cleaned, disinfected and managed to avoid contamination of systems i. Describe available environmental (temperature, humidity, air conditioning) controls for the room and the physical enclosures/systems	

Ag SOP Form and Review:

Similarly, the subcommittee had recommendations for the Ag SOP form and review process. In general, the subcommittee commented that the form needed to be consistent with the recommendations of the Ag Guide and the procedures listed would need to be evaluated by a veterinarian. In addition, the subcommittee recommended that the review of the Ag SOP be done by administrative staff.

Suggestions to modify the form included:

- Adding a field that allowed the PI to confirm that the procedures had been evaluated by a veterinarian and that the husbandry was consistent with the guide.
- Adding the following text to question 4B in the form:

  "*The site veterinarian will be notified if:*
  - a condition has not resolved by the completion of treatment
  - if a condition worsens despite treatment, or develops complications during treatment
  - if a condition becomes recurrent
  - if an animal presents with illness or injury for which the site has not established a treatment plan the site veterinarian"

Following discussion the committee voted to approve review of the IMHA and Ag SOP content via IACUC members from the administrative staff. In the event that there are additional questions, the members will consult with veterinarians or other committee members with additional expertise in the husbandry of the specific species to facilitate review. In addition, the

committee voted to accept the changes the form questions of the IMHA section and the Ag SOP form. A complete draft of these form updates will be provided to the committee.

8. ePROTOCOL FORM UPDATES

- IMHA
  - Updates as determined by committee discussion following the IMHA and Ag SOP Subcommittee update
- Breeding
  - Remove the field: "Anticipated number of offspring that will be used for experiments"
- Health and Monitoring
  - Update to include more clarification regarding research specific adverse events that are not common
- Continuing Review
  - Include a question to account for instances where the lab has exceeded the allotted number of animals to be bred or used
- DEHS
  - Update the radiation section and other fields as requested by UMN DEHS
- Broken links
  - Update all broken links
- Help Pages
  - Update to include links to new help aids

9. Protocol Content Requirements

- Gender justification for animal subjects

  The committee discussed whether they should require that investigators address how the sex of the subjects was selected to address recent NIH request for studies to include both male and female subjects. It was determined that an update to the form could include a link to NIH's guidance. At this time we will not require an extended justification or rationale for the sex to be used in studies.

- Surgical procedures at the vet hospital

  The committee discussed what circumstances should be required for procedure to be eligible for the optional drop down item "Surgery as part of clinical care on VTH Clients" and whether there can be broader veterinary discretion allowing for VMC and RAR. UMN veterinarians will develop a proposal for committee consideration at an upcoming IACUC meeting.

- Use of non-pharm grade compounds

The committee discussed how much detail should be required in the protocol for the use of non-pharmaceuticals as test compounds. The group recognized that test compounds are often not available in pharmaceutical grade and are available in quantities that would not make extensive sterilization testing and processes possible. The committee recommended including the guidance outlined in the Guide for the Care and Use of Laboratory Animals within the current IACUC protocol form as outlined below.

"When non-pharmaceutical grade compounds are used on study, the following guidance outlined in the Guide for the Care and Use of Laboratory Animals should be followed, 'consideration should be given to the grade, purity, sterility, pH, pyrogenicity, osmolality, stability, site and route of administration, formula-tion, compatibility, and pharmacokinetics of the chemical or substance to be administered, as well as animal welfare and scientific issues relating to its use.'"

- Oversight for cephalopod research

  The committee discussed whether the IACUC should adjust its current purview and definition of animal beyond vertebrates to include research done on octopi. There is a researcher at the UMN that has recently received funding to investigate motor control and neuroanatomy. A subcommittee was formed to determine the best way to oversee this work and ensure the welfare of the subjects.

10. Emergency power and notification for power outages

IACUC leadership is currently working with FM to determine animal housing areas without an adequate plan for back-up power, as well as, a more robust method for notifying investigators in the event of an extended power outage or similarly significant facilities problem. A meeting with FM will be scheduled for the near future and the committee will be updated at upcoming IACUC meetings.

11. Cumulative Experience Subcommittee Update

The subcommittee has not reconvened over the past six-month period, but has scheduled a meeting later this month. The next meeting the group will solidify next steps for the previous action items: 1) creating case scenarios for the IACUC to review at the beginning of FCR meetings, and 2) review current RAR process for evaluating the transfer of an animal from one protocol to another, particularly in instances where the animal has already undergone procedures.

12. Evaluation of the OLAW Checklist

The meeting attendees formed small groups (see below) to discuss sections of the OLAW checklist which were then reviewed by the reconvened group.

In particular, the committee discussed potential re-assessment of training for personnel working with animals. It was determined that recertification would not necessarily be more affective in

ensuring proficiency and that our current ongoing outreach and daily animal checks suggest that our current practice is sufficient. Upon inspection, we will provide a reminder of applicable training courses provided to further promote hands-on courses provided by RAR.

The committee also noted that it should follow up with satellite facilities to ensure that applicable disaster plan components are shared with local law enforcement.

Following deliberations, the committee determined that the Animal Use Program received a grade of "A" for all areas of the OLAW checklist (see page XX for OLAW Checklist).

Sub-Groups for Evaluating the 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)

Ben Clark
Ilana Cohen
Jennifer Hubbard
Dezhi Liao
[redacted]
Jodi Ogilvie

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)

Brian Crooker
Peggy Norris
Don Martin
Geoff Ghose
Laura Hocum-Stone
Frances Lawrenz

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)

Jennifer Borgert
Jim Perry
Dezhi Liao

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

Melanie Graham
Kristin Pilon
Christine Sivula
[redacted]

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

Felicia Duke
Paul Lindstrom
Megan McCoy
Mimie Pollard
Robert Schumacher
Marilyn Bennett
Maggie Luesse

I. Semiannual Program Review Checklist [i]

Institutional Policies and Responsibilities

Date:

1. Animal Care and Use Program NEW	A*	M	S	C	NA
• Responsibility for animal well-being is assumed by all members of the program (*Guide*, p 1) [must]	A				
• IO has authority to allocate needed resources (*Guide*, p 13)	A				
• Resources necessary to manage program of veterinary care are provided (*Guide*, p 14) [must]	A				
• Sufficient resources are available to manage the program, including training of personnel in accord with regulations and the *Guide* (*Guide*, pp 11, 15)	A				
• Program needs are regularly communicated to IO by AV and/or IACUC (*Guide*, p 13)	A				
• 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]	A				
• Inter-institutional collaborations are described in formal written agreements (*Guide*, p 15)	A				
• Written agreements address responsibilities, animal ownership, and IACUC oversight (*Guide*, p 15)	A				

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

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

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)	A				
• For pilot studies, a system to communicate with the IACUC is in place (*Guide*, p 28)	A				
• For genetically modified animals, enhanced monitoring and reporting is in place (*Guide*, p 28)	A				
• Restraint devices are justified in the animal use protocols (*Guide*, p 29) [must]	A				
• Alternatives to physical restraint are considered (*Guide*, p 29)	A				
• Period of restraint is the minimum to meet scientific objectives (*Guide*, p 29)	A				
• Training of animals to adapt to restraint is provided (*Guide*, p 29)	A				
• Animals that fail to adapt are removed from study (*Guide*, p 29)	A				
• Appropriate observation intervals of restrained animals are provided (*Guide*, p 29)	A				
• Veterinary care is provided if lesions or illness result from restraint (*Guide*, p 30) [must]	A				

• Explanations of purpose and duration of restraint are provided to study personnel (*Guide*, p 30)	A					
• Multiple surgical procedures on a single animal are justified and outcomes evaluated (*Guide*, p 30)	A					
• Major versus minor surgical procedures are evaluated on a case-by-case basis (*Guide*, p 30)	A					
• Multiple survival procedure justifications in non-regulated species conform to regulated species standards (*Guide*, p 30)	A					
• Animals on food/fluid restriction are monitored to ensure nutritional needs are met (*Guide*, p 31)	A					
• Body weights for food/fluid restricted animals are recorded at least weekly (*Guide*, p 31)	A					
• Daily written records are maintained for food/fluid restricted animals (*Guide*, p 31)	A					
• Pharmaceutical grade chemicals are used , when available, for animal-related procedures (*Guide*, p 31)	A					
• Non-pharmaceutical grade chemicals are described, justified, and approved by IACUC (*Guide*, p 31)	A					
• Investigators conducting field studies know zoonotic diseases, safety issues, laws and regulations applicable in study area (*Guide*, p 32)	A					
• Disposition plans are considered for species removed from the wild (*Guide*, p 32)	A					
• Toe-clipping only used when no alternative, performed aseptically and with pain relief (*Guide*, p 75)	A					

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.)	A				
• Members include a veterinarian, a scientist, a nonscientist, and a nonaffiliated non-lab animal user (*Guide*, p 24)[ii]	A				
• IACUC authority and resources for oversight and evaluation of institution's program are provided (*Guide*, p 14)	A				
• IACUC conducts semiannual evaluations of institutional animal care and use program (PHS Policy, IV.B.)	A				
• Conducts semiannual inspections of institutional animal facilities (PHS Policy, IV.B.)	A				
• IACUC organizationally reports to the Institutional Official (PHS Policy, IV.A.1.b.)	A				
• Methods for reporting and investigating animal welfare concerns are in place (*Guide*, p 23) [must]	A				
• Reviews and investigates concerns about animal care and use at institution[iii] (PHS Policy, IV.B.)	A				
• Procedures are in place for review, approval, and suspension of animal activities[iv] (PHS Policy, IV.B.)	A				
• Procedures are in place for review and approval of significant changes to approved activities (PHS Policy, IV.B.)	A				
• 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)	A				
• Requests for exemptions from major survival surgical procedure restrictions are made to USDA/APHIS[v] (*Guide*, p 30) [must]	A				

6. IACUC Training NEW	**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)	A				
○ Training on how to inspect facilities and labs where animal use or housing occurs (*Guide*, p 17)	A				
○ Training on how to review protocols as well as evaluate the program (*Guide*, p 17)	A				
○ Ongoing training/education (*Guide*, p 17)	A				

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	A				
○ Compiles program review and facility inspection(s) results (includes all program	A				

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

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]	A				
• Veterinary access to all animals is provided (*Guide*, p 14) [must]	A				
• Direct or delegated authority is given to the veterinarian to oversee all aspects of animal care and use (*Guide*, p 14) [must]	A				
• Veterinarian provides consultation when pain and distress exceeds anticipated level in protocol (*Guide*, p 5) [must]	A				
• Veterinarian provides consultation when interventional control is not possible (*Guide*, p 5) [must]	A				
• If part time /consulting veterinarian, visits meet programmatic needs (*Guide*, p 14)	A				
• Regular communication occurs between veterinarian and IACUC (*Guide*, p 14)	A				
• Veterinarian(s) have experience and training in species used (*Guide*, p 15) [must]	A				
• Veterinarian(s) have experience in facility administration/management (*Guide*, p 15)	A				

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)	A				
○ IACUC members (*Guide*, p 17)	A				
○ Animal care personnel (*Guide*, p 16)	A				
○ Research investigators, instructors, technicians, trainees, and students (*Guide*, pp 16-17)	A				
• Continuing education for program and research staff provided to ensure high quality care and reinforce training (*Guide*, pp 16-17)	A				
• Training is available prior to starting animal activity (*Guide*, p 17)	A				
• Training is documented (*Guide*, p 15)	A				
• Training program content includes: (*Guide*, p 17)					
○ Methods for reporting concerns (*Guide*, p 17)	A				
○ Humane practices of animal care (e.g., housing, husbandry, handling) [xii]	A				
○ 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]	A				
○	Research/testing methods that minimize numbers necessary to obtain valid results (PHS Policy, IV.A.1.g.)	A				
○	Research/testing methods that minimize animal pain or distress (PHS Policy, IV.A.1.g.)	A				
○	Use of hazardous agents, including access to OSHA chemical hazard notices where applicable (*Guide*, p 20)	A				
○	Animal care and use legislation (*Guide*, p 17)	A				
○	IACUC function (*Guide*, p 17)	A				
○	Ethics of animal use and Three R's (*Guide*, p 17)	A				

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]	A				
•	Program covers *all* personnel who work in laboratory animal facilities (*Guide*, p 18)	A				
•	Changing, washing, and showering facilities are available as appropriate (*Guide*, p 19)	A				
•	Hazardous facilities are separated from other areas and identified as limited access (*Guide*, p 19)	A				
•	Personnel training is provided based on risk (e.g., zoonoses, hazards, personal hygiene, special precautions, animal allergies) (*Guide*, p 20)	A				
•	Personal hygiene procedures are in place (e.g., work clothing, eating/drinking/smoking policies) (*Guide*, p 20)	A				
•	Procedures for use, storage, and disposal of hazardous biologic, chemical, and physical agents are in place (*Guide*, p 21)	A				
•	Personal Protective Equipment for the work area is appropriate and available (*Guide*, p 21)	A				
•	Program for medical evaluation and preventive medicine for personnel includes:					
○	Pre-employment evaluation including health history (*Guide*, p 22)	A				
○	Immunizations as appropriate (e.g., rabies, tetanus) and tests as appropriate (*Guide*, p 22)	A				
○	Zoonosis surveillance as appropriate (e.g., Q-fever, tularemia, Hantavirus, plague) (*Guide*, p 23)	A				
○	Procedures for reporting and treating injuries, including accidents, bites, allergies, etc. (*Guide*, p 23)	A				
○	Promotes early diagnosis of allergies including preexisting conditions (*Guide*, p 22)	A				
○	Considers confidentiality and other legal factors as required by federal, state and local regulations (*Guide*, p 22) [must]	A				
○	If serum samples are collected, the purpose is consistent with federal and state laws (*Guide*, p 22) [must]					NA
•	Waste anesthetic gases are scavenged (*Guide*, p 21)	A				
•	Hearing protection is provided in high noise areas (*Guide*, p 22)	A				
•	Respiratory protection is available when performing airborne particulate work (*Guide*, p 22)	A				
•	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)	A				
○	Training and implementation of procedures for bites, scratches, or injuries associated with macaques (*Guide*, p 23)	A				
○	PPE is provided including gloves, arm protection, face masks, face shields, or goggles (*Guide*, p 21)	A				
○	Injuries associated with macaques are carefully evaluated and treatment implemented (*Guide*, p 23)	A				
•	Occupational safety and health of field studies is reviewed by OSH committee or office (*Guide*, p 32)	A				

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

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

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

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

3. Surgery	A*	M	S	C	NA
• Surgical outcomes are assessed and corrective changes instituted (*Guide*, p 115)	A				
• Researchers have appropriate training to ensure good technique (*Guide*, p 115) [must]	A				

• Pre-surgical plans are developed and include veterinary input (e.g., location, supplies, anesthetic and analgesic use, peri-operative care, recordkeeping) (*Guide*, p 116)	A					
• Aseptic surgery is conducted in dedicated facilities or spaces, unless exception justified and IACUC approved (*Guide*, p 116)	A					
• Surgical procedures including laparoscopic procedures are categorized as major or minor (*Guide*, pp 117-118)	A					
• For nonsurvival surgery, the site is clipped, gloves are worn and instruments and area are clean (*Guide*, p 118)	A					
• Aseptic technique is followed for survival surgical procedures (*Guide*, pp 118-119)	A					
• Effective procedures for sterilizing instruments and monitoring expiration dates on sterile packs are in place (*Guide*, p 119)	A					
• Procedures for monitoring surgical anesthesia and analgesia are in place (*Guide*, p 119)	A					
• For aquatic species, skin surfaces are kept moist during surgical procedures (*Guide*, p 119)	A					
• 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)	A					

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)	A				
• Selection of analgesics and anesthetics is based on professional veterinary judgment (*Guide*, p 121)	A				
• Painful procedures are monitored to ensure appropriate analgesic management (*Guide*, p 122)	A				
• Nonpharmacologic control of pain is considered as an element of postprocedural care (*Guide*, p 122)	A				
• Procedures are in place to assure antinoception before surgery begins (*Guide*, p 122) [must]	A				
• Guidelines for selection and use of analgesics and anesthetics are in place and regularly reviewed and updated (*Guide*, p 122)	A				
• Special precautions for the use of paralytics are in place to ensure anesthesia[xiv] (*Guide*, p 123)	A				

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

6. Drug Storage and Control NEW	**A***	**M**	**S**	**C**	**NA**
• Program complies with federal regulations for human and veterinary drugs(*Guide*, p 115) [must]	A				
• Drug records and storage procedures are reviewed during facility inspections (*Guide*, p 115)	A				
• Procedures are in place to ensure analgesics and anesthetics are used within expiration date (*Guide*, p 122) [must]	A				
• Anesthetics and analgesics are acquired, stored, and their use and disposal are recorded legally and safely (*Guide*, p 122)	A				

* **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:

Appendices

a. Inspection Dates (pg 44-46)
b. IMHA List and Justifications (pg 47-79)
c. Reduced PAM (pg 80)
d. Complete Inspection Report Summary (pg 81-156)
e. Approved Protocol Exceptions (pg 157-213)
f. Administrative Summary and Graphs (pg 214-231)
g. Expired and Incoming Holding Protocols (pg 232)
h. Repeat Significant Findings (pg 233-234)

Facility Name	Facility Code	Fall 2018	Spring 2019
[redacted]	1	7/20/2018	1/17/2019
	1	7/18/2018	1/9/2019
	1	4/27/2018	10/10/2018
	1	7/20/2018	1/17/2019
	2	7/20/2018	1/9/2019
	2	7/18/2018	1/9/2019
	3	7/20/2018	1/17/2019
	4	7/13/2018	1/22/2019
	5	9/12/2018	3/6/2019
	6	6/19/2018	12/14/2018
	7	8/6/2018	2/5/2019
	8	6/20/2018	12/17/2018
	10	4/16/2018	10/10/2018
	10	4/12/2018	10/30/2018
	10	4/12/2018	10/30/2018
	10	4/12/2018	10/30/2018
	10	4/12/2018	10/30/2018
	10	5/16/2018	11/29/2018
	10	9/26/2018	3/29/2019
	12	5/21/2018	11/19/2018
	12	6/18/2018	12/21/2018
	12	9/18/2018	3/18/2019
	12	9/13/2018	3/25/2019
	12	9/28/2018	3/13/2019
	12	Not applicable	Not applicable
	13	4/26/2018	10/15/2018
	14	8/16/2018	2/18/2019
	15	9/20/2018	3/28/2019
	16	5/23/2018	11/28/2018
	17	7/19/2018	1/8/2019
	18	6/26/2018	12/13/2018
	19	4/18/2018	10/29/2018
	20	8/16/2018	Not applicable
	21	7/20/2018	1/14/2019
	22	9/28/2018	3/26/2019
	22	Not applicable	3/5/2019
		Not applicable	Not applicable
		8/22/2018	2/21/2019

[redacted]	9/11/2018	3/19/2019
	7/16/2018	1/22/2019
	9/25/2018	3/6/2019
	Not applicable	Not applicable
	Not applicable	Not applicable
	Not applicable	Not applicable
	6/29/2018	Not applicable
	9/17/2018	3/21/2019
	8/9/2018	2/19/2019
	4/27/2018	10/25/2018
	6/26/2018	12/13/2018
	9/27/2018	2/15/2019
	9/27/2018	2/4/2019
	8/10/2018	Not applicable
	Not applicable	Not applicable
	8/14/2018	2/18/2019
	Not applicable	Not applicable
	Not applicable	Not applicable
	Not applicable	Not applicable
	Not applicable	Not applicable
	Not applicable	Not applicable
	8/23/2018	2/8/2019
	8/23/2018	3/1/2019
	9/18/2018	3/7/2019
	Not applicable	Not applicable
	8/6/2018	Not applicable
	5/21/2018	11/26/2018
	5/4/2018	11/1/2018
	9/19/2018	Not applicable
	Not applicable	Not applicable
	Not applicable	Not applicable
	8/20/2018	Not applicable
	9/27/2018	3/26/2019
	6/18/2018	12/21/2018
	6/22/2018	1/2/2019
	6/22/2018	1/2/2019
	7/10/2018	1/25/2019
	Not applicable	Not applicable
	4/23/2018	10/16/2018
	8/14/2018	2/25/2019
	5/17/2018	11/2/2018
	8/31/2018	2/28/2019

[redacted]		8/9/2018	2/19/2019
		Not applicable	12/11/2018
		5/15/2018	11/27/2018
		9/24/2018	3/26/2019
		9/18/2018	3/27/2019
		9/18/2018	3/27/2019
		Not applicable	Not applicable
		6/20/2018	12/21/2018
		9/7/2018	2/15/2019
		9/17/2018	3/13/2019
		9/19/2018	3/18/2019
		Not applicable	2/21/2019
		9/26/18 and 9/27/18	3/20/2019
AG Sites:			
Crookston		9/26/18 and 9/27/18	3/20/2019
WCROC Morris		4/19/2018	10/29/2018
Morris Saddle Club		4/19/2018	10/29/2018
Waseca Swine (MSROC)		5/24/2018	12/6/2018
Waseca Dairy (MSROC)		5/24/2018	12/6/2018
Grand Rapids--Beef		6/20/2018	11/15/2018
Rosemount Beef Unit (UMORE beef)		5/22/2018	11/26/2018
Rosemount UMORE Turkey		5/22/2018	11/26/2018
St. Paul Dairy/Beef		6/18/2018	12/14/2018
St. Paul Poultry		6/19/2018	12/14/2018
St. Paul Sheep/Swine		6/21/2018	12/11/2018
St. Paul Cornercopia		6/19/2018	N/A
St. Paul Equine Paddock and Pasture		6/19/2018	12/11/2018

Investigator	Species	Building	Room number	Protocol Number	Justification
Alejandro, Emilyn	mouse	[redacted]	[redacted]	1806-36072A	We need special housing for this mice that is only available in IBP Phenotyping core in [redacted]
Aliota, Matthew	mouse	[redacted]	[redacted]	1804-35828A	The experiments to be performed are to be done at [redacted]
Asakura, Atsushi	mouse	[redacted]	[redacted]	1604-33660A	Locomotor activity in mouse housed in standard cages will be assessed non-invasively by means of infrared passive sensors as described previously. Briefly, mice will be housed individually in cages with the sensor located on the top of each cage. The sensors allow for registration of infra-red radiation (body heat) and its spatial displacement over time. Mice will be kept in the chambers for 7 days total which include an acclimation period as well as a recording period. the animals will be monitored each day by the facility staff– Atsushi Asakura or [redacted]
Bartolomucci, Alessandro	mouse	[redacted]	[redacted]	1701-34522A, 1706-34930A, 1711-35305A	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.

Baughn, Anthony	mouse	[redacted]	[redacted]	1810-36444A	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 [redacted] containment. However, the initial infection procedure and processing of infected mice does present a significant aerosol exposure risk and must be conducted inside the [redacted]. Standard operating procedures for work in the [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	[redacted]	[redacted]	1701-34456A	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.
Bee, Mark	frogs	[redacted]	[redacted]	1701-34456A	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.

Belcher, John	mice	[redacted]	[redacted]	1712-35371A	Mice are implanted with dorsal skin fold chambers in IMHA and then kept warm in humidified 32 degree C incubators in IMHA to minimize body heat loss via the implanted chamber. Three days later, microvascular stasis is meausured using specialized intravital microscopy equipment in the same IMHA.
Benneyworth, Michael	mice	[redacted]	[redacted]	1711-35294A	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 IMHA will enable us to minimize unwanted stress and control out animals' environment to reduce variability in our data
Benneyworth, Michael	mice	[redacted]	[redacted]	1711-35294A	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 IMHA will enable us to minimize unwanted stress and control out animals' environment to reduce variability in our data

Bianco, Richard	sheep, pigs	[redacted]	[redacted]	1605B87801 (SOP); 1606-33922A, 1610-34221A, 1610-34277A, 1703-34665A, 1704-34726A, 1705-34789A, 1707-34942A, 1710-35219A, 1711-35350A, 1802-35610A, 1804-35772A, 1804-35780A, 1806-36011A, 1807-36201A, 1808-36237A, 1810-36420A, 1903-36852A	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	mice	[redacted]	[redacted]	1701-34516A	We received IACUC approval for housing SPF mice in our animal surgery room located in [redacted] in early 2002 and have continuously housed animals for this study there since then. In brief, the equipment needed for this project is required by other personnel in the lab at various times and cannot be moved to an RAR area.
Bischof, John	fish embryos	[redacted]	[redacted]	1804-35844A	Fish embryos will be considered vertebrates after they reach Day 3. They will be housed in NHH from Day 3 to Day 5 for observation. After which any surviving fish will be transferred to the zebrafish core 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 NHH whereas the housing & care of fish post day 5 can be taken care in the zebrafish core. The zebrafish core has experts and an approved protocol for this procedure (#1506-32642A)

Bischof, John	zebrafish embryos	[redacted]	[redacted]	1804-35844A	Fish embryos will be considered vertebrates after they reach Day 3. They will be housed in NHH from Day 3 to Day 5 for observation. After which any surviving fish will be transferred to the zebrafish core 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 NHH whereas the housing & care of fish post day 5 can be taken care in the zebrafish core. The zebrafish core has experts and an approved protocol for this procedure (#1506-32642A)
Bitterman, Peter	fish	[redacted]	[redacted]	1801-35483A	Zebrafish research facility, [redacted] (IMHA) is used only for egg/embryo production
Boe, Gail	fish, birds	[redacted]	***	1806-36052A	For display at UMM
Bold, Tyler	mouse	[redacted]	[redacted]	1812-36571A	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 the [redacted] and caging equipment used for housing the infected animals are designed to reduce the risk of personnel exposure to infectious organisms during husbandry.
Chen, Xiaoli	mouse	[redacted]	[redacted]	1801-35539A	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.

Chen, Xiaoli	mouse	[redacted]	[redacted]	1801-35539A	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.
Collister, John	rats	[redacted]	[redacted]	1602-33485A, 1612-34405A, 1810-36452A	The required equipment using in recording blood pressure and heart rate is located in [redacted]
Cvetanovic, Marija	mouse	[redacted]	[redacted]	1810-36435A	Behavioral test done by behavioral core. Recent studies have shown that even mild stress (handling, injections, and/or novelty exposure) can have significant impact on our outcome measures. The IMHA 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
Cvetanovic, Marija	guinea pigs, frog, rat, mouse	[redacted]	[redacted]	1703-34631A	the proposed animals will be used for a teaching lab taught at the Itasca Biological Research Station at Lake Itasca State Park. This is sufficiently far from the Twin Cities that central RAR housing would not be possible
Denton, Robert	salamanders	[redacted]	[redacted]	1901-36686A	This secured cold room provides controlled conditions necessary to keep the salamanders at a cool temperature.
Desrosiers, Mark	turtle	[redacted]	[redacted]	1810-36465A	There are no turtle housing facilities in Research Animal Resources, and this is a display animal in the libraries

Dudley, Samuel	mouse	[redacted]	[redacted]	1703-34647A, 1704-34710A	Use of telemetry system
Dougherty, Brendan	rat	[redacted]	[redacted]	1704-34724A	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	[redacted]	[redacted]	1808-36330A	We request IMHA for up to 72 hours postop housing of animals undergoing survival surgeries. As described in the text, following a survival surgery the animal is placed in a clean cage and the cage placed in the fume hood in [redacted]. The purpose of this is to facilitate the post-operative evaluation and special care of the mice with implants.
Engeland, William	mouse	[redacted]	[redacted]	1710-35244A	There are two reasons for housing mice in the Jackson Phenotyping Core facility. First it enhances our ability to optimally perform chronic subordinate stress experiments, since the IMHA is the facility being used by our collaborators, Drs. A. Bartolomucci and M. Razzoli who have the experience required to effectively complete these experiments. Secondly, the current housing space in [redacted] is not adequate; there is insufficient space for the cages required for the subordinate stress and more importantly, my collaborators emphasize the importance of minimizing exposure of mice not involved in the experiment to mice undergoing daily bouts of dominant subordinate interactions. Since we house and breed mice for other experiments in [redacted], this space is not available for the subordinate stress experiments
Ervasti, James	mouse	[redacted]	[redacted]	1806-36018A	Our studies involve continuous monitoring of mouse metabolic functions including 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 monitor the animals at all times.

Fallon, Ann	hamsters	[redacted]	[redacted]	1902-36743A	Blood-feeding arthropods cannot be transported to another building to be provided a blood meal.
Ferrington, Deborah	mice	[redacted]	[redacted]	1704-34752A	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 normal RAR facility where a 12/12 cycle of light and dark is maintained.
Firshman, Anna	Horse	[redacted]	[redacted]	1708-35084A	**No Justification provided**
Garry, Mary	pigs	[redacted]	[redacted]	1806-36050A	Young piglets require very close attention and specialized care. This level of care is provided by laboratory personnel.
Gewirtz, Jonathan	mouse	[redacted]	[redacted]	1609-34140A	Animals are to be transported [redacted] for surgical procedures and behavioral experiments that are unavailable within [redacted] Because the current housing is 'conventional', mice must be transported directly to the IMHA (a conventional space).
Graham, Melanie	pigs	[redacted]	[redacted]	1607-33993A	[redacted] is an alternate location to house donor pigs pending organ procurement, primarily utilized when [redacted] housing is full. It has the unique advantage that it is remote from other pig facilities limiting exposure to routine pathogens. Pigs housed at the [redacted] rarely experience swine herd health issues (intestinal pathogens) that include transient diarrhea, inappetence, fever and we attribute this to the relative "isolation" status of this group and barn practices. the unique advantage that it is remote from other pig facilities limiting exposure to routine pathogens.

[redacted]	NHP, mouse, rat	[redacted]	[redacted]	1706-34873A, 1706-34898A, 1706-34903A, 1707-34995A, 1708-35062A, 1805-35937A, 1806-35989A, 1806-36065A, 1808-36291A, 1810-36463A, 1902-36830A, 1903-36845A	We have modified husbandry practices to be optimal for NHP and rodents used in complex disease models. This IMHA 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.
Gregerson, Dale	mouse	[redacted]	[redacted]	1706-34882A	Maintenance of a specific, bright light environment continuously for up to 4 days can not be accommodated in RAR mouse rooms.
Griffith, Thomas	mouse	[redacted]	[redacted]	1608-34062A	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 [redacted] facility.
Hackel, Benjamin	mice	[redacted]	[redacted]	1710-35191A	Mice will be injected IV with 64Cu-labeled proteins. Housing in [redacted] enables them to be kept in a remote, shielded location while radioactivity is present. This radioisotope has a 12.7 hour half life. Mice will be housed between imaging experiments (up to 48 hour post injection). Mice that are not euthanized for excised tissue biodistribution will be housed in [redacted] until radioactivity decays to background (typically 10 half lives (127 hours))
Haskell-Leuvano, Carrie	mice	[redacted]	[redacted]	1702-34552A, 1705-34823A	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	[redacted]	[redacted]	1702-34552A	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	[redacted]	[redacted]	1607-33971A	The [redacted] s a University ESO/ISO (external/internal service organization). [redacted] provides animal testing services, as such, the animals are housed in the IMHA and all services are performed in the IMHA.
Heimpel, George	birds	[redacted]	[redacted]	1804-35830A	The zebra finches will be used to rear a quarantined insect. A certified quarantine facility is therefore needed to do the research
Henke, Craig	mice	[redacted]	[redacted]	1610-34253A	Hypoxia chamber studies
Hove, Mark	fish	[redacted]	[redacted]	1902-36808A	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	[redacted]	[redacted]	1612-34364A, 1803-35684A	1612-34364A: This is a UROP provided by the University of Minnesota- Duluth. We need to house the fish here because it is the only place where there is enough space to hold all (6) of our holding tanks. We also have the rooms in which the tanks will be placed where we can control the amount of light and temperature.
Ikramuddin, Sayeed	mouse	[redacted]	[redacted]	1612-34402A	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	[redacted]	[redacted]	1901-36714A	Animals must be quarantined after MPTP injection (either IM or intracarotid) and are held in a [redacted] 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

Kawakami, Yasuhiko	zebra fish	[redacted]	[redacted]	1608-34031A, 1704-34728A	No RAR housing is available for zebrafish. The zebra fish facility in [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	[redacted]	[redacted]	1712-35414A	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] (Director: Dr. Alessandro Bartolomucci). 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	[redacted]	[redacted]	1701-34527A, 1705-34831A, 1706-34859A, 1902-36754A	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 [redacted] RAR facility we need to use IMHA [redacted]).
Kozak, Kenneth	salamanders	[redacted]	[redacted]	1704-34734A	Transporting salamanders between housing and testing facilities that are in different buildings has the potential to alter their basal metabolic rates by exposing them to sunlight and outdoor temperatures. Given that the animals are tested over a period of several months, this could adversely affect the results of the experiments as the outdoor climate fluctuates
Krook-Magnuson, Esther	mouse	[redacted]	[redacted]	1801-35497A	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	[redacted]	[redacted]	1605-33815A, 1809-36343A	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.

Kyba, Michael	mouse	[redacted]	[redacted]	1708-35046A	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
Langlios, Ryan	mouse, rat	[redacted]	[redacted]	1811-36488A	We are conducting a study that requires rats 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 rats housed in [redacted] facility.
Lee, Anna	mouse	[redacted]	[redacted]	1706-34906A, 1802-35545A	An IMHA is required because the voluntary drug consumption studies must be conducted in home cages in a room with minimal noise and low foot traffic.
Lee, Michael	mouse	[redacted]	[redacted]	1602-33506A	[redacted] will be used for the "Circadian Monitoring". This room ([redacted]) is within the centrally managed RAR location and contains ventilation, ventilated cage rack, and ventilated hood. The animals are being housed here because we need to locate the computer and detection hub to record the animal activity during the procedure. The cage change is done by lab staff by hand as the "specialized" components (water bottle, food hopper) do not survive the automated washing. Main cage will be washed by the RAR.
Lemos, Julia	mouse	[redacted]	[redacted]	1801-35436A	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 IMHA on [redacted] (in a room to be shared with Mark Thomas) 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.

Liang, Jennifer	zebra fish	[redacted]	[redacted]	1703-34641A, 1708-35044A, 1804-35821A	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 (in [redacted]) or on a tray ([redacted]). After that, they will be in the recirculating aquatic system[redacted].
Lin, Gufa	frogs, axolotls	[redacted]	[redacted]	1703-34677A	Tadpoles and axolotl juveniles need to be kept in the lab until feeding is well established and they are large enough to survive in the recirculating aquarium. Secondly, tadpoles or froglets that are under current experimentation, for example receiving daily warm pulse for transgene induction, or being kept in water with an added substance, or requiring regular observation under fluorescence microscope, will be kept in the lab. In the case of the added substance this cannot be done in the RAR area because the aquaria are recirculating type. For ongoing experiments requiring daily intervention the justificaiton is that the tadpoles should not be subjected to frequent water changes and transport unnecessarily, as this may compromise their health and the success of the experiments. Some tadpoles or axolotls will be subjected to recording under light fluorescent microcopies which is not available in RAR facilities
Lowe, Dawn	mice	[redacted]	[redacted]	1607-33935A	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	[redacted]	[redacted]	1605-33798A	Core Facility

Madill, Scott	horses	[redacted]	[redacted]	1605-33766A, 1606-33855A, 1607-33961A, 1607-33962A, 1609-34123A	**No Justification provided**
Malone, Erin	horses, sheep, cow, donkey, goat, camelids	[redacted]	[redacted]	1606-33889A, 1805-35927A	Animals will be housed [redacted] as this is also the location of the student laboratories. By housing the animals near the students and at the lab site, we are able to minimize the risk and stress of transport across campus and to maximize animal use during the relevant time period.
Mand, Sandy	fish, axolotls, reptiles	[redacted]	[redacted]	1605-33816A, 1611-34300A, 1702-34545A, 1705-34846A, 1712-35413A, 1811-36504A	These are animals in laboratory classrooms where students can observe them. This IS their primary housing area, but it is not an RAR facility. RAR does not typically house fish.
Mand, Sandy	fish	[redacted]	[redacted]	1702-34545A	These are animals in laboratory classrooms where students can observe them. 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.
Mand, Sandy	fish	[redacted]	[redacted]	1605-33816A, 1611-34300A, 1702-34545A, 1705-34846A, 1712-35413A	These are animals in laboratory classrooms where students can observe them. This IS their primary housing area, but it is not an RAR facility. RAR does not typically house fish.
Maragi, Frank	fish, amphibians, reptiles	[redacted]	[redacted]	1701-34515A	Fish and reptile species (i.e. turtles) are used in the Department of Biology 'Living Wall' to display animals discussed in Animal Physiology, Developmental Biology, and Genetics courses. It is necessary to house them in the classroom for students to observe during course instruction and discussion.
Martin, Cindy	pigs	[redacted]	[redacted]	1803-35699A	Animals will be undergoing a surgical procedure (arterial switch and atrial septectomy). It is anticipated that animals may need to stay anesthetized and supported by a ventilator for 12-48 hours [redacted] to have time to recover from the surgical procedure.

Martinson, Krishona	Horse	[redacted]	[redacted]	1603-33539A, 1808-36231A	**No Justification provided**
Mashek, Doug	mouse	[redacted]	[redacted]	1704-34729A	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]	1605-33722A, 1806-36051A	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 IMHA will also be housing and caring for additional animals (zebrafish) that are found on other protocols.
Masino, Mark	zebra fish embryos	[redacted]	[redacted]	1605-33712A	Our lab uses embryos/larvae from 1-7dpf for experiments, so we house them in the lab.
Masopust, David	mouse	[redacted]	[redacted]	1609-34184A, 1902-36825A	We are conducting a study that requires mice to be housed in [redacted] facility [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] facility.
McGaugh, Suzanne	fish	[redacted]	[redacted]	1705-34800A	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	fish	[redacted]	[redacted]	1705-34800A	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.

Menken, Jennifer	snake, turtle, salamander, toad, gecko, fish	[redacted]	[redacted]	1611-34357A	The animals listed are part of the educational programming at the [redacted] They are used for display in the "Touch and See Room" 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
Mensinger, Allen	fish, frog	[redacted]	[redacted]	1807-36111A	The course tried to integrate physiology with behavior. We house the frogs in the lab 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 the lab, 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	[redacted]	[redacted]	1604-33658A, 1801-35509A, 1801-35507A, 1903-36856A	Facility was built to specifically house aquatic animals
Mermelstein, Paul	rat	[redacted]	[redacted]	1809-36379A, 1811-36486A	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 Jackson[redacted], which have been specifically modified to allow us to run our behavioral testing protocol. The only housing for rats in Jackson is SPF, 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.
Metzger, Joseph	mouse	[redacted]	[redacted]	1706-34883A	Our lab recently moved to [redacted] is much more accessible for our lab. Previously we have used the [redacted]
Michael, Kerry	rat	[redacted]	[redacted]	1605-33704A	The Morris campus of the University is physically isolated from the rest of the University system--a three hour drive from the Twin Cities campus. It is therefore necessary for the sake of research productivity that we maintain our animals on site at the Morris campus.

Munderloh, Ulrike	mice, hamster	[redacted]	[redacted]	1605-33719A, 1607-33953A, 1804-35774A	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.
Nakagawa, Yasushi	mouse	[redacted]	[redacted]	1712-35389A	Equipment for behavioral tests is housed in [redacted] and it will take up to 8 weeks to complete these tests. Therefore, mice housed in [redacted] need to be located in [redacted] during behavioral testing. During sucrose preference test, we need to house the mice in IMHA.
Netoff, Tay	rat	[redacted]	[redacted]	1704-34730A	We need to video record the rats 24/7 for 15 days to find whether or not they have behavioral seizures
Oliver, Jonathan	mouse	[redacted]	[redacted]	1609-34130A	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. [redacted] was designed with the input and advice of the late Dr. Patrick Manning and brought to standard according to his recommendations. Access to [redacted] is limited to the principal investigators RAR personnel, technicians and students working on these projects. 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, The procedures for handling the animals are written out in detail in our laboratory SOP and all of our laboratory personnel are instructed in the procedures in case of emergency or absence of the principal investigators.
Olson, Erin	fish	[redacted]	[redacted]	1810-36469A	Protocol not yet approved

Ondrey, Frank	mouse	[redacted]	[redacted]	1606-33909A, 1712-35415A, 1806-36059A, 1902-36832A	We have had our own research facility (IMHA) for more than 40 years. This is our own research project, and specialized equipment is housed in the facility.
Ondrey, Frank	mouse	[redacted]	[redacted]	1806-36059A	Mice will be imaged five times each, when radioisotope copper 64 is injected, at Time Zero, and 12, 24, 36 and 48 hours, post injection. During this time the mice will be housed [redacted] This [redacted] is intended to hold radioactive research animals, and is only accessible from [redacted]. Once imaging is complete, these mice will be euthanized via cervical dislocation, under Isoflurane anesthesia. Carcasses will be disposed of in house, allowing the radioactivity to dissipate before disposal. 64Cu has a half life of 12.7 hours. Caging will be collected from [redacted], once radioactivity has dissipated.
Osborn, John	rat	[redacted]	[redacted]	1612-34416A, 1708-35043A, 1805-35904A, 1812-36628A	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
Palmer, Melissa	fish	[redacted]	[redacted]	1711-35315A	The IMHA is needed in order to have the fish species on display for educational purposes. The location of the IMHA is crucial for the purpose of the display and need of the animals.

Patterson, Ned	dog	[redacted]	[redacted]	1901-36697A	For the at least the first 24 hours (and longer at the discretion of the study PI) the dogs will be in the [redacted] that is staffed 24 hours a day by certified veterinary technicians; The [redacted] is for our clinical patients (dog, cat) and is monitored 24 hours a day by a minimum of 2 certified veterinary technicians who check each patient at least once every hour. For any dog out of the RAR housing and [redacted] for more than 1 week, the PI will have another VMC clinician in the appropriate medical area co-manage the case, and the other clinician will have final authority on all medical decisions that are not directly indicated in the protocol or by IACUC guidelines.
Paulsen, Megan	mouse	[redacted]	[redacted]	1708-35022A	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	[redacted]	[redacted]	1610-34220A	The equipment for the exposure of animals to the inhaled aldehyde vapors is in this area
Ponder, Julia	birds	[redacted]	[redacted]	1705-34793A, 1901-36695A	The [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

Portoghese, Phillip	mouse	[redacted]	[redacted]	1702-34546A, 1809-36366A	In a number of our experiments we test the mice for acute tolerance. This requires the animals to be brought up the night before LPS injection wait another 24 hours for testing of the compound and another 48 hours to test the ED80 dose of the drug to see if there is tolerance. for the sickle cell mice, these animals are quite fair and at this time we are unsure how they will respond to the treatment. There will not be a large number being used at one time and we would like to keep them upstairs for 72 hours for observation
Primus, Alexander	fish	[redacted]	[redacted]	1610-34232A	Housing for fish (larger than zebrafish) is not readily avlaiable in RAR facilities (that I am aware of). Also, this lab space is designed for housing aquatic organisms.
Primus, Alexander	fish (various species)	[redacted]	[redacted]	1610-34203A	One of the goals of this course is to train students to manage or work in an aquaponics facility. Therefore students in this course need hands-on experience with live fish. The plant growth facility is also an ideal setting for the course because most aquaponics facilities in north-temperate climates rely on greenhouses for light and heat through winter.
Primus, Alexander	fish	[redacted]	[redacted]	1808-36276A	Fish will require high quality care to eliminate confounding variables of poor fish health for the experiment. Staff at MCL have the expertise and equipment required to maintain this level of care.

Robinson, Jerid	mouse	[redacted]	[redacted]	1607-33989A	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
Rothwell, Patrick	mice	[redacted]	[redacted]	1810-36447A	Our lab studies the effects of behavioral experience on brain function and behavior. My previous studies have shown that even mild stress (handling, injections, and/or exposure to a novel environment) can have significant impact on our outcome measures. The IMHA 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.
Rothwell, Patrick	mice	[redacted]	[redacted]	1810-36447A	Our lab studies the effects of behavioral experience on brain function and behavior. My previous studies have shown that even mild stress (handling, injections, and/or exposure to a novel environment) can have significant impact on our outcome measures. The IMHA 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.

Ruan, Hai-Bin	mice	[redacted]	[redacted]	1702-34582A, 1811-36529A	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 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.
Phelps, Nicholas	fish	[redacted]	[redacted]	1611-34299A	The plant growth facility we will use is also used for the UMN course Hort/FW4601 Aquaponics. It is an ideal setting for the course and our research because most aquaponics facilities in north-temperate climates rely on greenhouses for light and heat through winter.
Schwertfeger, Kaylee	mouse	[redacted]	[redacted]	1609-34120A	We are conducting a study that requires mice to be housed in [redacted] facility [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] facility.
Shimizu, Yoji	mouse	[redacted]	[redacted]	1802-35542A	We are conducting a study that requires mice to be housed in [redacted] facility [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] facility.
Sivaramakrishnan, Sivaraj	cichlids	[redacted]	[redacted]	1805-35886	RAR does not maintain Cichlid facilities
Smanski, Michael	fish	[redacted]	[redacted]	1603-33564A	There is no non-IMHA housing for zebrafish on campus

Smanski, Michael	fish	[redacted]	[redacted]	1603-33564A	To complete the genetic experiments in carp that need to be held in aquaria for experiments and observation. Observations made during these studies will be used to improve natural resource management decisions.
Smanski, Michael	fish	[redacted]	[redacted]	1603-33564A, 1711-35334A	These are animals in a laboratory classroom where students can work with and observe them. This is their primary housing area but it is not an RAR facility. RAR does not typically house fish
Sorensen, Peter	fish	[redacted]	[redacted]	1605-33731A, 1712-35381A	RAR does not possess fish holding facilities that are either large enough or have well water for our carps
Sorensen, Peter	fish	[redacted]	[redacted]	1712-35381A	RAR does not possess fish holding facilities that are either large enough or have well water for our carps.
Spencer, Sade	mouse	[redacted]	[redacted]	1804-35790A, 1804-35806A	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 IMHA [redacted] in a room to be shared with Mark Thomas) 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.
Stephens, David	birds	[redacted]	[redacted]	1707-34943A	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. The [redacted] 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.
Stromnes, Ingunn	mouse	[redacted]	[redacted]	1703-34658A	We are conducting a study that requires mice to be housed in [redacted] facility [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] facility

Thayer, Stanley	rat	[redacted]	[redacted]	1612-34372A	These animals will be used for overnight, 24 hour sessions of EEG testing. Moving them back and forth from Jackson will induce stress. Animals housed for three weeks in IMHA
Thayer, Stanley	rat	[redacted]	[redacted]	1612-34372A	These experiments require that the mice remain isolated to avoid stress that could disrupt behavioral testing.
Thomas, Mark	mice	[redacted]	[redacted]	1711-35337A	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. The IMHA 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
Thomas, Mark	rat	[redacted]	[redacted]	1711-35358A	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. The IMHA 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
Tischler, Anna	mice	[redacted]	[redacted]	1707-34999A, 1709-35107A, 1804-35785A	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] facility 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.

Toth, Ferenc	horse	[redacted]	[redacted]	1608-34076A	**No justification provided**
Townsend, DeWayne	mice	[redacted]	[redacted]	1810-36460A	some of the studies proposed use specialized equipment that cannot be placed into the standard RAR managed rooms
Tranquillo, Robert	sheep	[redacted]	[redacted]	1701-34530A, 1709-35109A	[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. The farm is GLP compliant and is inspected biannually by University of MN IACUC and monthly by RAR veterinarians
Trent, Ava	horse, camelids	[redacted]	[redacted]	1712-35369A	Horses and camelids that are free of infectious disease and are not intended for advanced imaging will be housed at the [redacted] Horses/camelids with potentially infectious disease and/or intended for practice with the advanced imaging modalities will be housed in the [redacted].
Tretyakova, Natalia	mouse	[redacted]	[redacted]	1706-34933A	The equipment for the exposure of animals for the inhalations is in this location, which is the [redacted] IMHA. The [redacted] is an External Service Organization/Internal Service Organization for the University. This study is an ISO project.
Trumble, Troy	horse	[redacted]	[redacted]	1710-35272A, 1902-36738A	**1710-35272A: No Justification provided;** 1902-36738A: RAR does not house horses

Trumble, Troy	horse	[redacted]	[redacted]	1902-36738A	1902-36738A: No other housing option on Twin Cities/St. Paul campus for housing horses
[redacted]	NHP	[redacted]	[redacted]	1605-33678A	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
Wagner, Carston	mouse	[redacted]	[redacted]	1807-36095A	Currently we are approved for IMHA housing and have passed all required inspections for the animals we keep in our lab. The animals we keep in the lab have some type of neuropathy or tumor that requires constant supervision to make sure they are eating, clean bedding and to watch tumor growth. They also require testing more frequently and the stress of moving them back and forth from Diehl hall would provide an additional stress.
Ward, John	frogs	[redacted]	[redacted]	1604-33632A, 1902-36788A	Housing allows daily post operative monitoring by the PI to ensure that the frog does not have negative consequences to surgery
Weaver, Cyprian	newts	[redacted]	[redacted]	1612-34381A	We will be performing the resection surgery on the animals. After surgery they need to be continuously monitored for at least three days of surgery for any kind of discomfort or distress
Waye, Heather	snakes, amphibians	[redacted]	[redacted]	1701-34462A, 1710-35172A, 1711-35353A, 1901-36655A	These animals are housed at UMM where they are used for display purposes or experimental subjects in a variety of classroom situations/laboratory research
Wefel, Sara	horse	[redacted]	[redacted]	1708-35045A	**No Justification provided**

Wiedmann, Timothy	mouse	[redacted]	[redacted]	1610-34236A, 1611-34288A	We have had our own research facility for more than 40 years. This lab is an External Service Organization/Internal Service Organization for the University. This project will be an ESO project.
Wong, Henry	mouse	[redacted]	[redacted]	1803-35719A	In brief, animals for screening are transported to the IMHA and allowed to acclimate for 24 hours prior to the start of any study. The mice are housed for all experimental manipulations for the duration of that particular study since they are tested or administered with compound daily. Animals would experience undue stress being transferred back and forth to the holding room everyday. In addition, the investigator will be more easily able to observe for any adverse effects. The longest duration study is the chronic tolerance test where mice will be housed in the IMHA for a maximum of 9 days. The animals are injected twice a day and are observed for any adverse effects due to the concentration of the compound being administered.
Wong, Henry	mouse	[redacted]	[redacted]	1803-35719A	In brief, animals for screening are transported to the IMHA and allowed to acclimate for 24 hours prior to the start of any study. The mice are housed for all experimental manipulations for the duration of that particular study since they are tested or administered with compound daily. Animals would experience undue stress being transferred back and forth to the holding room everyday. In addition, the investigator will be more easily able to observe for any adverse effects. The longest duration study is the chronic tolerance test where mice will be housed in the IMHA for a maximum of 9 days. The animals are injected twice a day and are observed for any adverse effects due to the concentration of the compound being administered.
Xie, Jiashu	mouse	[redacted]	[redacted]	1602-33510A	The pulse oximeter and telemetry monitor are housed in [redacted]. To used these machines, mice must be housed in [redacted] for the duration of the monitoring.

Zordoky, Beshay	mouse	[redacted]	[redacted]	1807-36187A	The mice for the stress studies will be housed in the [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.

David Stephens	[redacted]
10/18	Quarterly Inspections
11/20	Veterinary Consult
12/18	Quarterly Inspections
1/19	Quarterly Inspections
2/15/19--Semi-annual	No Deficiencies
3/19	Quarterly Inspections

Julia Ponder	[redacted]
10/18	Quarterly Inspections
11/29/18	Veterinary Consult
12/18	Quarterly Inspections
1/19	Quarterly Inspections
2/18/19--Semi-annual	No Deficiencies
3/19	Quarterly Inspections

Cyprian Weaver	[redacted]
10/25/18	Veterinary Consult
11/26/18	Veterinary Consult
12/19/18	Veterinary Consult
1/28/19	Veterinary Consult
2/18/19--PAM/Semi-annual	No Deficiencies
3/25/19	Veterinary Consult

Scott Madill	[redacted]
10/18	Quarterly Inspections
11/18	Quarterly Inspections
12/13/18--Semi-annual	No Deficiencies
1/19	Quarterly Inspections
2/19	Quarterly Inspections
3/26/19	Veterinary Consult

Anthony Baughn	[redacted]
10/15/2018	Veterinary Consult
11/26/18--Semi	No Deficiencies
12/17/2018	Veterinary Consult
1/14/2019	Veterinary Consult
2/25/2019	Veterinary Consult
3/19/2019	Veterinary Consult

Deborah Ferrington	[redacted]
10/18	Quarterly Inspections
11/18	Quarterly Inspections
12/10/18	Veterinary Consult
1/19	Quarterly Inspections
2/19	Quarterly Inspections
3/7/19--Semi-annual	No Deficiencies

Mark Masino	[redacted]
10/18	Quarterly Inspections
11/26/18	Veterinary Consult
12/18	Quarterly Inspections
1/19	Quarterly Inspections
2/19/19--Semi-annual	No Deficiencies
3/19	Quarterly Inspections

David Masopust	[redacted]
10/15/18	Veterinary Consult
11/26/18--Semi-annual	No Deficiencies
12/17/18	Veterinary Consult
1/14/19	Veterinary Consult
2/25/19	Veterinary Consult
3/19/19	Veterinary Consult

Anna Tischler	[redacted]
10/15/18	Veterinary Consult
11/26/18--Semi-annual	No Deficiencies
12/17/18	Veterinary Consult
1/14/19	Veterinary Consult
2/25/19	Veterinary Consult
3/19/19	Veterinary Consult

Philip Portoghese	[redacted]
10/16/18--Semi-annual	Minor: all cages should be properly identified
11/18	Quarterly Inspections
12/18	Quarterly Inspections
1/16/19	Veterinary Consult
2/19	Quarterly Inspections
3/19	Quarterly Inspections

Mark Sanders	[redacted]
10/18/18	Veterinary Consult
11/18	No animals housed for month of November so no inspection conducted
12/20/18	Veterinary Consult
1/19	No housing for month of January so no visit conducted
2/19/19	Veterinary Consult
3/18/19	Veterinary Consult

Melanie Graham	[redacted]
10/24/2018	Veterinary Consult
11/27/2018	Veterinary Consult
12/21/18--Second Surgery/Semi-annual	No Deficiencies
1/2/2019	Veterinary Consult
2/7/2019	Veterinary Consult
3/6/2019	Veterinary Consult

Carrie Haskell-Luevano	[redacted]
11/1/18--PAM/Semi-annual	No Deficiencies

Patrick Rothwell	[redacted]
10/18/2018	Veterinary Consult
11/2/2018	Veterinary Consult
12/19/2018	Veterinary Consult
1/31/2019	Veterinary Consult
2/27/2019	Veterinary Consult
3/19/2019--Second Surgery/Semi-annual	No Deficiencies

Frank Ondrey	[redacted]
10/18	Quarterly inspections
11/18	Quarterly inspections
12/18	PI not housing animals this month so consult not completed
1/4/19	Veterinary Consult
2/19/19	Quarterly inspections
3/6/19--Semi-annual	No Deficiencies

Michael Benneyworth	[redacted]
10/18	No animals house[redacted]ctober so no visit conducted
11/18	No animals housed for month of November so no visit conducted
12/18	No animals housed for month of December so no inspection conducted
1/19	No animals housed for month of January so no inspection conducted
2/19	No animals housed for month of February so no inspection conducted
3/1/19--Semi-annual	Minor: vaporizer overdue for calibration in room 1-134F

Esther Krook-Magnuson	[redacted]
10/25/18	Veterinary Consultation
11/18	No Inspection--Reduced Frequency
12/18/18	Veterinary Consultation
1/19	No Inspection--Reduced Frequency
2/28/19--Second Surgery/Semi-annual	No Deficiencies
3/19	No Inspection--Reduced Frequency

John Collister	[redacted]
10/25/18--Second Surgery/Semi-annual	Significant: buprenophrine not given to rats that are used for training purposes as stated would be done in protocol
	Minor: person acting as surgeon on study not listed as surgeon in protocol (but is listed as staff)
	Minor: two rats had anesthetic induction using both Ketamine/xylazine and Isoflurane although protocol indicates that either one or the other will be used
11/18	PI has closed laboratory, no further housing

Richard Bianco	[redacted]
10/18	No Inspection-Reduced Frequency
11/12/18	Veterinary Consult
12/18	No Inspection--Reduced Frequency
1/8/19--Semi-annual	No Deficiencies
2/19	No Inspection--Reduced Frequency
3/8/19	Veterinary Consult

Mark Thomas	[redacted]
10/17/2018 and 11/2/18	Veterinary Consult
11/14/2018 and 11/28/18	Veterinary Consult
12/12/18 and 12/19/18	Veterinary Consult
1/16/2019	Veterinary Consult
2/27/2019	Veterinary Consult
3/13/2019--Initial Surgery/Semi-annual	Minor: emergency plan overdue for inspection
	Minor: autoclaved items did not have date of sterilization on packaging

John Ward	[redacted]
1/22/19--Semi-annual	No Deficiencies

Sivaraj Sivamakrishnan	[redacted]
10/18/18	Quarterly inspections
11/1/18--Semi-annual	No Deficiencies
12/18	Quarterly inspections
1/19	Quarterly inspections
2/27/19	Veterinary Consultation
3/19	Quarterly inspections

Tim Kurtti	[redacted]
10/18	No Inspection--Reduced Frequency
11/27/18	Veterinary consult
12/18	No Inspection--Reduced Frequency
1/8/19	Veterinary consult
2/19	No Inspection--Reduced Frequency
3/21/19--Semi-annual	No Deficiencies

Gufa Lin	[redacted]
10/18	No animals housed for month of October so no vet consult conducted
11/18	No animals housed for month of November so no vet consult conducted
12/18/18--Initial Surgery only as PI is not currently housing	No Deficiencies
1/19	Quarterly Inspections
2/19	Quarterly Inspections
3/6/19	Veterinary Consult

John Bischof	[redacted]
12/3/2018	Veterinary Consult
1/11/2019	Veterinary Consult
3/1/2019	Veterinary Consult

Tay Netoff	[redacted]
3/27/2019	Veterinary Consult

Alessandro Bartolomucci	[redacted]
10/19/2018	Veterinary Consult
11/15/2018	Veterinary Consult
12/13/2018	Veterinary Consult
1/24/2019	Veterinary Consult
2/21/19--Semi-annual	Minor: tape used in 1-230A to secure documenation in the housing room
3/22/2019	Veterinary Consult

Spring 2019 REDUCED POST APPROVAL MONITORING INSPECTION RESULTS FROM LAST SIX MONTHS (October 2018—March 2019)

#DID NOT QUALIFY OR COMPLETED: 116
#QUALIFIED FOR REDUCED PAM: 47
#QUALIFIED BUT STAGGERED: 0
NO ACTIVE ANIMAL WORK, INACTIVE PROTOCOL, ETC…: 50

Fall 2018 REDUCED POST APPROVAL MONITORING INSPECTION RESULTS FROM LAST SIX MONTHS (April 2018—September 2018)

#DID NOT QUALIFY OR COMPLETED: 133
#QUALIFIED FOR REDUCED PAM: 53
#QUALIFIED BUT STAGGERED: 0
NO ACTIVE ANIMAL WORK, INACTIVE PROTOCOL, ETC…: 62

Spring 2018 REDUCED POST APPROVAL MONITORING INSPECTION RESULTS FROM LAST SIX MONTHS (October 2017—March 2018)

#DID NOT QUALIFY OR COMPLETED: 118
#QUALIFIED FOR REDUCED PAM: 44
#QUALIFIED BUT STAGGERED: 0
NO ACTIVE ANIMAL WORK, INACTIVE PROTOCOL, ETC…: 59

Fall 2017 REDUCED POST APPROVAL MONITORING INSPECTION RESULTS FROM LAST SIX MONTHS (April 2017—September 2017)

#DID NOT QUALIFY OR COMPLETED: 133
#QUALIFIED FOR REDUCED PAM: 38
#QUALIFIED BUT STAGGERED: 0
NO ACTIVE ANIMAL WORK, INACTIVE PROTOCOL, ETC…: 63

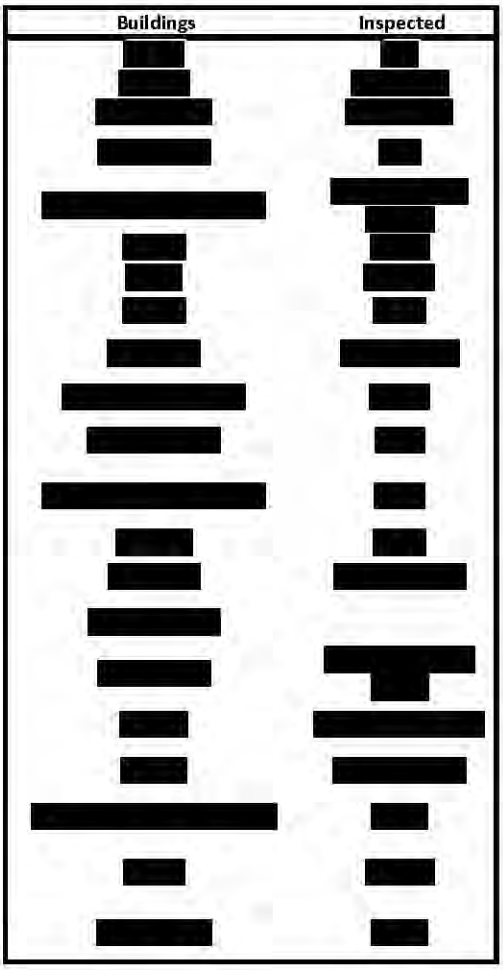
Spring 2017 REDUCED POST APPROVAL MONITORING INSPECTION RESULTS FROM LAST SIX MONTHS (October 2016—March 2017)

#DID NOT QUALIFY OR COMPLETED: 109
#QUALIFIED FOR REDUCED PAM: 38
#QUALIFIED BUT STAGGERED: 0
NO ACTIVE ANIMAL WORK, INACTIVE PROTOCOL, ETC…: 55

Spring 2019 IACUC Inspection Report

Inspection Type	Number	Percentage
# of PAM Inspections	100	35%
# Second Surgery Inspections	54	19%
# of Initial Surgery Inspections	5	2%
#PAM/Semi-Annual	16	6%
#Second Surgery/Semi-annual	12	4%
#Initial Surgery/Semi-annual	6	2%
# of Semi-Annual Inspections	80	28%
# of Ag Inspections	17	6%
Total # of Inspections	**287**	**100%**
Total # of Findings	**194**	

Inspection Finding Summary	Number	Percentage
Finding Category		
IACUC (% of total findings)	163	84%
DEHS (% of total findings)	1	1%
DEHS-CS (% of total findings)	1	1%
IBC (% of total findings)	0	0%
OHS (% of total findings)	12	6%
Ag (% of total findings)	17	9%
Type of Inspection		
PAM (% of total findings)	69	36%
Second Surgery Inspection (% of total findings)	45	23%
Initial Surgery Inspection (% of total findings)	1	1%
Initial Surgery/Semi-annual (% of total findings)	5	3%
Semi-annual (% of total findings)	23	12%
PAM/Semi-annual (% of total findings)	14	7%
Second Surgery/Semi-annual (% of total findings)	10	5%
Ag (% of total findings)	17	9%
Self Report (% total findings)	7	4%
Surgical Records Review (% of total findings)	0	0%
Committee Request (% of total findings)	0	0%
Unannounced visit (% of total findings)	0	0%
Outside reports of non-compliance (% of total	3	2%



* Buildings where animals are housed or used as part of AAALAC Accredited Unit

Type of Finding		
Minor (% of total findings)--Standard	164	85%
Minor (% of total findings)--Other	1	1%
Significant (% of total findings)--Standard	21	11%
Significant (% of total findings)--Other	8	4%

Repeat Findings		
	Spring 2019	**Fall 2018**
Minor -----> Minor:	5	1
Significant -----> Significant:	1	0
Total # of repeat findings	**6**	**1**

Spring 2019 IACUC Inspection Report

SIGNIFICANT Spring 2019		
Findings	**Number**	**Percentage**
Euthanasia methods not followed	1	3%
Analgesics not given after surgical or anesthetic procedures as outlined in protocol	7	24%
Analgesics not given (time/duration) as outlined in protocol**	2	7%
Anesthetic not used when performing procedures but protocol indicates anesthetic will be used	1	3%
Sheep that received sedation did not have vital monitoring performed every 15 minutes but only pre-sedation measurements were obtained	1	3%
Animal work conducted without an approved protocol	2	7%
Lidocaine/bupivacaine not given prior to or after surgery	2	7%
Personnel working with animals but not listed as staff on study	1	3%
Expired anesthetic/ analgesic/euthanasia solution in use	1	3%
Body temperature and oxygen saturation levels low during surgical procedures without any intervention	1	3%
Cage space requirements for pigs not followed--overcrowding in nursery	1	3%
three NHP underwent CT scans for anatomical imaging but CT scans not approved in protocol*	1	3%
Survival surgery conducted on protocol that does not have survival procedures as approved (animals ordered on wrong protocol)	2	7%

SIGNIFICANT Fall 2018		
Findings	**Number**	**Percentage**
Euthanasia methods not followed	0	0%
Analgesics not given after surgical or anesthetic procedures as outlined in protocol	4	17%
Analgesics not given (time/duration) as outlined in protocol	2	9%
Anesthetic not used when performing procedures but protocol indicates anesthetic will be used	0	0%
Work conducted on protocol but continuing review not completed	1	4%
Animal work conducted without an approved protocol*	2	9%
blood collection done on protocol but procedure not approved	1	4%
Personnel working with animals but not listed as staff on study	1	4%
Expired anesthetic/ analgesic/euthanasia solution in use*	6	26%
Imaging of mice conducted more often than approved in protocol	1	4%
live animal imaging under Isoflurane not approved in protocol	1	4%
breeding of animals without approval	1	4%
controlled substances not properly stored	0	0%

mice underwent up to three cardiotoxin injury surgical procedures but protocol does not outline multiple injury surgeries in same animal	1	3%
Animals left unattended in RAR while recovering from anesthesia	1	3%
controlled substances not properly stored	1	3%
Staff euthanizing two cages of mice with CO2 left them in euthanasia chamber unattended	1	3%
due to miscommunication on the weekend treatment sheet, two sheep did not receive antibiotics; last dose of Carprofen or vitals. No pain seen on weekend by vets	1	3%
Report details mouse found on floor of research area that was lethargic and underwent some type of surgical intervention as apparent in surgical repair of chest, animal not properly euthanized by cervical dislocation	1	3%
Total Significant Findings	**29**	100%

Exam/treatment plan card was not on cage for animal being treated for dermatitis and resolution of the condition was written on the card but animal had active lesion for which veterinarian had requested further treatment	1	4%
Mouse found in cage without food, bedding or cage card; animal did have access to water but no health checks were performed by RAR staff since mouse was in unmarked cage; mouse health condition was poor and had to euthanize	1	4%
two rats had unrelieved foot tissue injury from heat testing apparatus	1	4%
Total Significant Findings	**23**	100%

***Reported to OLAW**

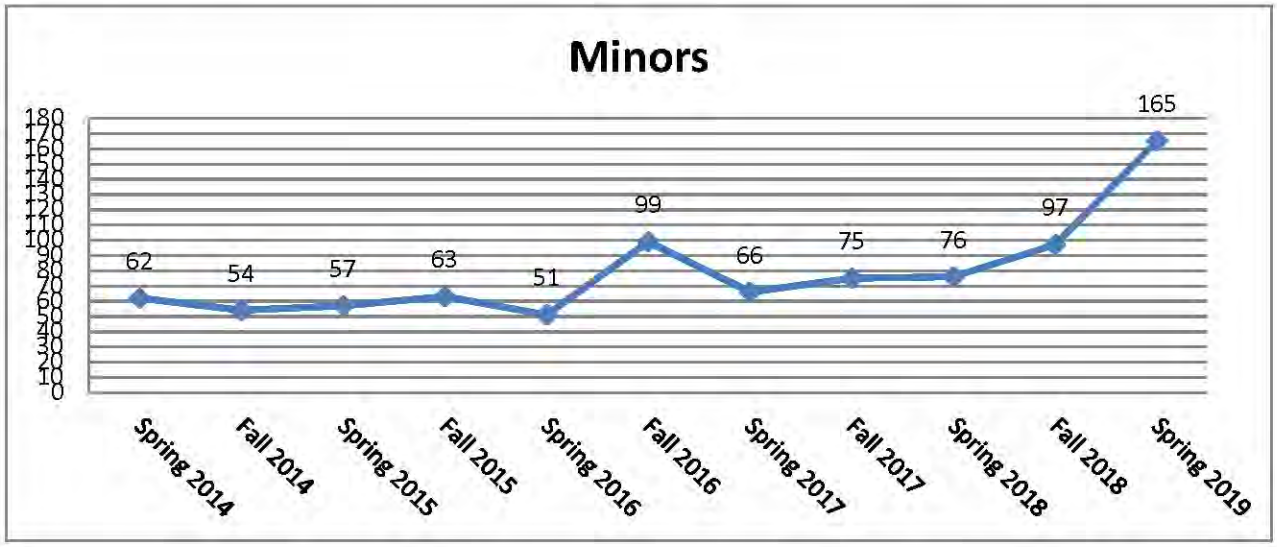
MINOR Spring 2019		
Findings	**Number**	**Percentage**
ROHP	11	7%
IPNF--Expired items	1	1%
IPNF-Surgical Records	7	4%
PNF	49	30%
PNF-Other	1	1%
IPNF--Standard	37	22%
IPNF-Other	0	0%
DEHS	1	1%
DEHS-CS	0	0%
IPNF-Anesthetic Records	11	7%
Ag--Standard	15	9%
Ag--Other	0	0%
IPNF-Personnel Training Records	7	4%
OHS	1	1%
IPNF-Aseptic Technique	18	11%
Husbandry	6	4%
Total Minor Findings	**165**	**100%**

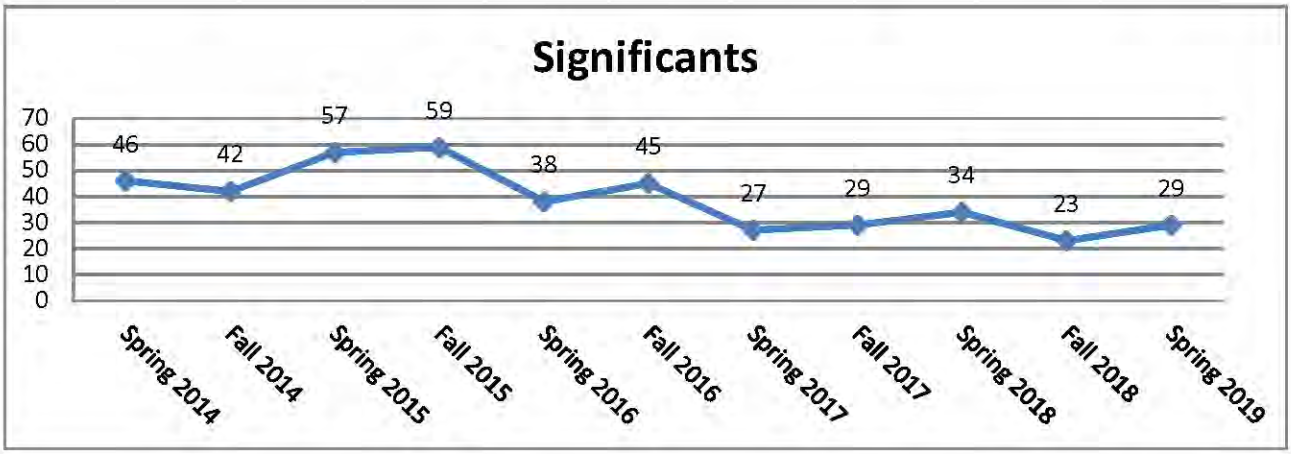
*IPNF: IACUC Policy Not followed

*PNF: Protocol Not Followed

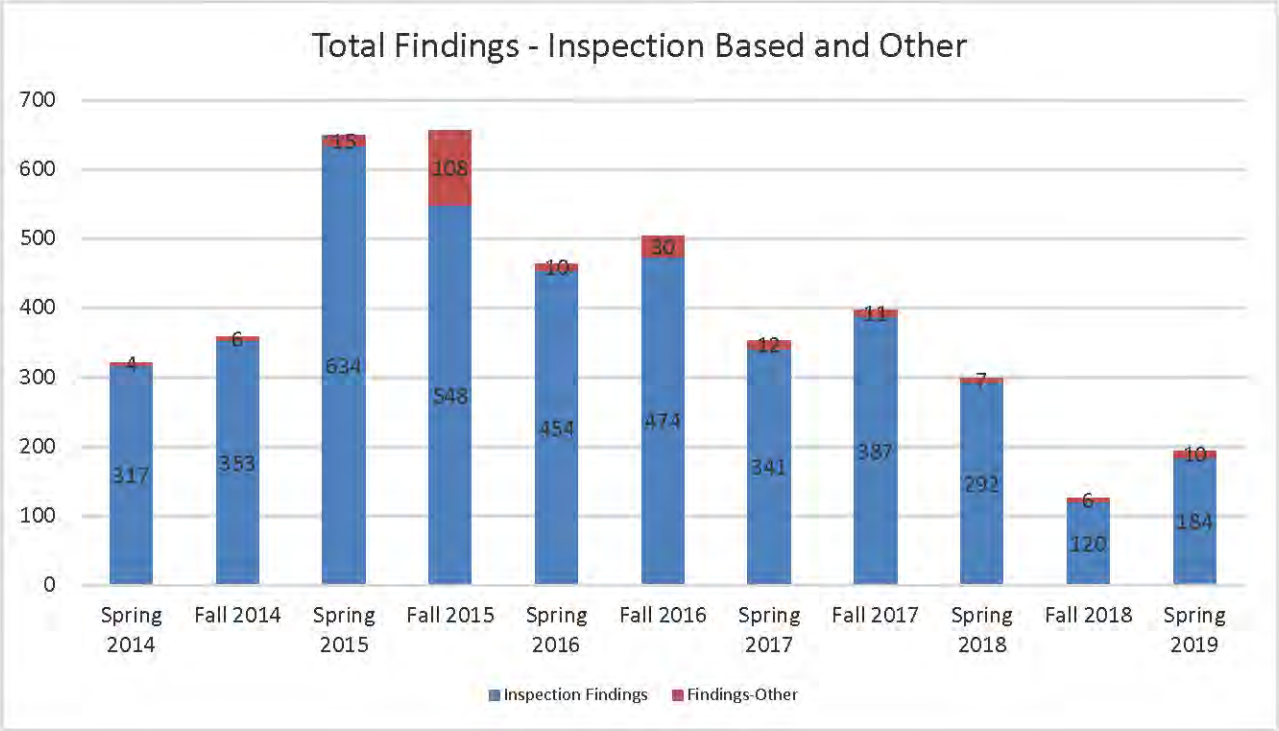
MINOR Fall 2018		
Findings	**Number**	**Percentage**
ROHP	14	14%
IPNF-Surgical Records	6	6%
PNF	27	28%
PNF-Other	2	2%
IPNF--Standard	21	22%
IPNF-Other	0	0%
DEHS	0	0%
DEHS-CS	0	0%
IPNF-Anesthetic Records	10	10%
Ag--Standard	0	0%
Ag--Other	0	0%
IPNF-Personnel Training Records	8	8%
OHS	0	0%
IPNF-Aseptic Technique	7	7%
Husbandry	2	2%
Total Minor Findings	**97**	**100%**

	Spring 2014	Fall 2014	Spring 2015	Fall 2015	Spring 2016	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019
Minors	62	54	57	63	51	99	66	75	76	97	165
Significants	46	42	57	59	38	45	27	29	34	23	29

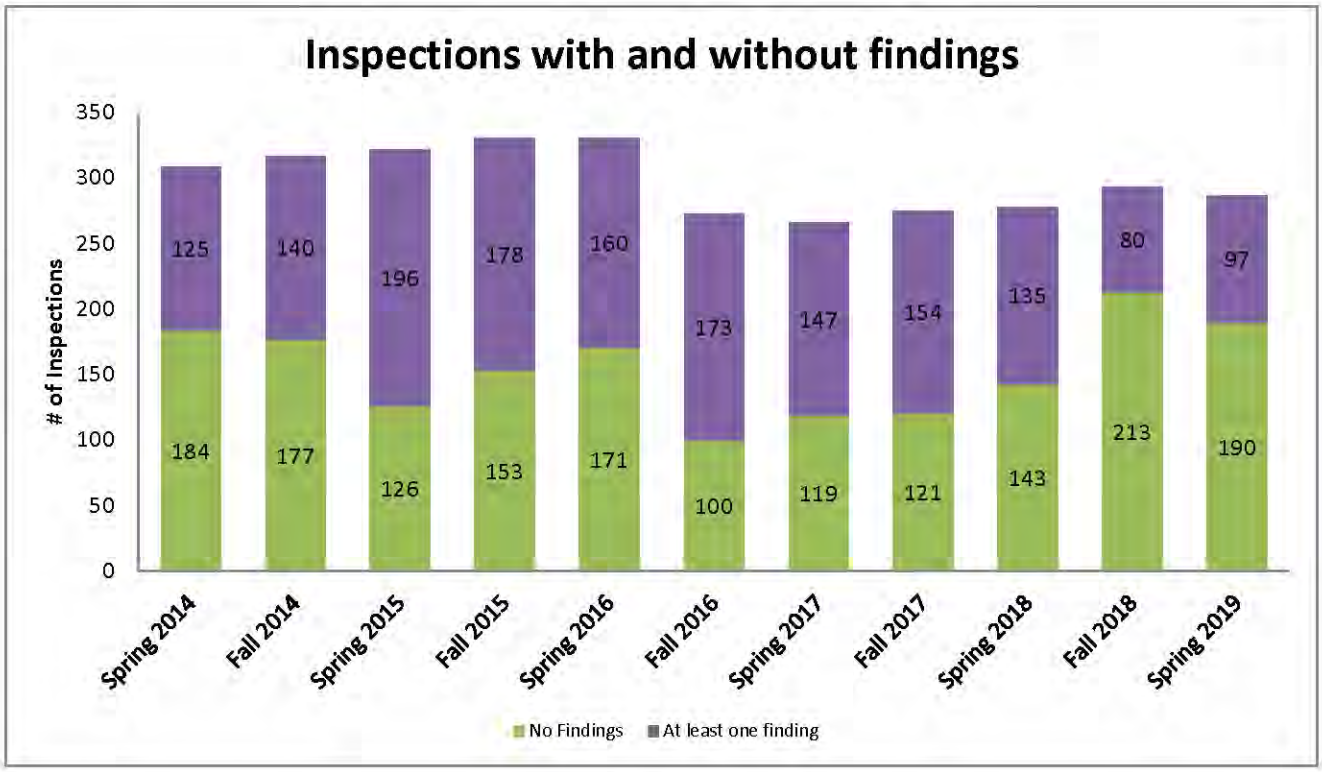




	Spring 2014	Fall 2014	Spring 2015	Fall 2015	Spring 2016	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019
Inspection Findings	317	353	634	548	454	474	341	387	292	120	184
Findings-Other	4	6	15	108	10	30	12	11	7	6	10

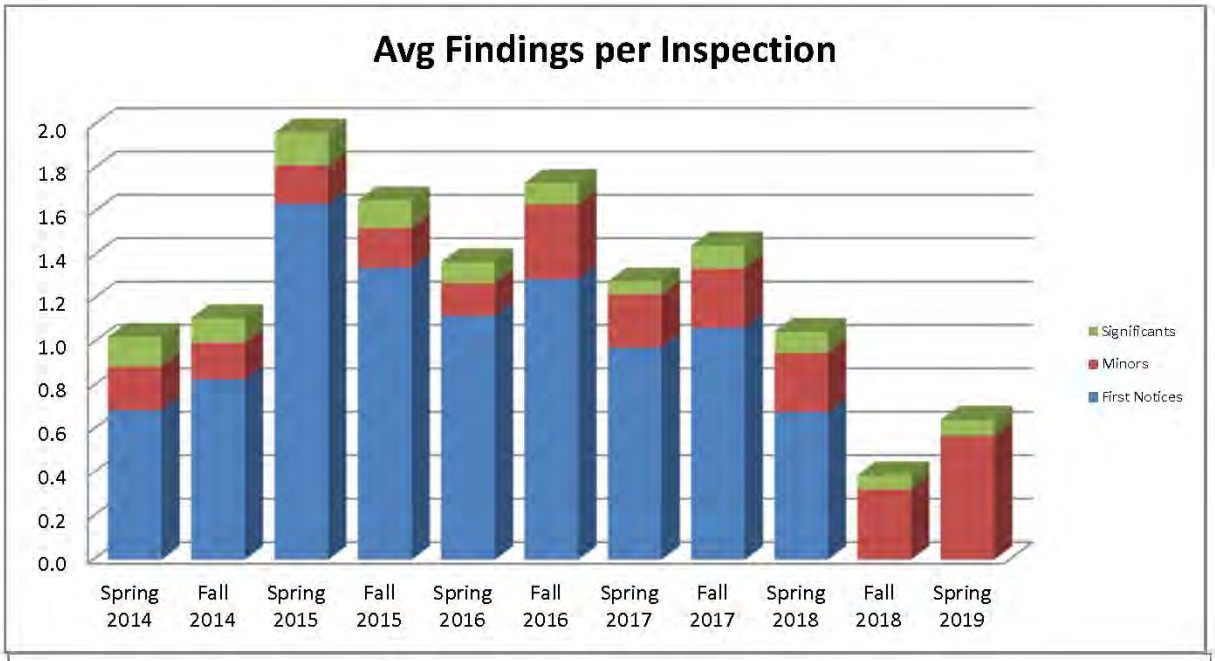


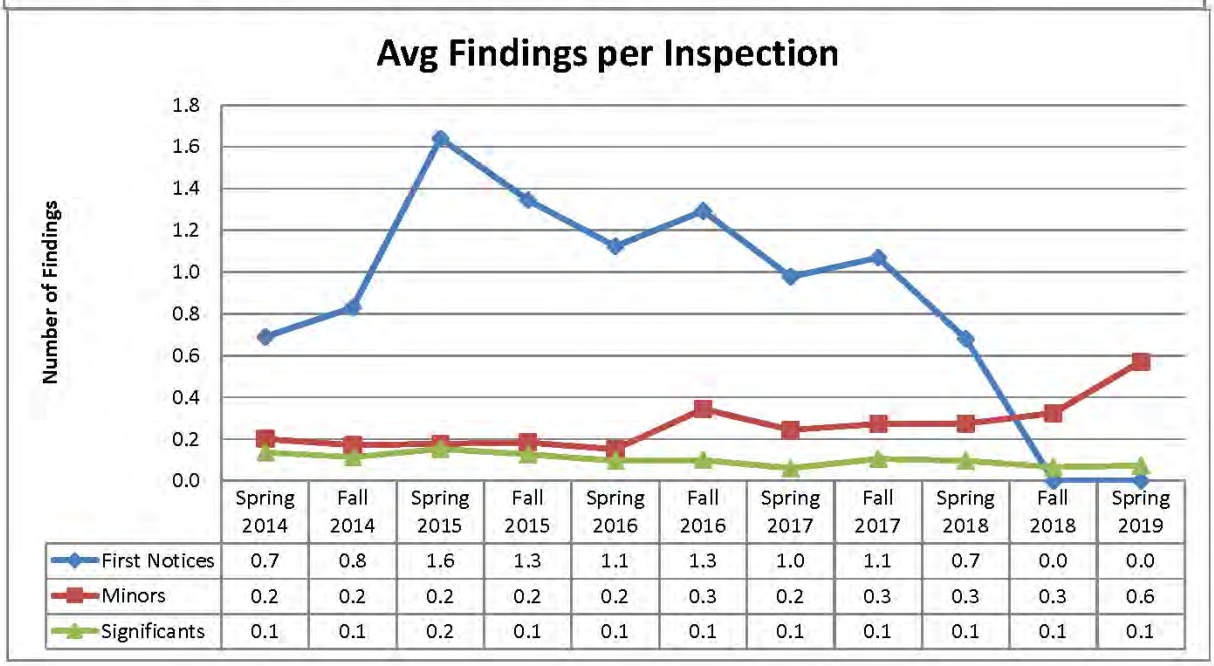
	Spring 2014	Fall 2014	Spring 2015	Fall 2015	Spring 2016	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019
Total Findings-Standard	317	353	634	548	454	474	341	387	292	114	184
Total Inspections	309	317	322	331	331	273	266	275	278	293	287
No Findings	184	177	126	153	171	100	119	121	143	213	190
At least one finding	125	140	196	178	160	173	147	154	135	80	97



	Spring 2014	Fall 2014	Spring 2015	Fall 2015	Spring 2016	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019
Total Inspections	309	317	322	331	331	273	266	275	278	293	287
First Notices	213	263	528	445	372	353	260	294	189	0	0
Minors	62	54	57	61	50	94	65	75	76	95	164
Significants	42	36	49	42	32	27	16	29	27	19	21

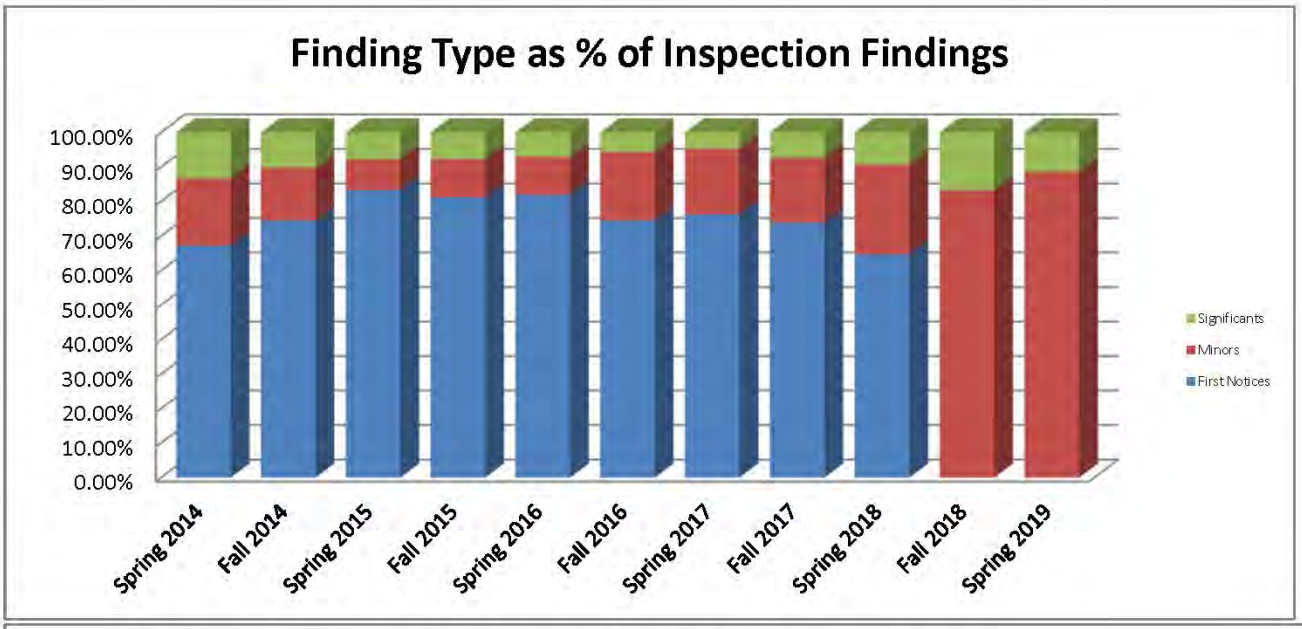
	Spring 2014	Fall 2014	Spring 2015	Fall 2015	Spring 2016	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019
First Notices	0.7	0.8	1.6	1.3	1.1	1.3	1.0	1.1	0.7	0.0	0.0
Minors	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.3	0.6
Significants	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

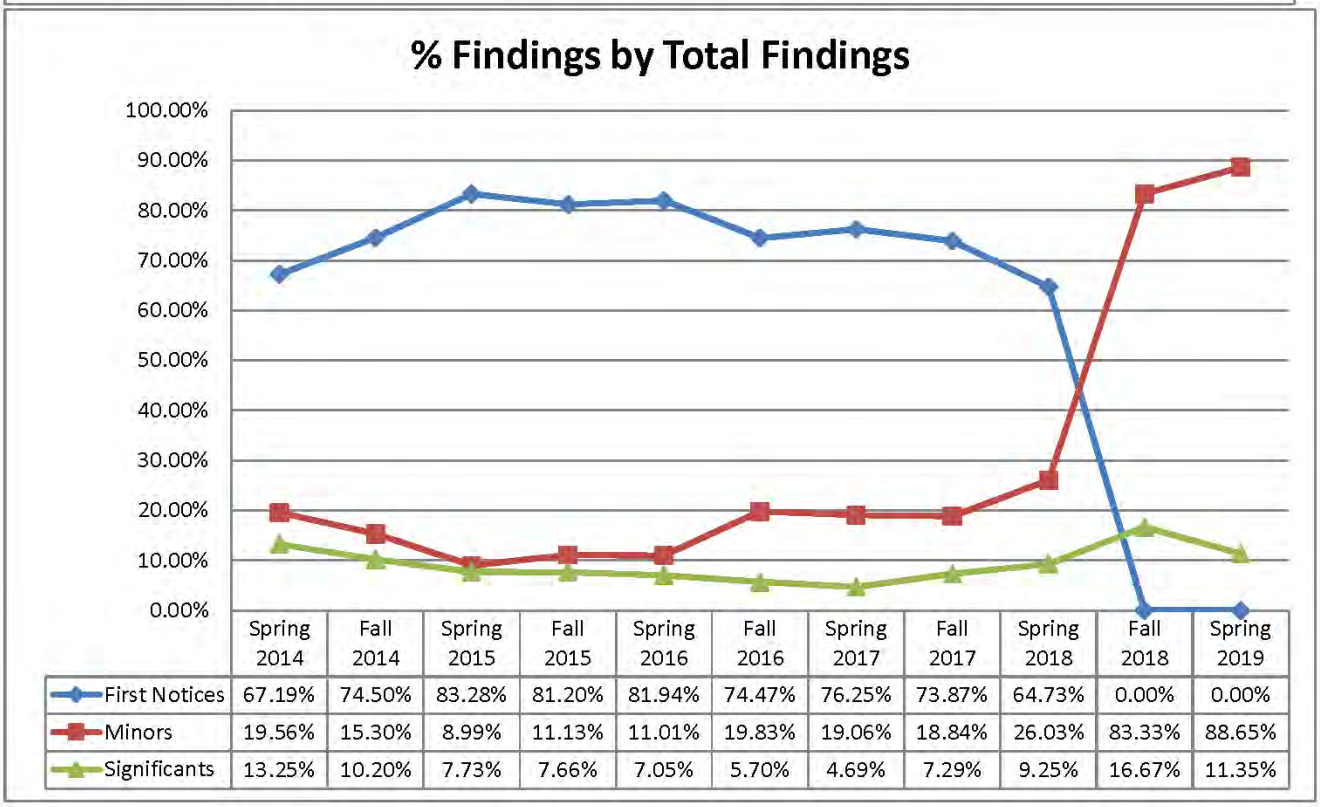




	Spring 2014	Fall 2014	Spring 2015	Fall 2015	Spring 2016	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019
First Notices	0.7	0.8	1.6	1.3	1.1	1.3	1.0	1.1	0.7	0.0	0.0
Minors	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.3	0.6
Significants	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

	Spring 2014	Fall 2014	Spring 2015	Fall 2015	Spring 2016	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019
First Notices	67.19%	74.50%	83.28%	81.20%	81.94%	74.47%	76.25%	73.87%	64.73%	0.00%	0.00%
Minors	19.56%	15.30%	8.99%	11.13%	11.01%	19.83%	19.06%	18.84%	26.03%	83.33%	88.65%
Significants	13.25%	10.20%	7.73%	7.66%	7.05%	5.70%	4.69%	7.29%	9.25%	16.67%	11.35%





	Spring 2014	Fall 2014	Spring 2015	Fall 2015	Spring 2016	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019
First Notices	67.19%	74.50%	83.28%	81.20%	81.94%	74.47%	76.25%	73.87%	64.73%	0.00%	0.00%
Minors	19.56%	15.30%	8.99%	11.13%	11.01%	19.83%	19.06%	18.84%	26.03%	83.33%	88.65%
Significants	13.25%	10.20%	7.73%	7.66%	7.05%	5.70%	4.69%	7.29%	9.25%	16.67%	11.35%

Spring 2019 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
Second Surgery/Semi-annual	[redacted]	[redacted]	John Collister	10/25/2018	IACUC	analgesics not given during surgical procedures as outlined in protocol	analgesics will be given as stated in approved protocol or amendment will be submitted requesting change	10/26/2018	Kristin Pilon and Melanie Graham
Semi-annual	[redacted]	[redacted]	Gail Boe	10/29/2018	IACUC	Protocol not in place for animals housed in greenhouse	protocol has been approved	10/30/2018	Paul Lindstrom and Felicia Boynton
Second Surgery Inspection	[redacted]	[redacted]	Ingunn Stromnes	11/16/2018	IACUC	lidocaine and bupivacaine not used prior to incision as outlined in protocol	amendment submitted to request the use of lidocaine/ bupivacaine be optional	11/26/2018	Ilana Cohen
Second Surgery Inspection	[redacted]	[redacted]	James Lokensgard	12/4/2018	IACUC	cervical dislocation without anesthesia conducted but not approved in protocol	going forward, cervical dislocation will not be used without anesthesia	12/6/2018	Ilana Cohen
PAM	[redacted]	[redacted]	Michael Greminger	12/10/2018	IACUC	buprenorphine not given during non-survival surgical procedures as outlined in protocol	buprenorphine will be given as outlined in protocol	12/11/2018	Kristin Pilon
Ag	[redacted]	[redacted]	Sam Baidoo	12/6/2018	Ag	cage space requirements for pigs not followed--nursery overcrowded	nursery was overcrowded at time of inspection because the buyer was delayed in picking the pigs up and there were no other housing locations due to PRRS outbreak; going forward, precautions will be taken to avoid overcrowding	1/4/2019	Paul Lindstrom and Felicia Boynton
Ag	[redacted]	[redacted]	Pedro Urriola	12/6/2018	Ag	body temperature and oxygen saturation levels low during surgical procedures without any intervention	With regard to body temp: temp probe moved several times reading less than actual values and going forward someone will monitor probe to make sure it stays in place. With regard to O2, they did not observe any other cardio-respiratory complications and concluded it was safe to continue; equipment is certified annually	12/14/2018	Paul Lindstrom and Felicia Boynton

Spring 2019 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]	[redacted]	Andrew Grande	12/18/18 and 12/20/18	IACUC	person performing surgeries on protocol but not listed as staff on study	amendment submitted adding staff to protocol	12/28/2018	Jennifer Borgert
PAM	[redacted]	[redacted]	Andrew Grande	12/18/18 and 12/20/18	IACUC	analgesics not administered for the secondary cut down procedure to inject cells IV (repeat finding)	staff will review protocol to ensure that adequate analgesic is administered	12/28/2018	Jennifer Borgert
PAM/Semi-annual	[redacted]	[redacted]	[redacted]	1/16/2019	IACUC	three NHP underwent CT scans for anatomical imaging but CT scans not approved in protocol*	CT scans discontinued until an amendment can be added and approved	1/22/2019	Kristin Pilon and Melanie Graham
Second Surgery Inspection	[redacted]	[redacted]	Clark Chen	1/18/2019	IACUC	mice underwent intracranial injection surgery but analgesics not given until 24 hours later*	buprenorphine will be given on the day of surgery and for 72 hours following the procedure	1/24/2019	Ilana Cohen
Second Surgery Inspection	[redacted]	[redacted]	Clark Chen	1/18/2019	DEHS-CS	controlled substances not properly stored	safe has been bolted to the wall and all controlled substances are stored in it	1/24/2019	Ilana Cohen
Self Report	[redacted]	[redacted]	Alex Bianco	1/28/2019	IACUC	sheep not sedated for jugular catheter placement as approved in protocol	sheep will be sedated as outlined and staff will thoroughly review all IACUC protocols prior to any study work performed	1/28/2019	Self Report
Self Report	[redacted]	[redacted]	Alex Bianco	1/28/2019	IACUC	sheep that received sedation were to have had vital monitoring performed every 15 minutes but only pre-sedation measurements were obtained	sheep will have vitals taken as outlined and staff will thoroughly review all IACUC protocols prior to any study work performed	1/28/2019	Self Report
Self Report	[redacted]	[redacted]	Alex Bianco	1/28/2019	IACUC	sheep were to have received pre-treatment with flunixin meglumine and been sedated prior to sacrococcygeal (caudal) epidural administration but neither was done	sheep be sedated and receive flunixin as outlined and staff will thoroughly review all IACUC protocols prior to any study work performed	1/28/2019	Self Report
Second Surgery Inspection	[redacted]	[redacted]	Catherine Kotz	2/5/2019	IACUC	expired Lidocaine in use	expired lidocaine has been disposed and new stock will be obtained	2/6/2019	Jennifer Borgert

Spring 2019 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
Outside Report of Non-compliance	[redacted]	[redacted]	Mary Holmberg Johnson	2/11/2019	IACUC	Due to miscommunication on the weekend treatment sheet, Sheep SAMR-8 and SAMR-9 did not receive their antibiotic, last dose of Carprofen or Vitals; no pain or distress noted by the veterinarians	Directions on the weekend treatment sheet will be much more specific so that communication of scheduled treatments will be followed	2/11/2019	Outside Report of Non-compliance
Self Report	[redacted]	[redacted]	Zigang Dong	2/8/2019	IACUC	staff euthanizing two cages of mice but left them unattended while still under the gas	while euthanizing animals, staff will be present going forward	2/8/2019	Self Report
Second Surgery/Semi-annual	[redacted]	[redacted]	Tay Netoff	2/12/2019	IACUC	survival surgery conducted on protocol that does not have survival surgery procedures	animals on this protocol were accidently used for surgery; PI has requested to transfer those animals to the correct protocol	3/8/2019	Paul Lindstrom and Jen Hubbard
Second Surgery/Semi-annual	[redacted]	[redacted]	Tay Netoff	2/12/2019	IACUC	only one dose of analgesic given to animals but approved for 72 hour administration*	going forward, lab will follow protocol and administer meloxicam for 3 days after surgery	3/8/2019	Paul Lindstrom and Jen Hubbard
Second Surgery Inspection	[redacted]	[redacted]	Peter Crawford	2/15/2019	IACUC	protocol states that both meloxicam and buprenorphine will be used for TAC surgeries but only meloxicam was used	both meloxicam and buprenorphine will be administered going forward; PI will further discuss with vet the need for bimodal analgesia for this procedure per feedback from IACUC committee	2/15/2019	Ilana Cohen
Outside Report of Non-compliance	[redacted]	[redacted]	Samuel Dudley	2/13/2019	IACUC	report details that mouse was found on floor of research area that was lethargic and underwent some type of surgical intervention apparent in the surgical repair of the chest; animal euthanized	staff have discontinued the cervical dislocation procedures and will be trained by Dr. Sara Hashway before they reinstate euthanasia procedure; discussion of this welfare incidence will be done at next lab meeting, will submit a protocol amendment for secondary euthanasia method (bilateral thoracotomy under anesthesia)	2/20/2019	Outside Report of Non-compliance

Spring 2019 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
Second Surgery Inspection	[redacted]	[redacted]	Phu Tran	2/28/2019	IACUC	analgesics not given to mice after surgery	lab came to realize that the use of buprenorphine potentially compromises the research; thus, PI will amend protocol to justify the omission of buprenorphine use; no surgery will be performed until an amendment is approved by the IACUC	3/6/2019	Ilana Cohen
PAM	[redacted]	[redacted]	Shalom Michaeli	2/27/2019	IACUC	lidocaine not administered during spinal cord electrode implant procedure	lidocaine will be given going forward	3/5/2019	Jennifer Borgert
Second Surgery Inspection	[redacted]	[redacted]	Michael Kyba	2/28/2019	IACUC	mice underwent up to three cardiotoxin injury surgical procedures without treatment but protocol does not outline multiple injury surgeries in the same animal	amendment will be submitted outlining the multiple injury procedure; procedure will not be conducted until such an amendment is submitted and approved	3/4/2019	Ilana Cohen
Self Report	[redacted]	[redacted]	Jill Siegfried	2/25/2019	IACUC	staff conducted surgery on a protocol that did not have surgery as animals were ordered under the wrong protocol	animals have been transferred to the appropriate protocol	2/28/2019	Self Report
Second Surgery Inspection	[redacted]	[redacted]	Lucy Vulchanova	3/21/2019	IACUC	Lidocaine/bupivacaine not used at time of closure as per approved protocol	going forward, lidocaine/ bupivicaine will be used as approved	3/21/2019	Ilana Cohen

Spring 2019 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]	[redacted]	Syntiron--Christine Sivula	3/26/2019	IACUC	animals left unattended in RAR while recovering from anesthesia	all syntiron employees that are approved to handle animals will be informed about post anesthesia monitoring requirements and directed to re-read the appropriate section of the IACUC protocol; for any procedures that require anesthesia, one person from Syntiron will remain at the U to monitor the mice continuously until they recover; if the monitor needs to leave the room, it will be for no more than 15 minutes	3/27/2019	Self Report
Semi-annual	[redacted]	[redacted]	Erin Olson	3/28/2019	IACUC	protocol not in place for display tank	protocol must be submitted or the tank dismantled by 5/3/19	5/3/2019	Kristin Pilon and Jen Hubbard

Spring 2019 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	Category
Ag	[redacted]	[redacted]	Lee Johnston	10/29/2018	Ag	disaster plan overdue for inspection	plan reviewed and updated	11/15/2018	Jennifer Borgert and Nathan Koewler	Ag
Ag	[redacted]	[redacted]	David Israels-Swenson	10/29/2018	Ag	horses are checked twice daily while in pasture but these checks are not documented	barn checklist template updated to include space to document twice daily checks	11/20/2018	Jennifer Borgert and Nathan Koewler	Ag
Ag	[redacted]	[redacted]	Alfredo DiCostanzo	11/26/2018	Ag	while treatment records were present, additional information is required (symptoms, documentation of daily observations for noted health issues and resolution of issues)	new template will be used going forward that includes all required information	12/19/2018	Jennifer Borgert and Felicia Boynton	Ag
Ag	[redacted]	[redacted]	Alfredo DiCostanzo	11/26/2018	Ag	No personnel training records present for new employees	personnel training record now available for new employee	12/19/2018	Jennifer Borgert and Felicia Boynton	Ag

Spring 2019 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	Category
Ag	[redacted]	[redacted]	Pedro Urriola	12/6/2018	Ag	nursery housing area adjacent to OR with numerous flies/rodent feces making aseptic environment for surgery difficult	area will be cleaned prior to future surgeries	12/14/2018	Paul Lindstrom and Felicia Boynton	Ag
Ag	[redacted]	[redacted]	Pedro Urriola	12/6/2018	Ag	person conducting surgery listed as staff but not listed as a surgeon	amendment submitted adding surgeon	12/26/2018	Paul Lindstrom and Felicia Boynton	Ag
Ag	[redacted]	[redacted]	Sam Baidoo	12/6/2018	Ag	disaster plan overdue for update	disaster plan updated	1/4/2019	Paul Lindstrom and Felicia Boynton	Ag
Ag	[redacted]	[redacted]	Hugh Chester-Jones	12/6/2018	Ag	calf in the automated feeder room had an initial treatment for inflamed eye but no other treatment or observation was noted; vet observed that the eye is still inflamed and painful	vet was called after inspection; calf was treated and has since recovered	1/4/2019	Paul Lindstrom and Felicia Boynton	Ag
Ag	[redacted]	[redacted]	Hugh Chester-Jones	12/6/2018	Ag	disaster plan overdue for review	disaster plan reviewed 1/4/19	1/4/2019	Paul Lindstrom and Felicia Boynton	Ag

Spring 2019 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	Category
Ag	[redacted]	[redacted]	Nicky Overgaard	3/20/2019	Ag	needs to update health and monitoring section of protocol to include the chronic treatment with Equioxx for the geriatric horses	amendment submitted	4/24/2018	Kristin Pilon and Jen Hubbard	Ag
Ag	[redacted]	[redacted]	Nicky Overgaard	3/20/2019	Ag	ziplock bags of Topline feed not placed in rodent proof container	bags placed in a rodent proof container at time of visit	3/20/2019	Kristin Pilon and Jen Hubbard	Ag
Ag	[redacted]	[redacted]	Terrill Giannonatti-Bradford	3/20/2019	Ag	ROHP requirements not met by all staff listed on protocol	all staff now ROHP compliant	3/27/2019	Kristin Pilon and Jen Hubbard	Ag
Ag	[redacted]	[redacted]	Nicky Overgaard	3/20/2019	Ag	open bag of horse food but not located in rodent proof container	open bag of food placed in a rubbermaid container with a lid	4/5/2019	Kristin Pilon and Jen Hubbard	Ag
Ag	[redacted]	[redacted]	Nicky Overgaard	3/20/2019	Ag	feeding study conducted for Nutrition class but activities not approved in protocol	new protocol submitted outlining this study	4/9/2019	Kristin Pilon and Jen Hubbard	Ag

Spring 2019 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	Category
Ag	[redacted]	[redacted]	Terrill Giannonatti-Bradford	3/20/2019	Ag	no training records present for new student members working in the barns	training records will be completed for new members on 4/17/19	4/16/2019	Kristin Pilon and Jen Hubbard	Ag
Semi-annual	[redacted]	[redacted]	Jennifer Erickson	10/10/2018	DEHS	top shelf on metal cart holding IBC blowers is significantly bowed which could cause the stacked items on the shelf to fall on personnel	several units were immediately removed from the shelf; permanent storage facility will be ready on 11/5/18 and units will be stored there	10/24/2018	Kristin Pilon and Dezhi Liao	DEHS
Semi-annual	[redacted]	[redacted]	Gail Boe	10/29/2018	IACUC	expired bird seed	bird seed has been replaced	11/1/2018	Paul Lindstrom and Felicia Boynton	Husbandry
Semi-annual	[redacted]	[redacted]	[redacted]	10/30/2018	IACUC	blood present in NHP play cages (126C) from the previous day and not cleaned as required	Cage cleaned, going forward, RAR asked lab staff to keep play cage calendar up to date so that RAR can clean as required. There is also signage for play cage indicating it can not [illegible]	11/13/2018	Melanie Graham and Brian Crooker	Husbandry

Spring 2019 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	Category
Semi-annual	[redacted]	[redacted]	Xiaoli Chen	11/19/2018	IACUC	high fat diet rodent food expired	expired food disposed of	12/14/2018	Ilana Cohen and Jim Perry	Husbandry
Semi-annual/Second Surgery Inspection	[redacted]	[redacted]	Tay Netoff	2/12/2019	IACUC	daily high low temperatures and humidity not documented in IMHA	temperature and humidity values will be recorded daily	3/8/2019	Paul Lindstrom and Jen Hubbard	Husbandry
Semi-annual	[redacted]	[redacted]	Alessandro Bartolomucci	2/21/2019	IACUC	Tape used in 1-230A to secure documentation to interior housing door	documents and tape residue removed; staff not to tape old protocols in this location	2/25/2019	Kristin Pilon and Laura Hocum Stone	Husbandry
Semi-annual	[redacted]	[redacted]	Scott Madill, Erin Malone and Micky Trent	3/18/2019	IACUC	chipped paint present in stall 2 that could come in contact with the animals	stall not used for research purposes and will be removed from inspection list	3/18/2019	Kristin Pilon and Peggy Norris	Husbandry
Semi-annual	[redacted]	[redacted]	Philip Portoghese	10/16/2018	IACUC	not all cages properly identified	cages will be labeled immediately	10/23/2018	Jennifer Borgert and Felicia Boynton	IPNF

Spring 2019 Minor Findings Report

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PAM/Semi-annual	[redacted]	[redacted]	Kerry Michael	10/29/2018	IACUC	disaster plan overdue for inspection	plan reviewed and updated	11/19/2018	Paul Lindstrom and Felicia Boynton	IPNF
Semi-annual	[redacted]	[redacted]	Andrew Grande	10/30/2018	IACUC	rats not pair housed and no exception in protocol	staff asked to pair house animals	10/30/2018	Melanie Graham and Brian Crooker	IPNF
PAM	[redacted]	[redacted]	Douglas Mashek	11/15/2018	IACUC	SOP not available for cleaning and disinfection of behavioral equipment	SOP now available detailing cleaning and disinfection of behavioral equipment	12/10/2018	Jennifer Borgert	IPNF
PAM	[redacted]	[redacted]	Wei Chen	11/20/2018	IACUC	vaporizer overdue for inspection	vaporizer will be calibrated prior to next procedure	11/29/2018	Kristin Pilon	IPNF

Spring 2019 Minor Findings Report										
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PAM	[redacted]	[redacted]	Wei Chen	11/20/2018	IACUC	pancuronium solution kept in screw top vial and used for up to two months	going forward, pancuronium bromide will be kept in a sterile tube with a septum and will only be kept one month	11/29/2018	Kristin Pilon	IPNF
PAM	[redacted]	[redacted]	Samuel Dudley	11/30/2018	IACUC	fur not removed from animals for non-survival surgery procedures	going forward, fur will be removed for non-survival procedures	12/5/2018	Megan McCoy	IPNF
PAM	[redacted]	[redacted]	Julia Lemos	12/5/2018	IACUC	scissors used for decapitation of adult mice but justification not approved in protocol	amendment submitted adding justification for use of scissors	12/20/2018	Kristin Pilon	IPNF
PAM	[redacted]	[redacted]	Julia Lemos	12/5/2018	IACUC	preparation dates missing from autoclaved material	autoclave packages will be clearly labeled with autoclave date	12/20/2018	Kristin Pilon	IPNF

Spring 2019 Minor Findings Report

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PAM	[redacted]		Demetri Yannopoulos	12/10/2018	IACUC	while person is listed as staff on protocol they are not listed as surgeon, needs to add training and relative experience for conducting surgery to protocol	amendment submitted adding surgeon	12/20/2018	Kristin Pilon	IPNF
Second Surgery/Semi-annual			Brendan Dougherty	12/11/2018	IACUC	pancuronium bromide solution kept for up to 8 months	new pancuronium was ordered; new solutions will be dated to expire in 30 days until amendment is submitted and approved allowing longer storage	12/13/2018	Kristin Pilon and Dan Montonye	IPNF
Second Surgery Inspection			Ratan Banik	1/10/2019	IACUC	eye ointment not used for anesthetic procedures	eye ointment will be used for all future procedures	2/4/2019	Jennifer Borgert	IPNF
PAM			Marija Cvetanovic	1/18/2019	IACUC	animals singly housed but no exception in protocol	amendment submitted requesting exception for single housing	1/25/2019	Jennifer Borgert	IPNF
PAM			Marija Cvetanovic	1/18/2019	IACUC	SOP not in place for cleaning/disinfection of behavioral equipment	SOP now in place; staff being trained	1/25/2019	Jennifer Borgert	IPNF

Spring 2019 Minor Findings Report

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PAM	[redacted]		Jocelyn Richard	1/23/2019	IACUC	person conducting surgeries not listed as a surgeon on protocol	amendment submitted adding surgeon to protocol	2/6/2019	Kristin Pilon	IPNF
Second Surgery Inspection			Erik Finger	1/28/2019	IACUC	anesthetic depth assessments not conducted every 15 minutes as required	anesthetic depth will be checked and documented	2/15/2019	Megan McCoy	IPNF
Second Surgery Inspection			Erik Finger	1/28/2019	IACUC	person performing surgeries not listed as a surgeon on the protocol	amendment submitted adding surgeon to procedure	2/15/2019	Megan McCoy	IPNF
Second Surgery Inspection			Alfonso Araque	1/31/2019	IACUC	person performing surgeries not listed as a surgeon on the protocol	amendment submitted adding surgeon to protocol	2/6/2019	Ilana Cohen	IPNF

Spring 2019 Minor Findings Report

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PAM	[redacted]		Jan Czyzyk	2/5/2019	IACUC	non-pharmaceutical grade streptozotocin used but no justification in protocol	amendment submitted adding justification for using non-pharmaceutical grade STZ	2/12/2019	Kristin Pilon	IPNF
Semi-annual			Mark Desrosiers	2/21/2019	IACUC	animal use tutorial not completed by one staff member	staff member has completed AUT	3/15/2019	Kristin Pilon and Felicia Boynton	IPNF
Semi-annual			Mark Desrosiers	2/21/2019	IACUC	signage on how to report animal welfare concerns not posted	animal welfare signage posted at the turtle's habitat	3/15/2019	Kristin Pilon and Felicia Boynton	IPNF
Semi-annual			Mark Desrosiers	2/21/2019	IACUC	needs to add to daily checklist vermin trap check	live trap check added to daily checklist and water quality added to weekly checklist	3/15/2019	Kristin Pilon and Felicia Boynton	IPNF

Spring 2019 Minor Findings Report

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Semi-annual	[redacted]		Michael Benneyworth	3/1/2019	IACUC	vaporizer overdue for calibration in 1-134F	vaporizer will be calibrated 3/12 and will not be used until calibration complete	3/4/2019	Kristin Pilon	IPNF
Initial Surgery/Semi-annual			Mark Thomas	3/13/2019	IACUC	decapitation log not kept	decapitation log now in place	4/2/2019	Ilana Cohen	IPNF
Initial Surgery/Semi-annual			Mark Thomas	3/13/2019	IACUC	barrier not used between animal and gas anesthetic	isoflurane box has been modified so that animals cannot come into contact with the isoflurane	4/2/2019	Ilana Cohen	IPNF
Initial Surgery/Semi-annual			Mark Thomas	3/13/2019	IACUC	wood stands used for cages not currently sealed	wood replaced with a sterilizable option	4/2/2019	Kristin Pilon and Peggy Norris	IPNF

Spring 2019 Minor Findings Report

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Semi-annual	[redacted]	[redacted]	Yuying Liang	3/26/2019	IACUC	anesthetic vaporizer overdue for inspection	vaporizer will be calibrated as soon as possible and prior to any further anesthetic procedures	4/1/2019	Paul Lindstrom and Brian Crooker	IPNF
PAM	[redacted]	[redacted]	Robert Lloyd	3/28/2019	IACUC	No SOP available for cleaning/disinfection of behavioral equipment	An SOP has been placed in the lab book for cleaning/disinfectiof behavioral equpiment	4/3/2019	Jennifer Borgert	IPNF
PAM/Semi-annual	[redacted]	[redacted]	Allen Mensinger	3/28/2019	IACUC	justification for non-pharmaceutical grade paralytic not outlined in protocol	renewal of protocol 1604-33658A includes justification	4/9/2019	Kristin Pilon and Jen Hubbard	IPNF
PAM/Semi-annual	[redacted]	[redacted]	Allen Mensinger	3/28/2019	IACUC	preparation and storage of pancuronium bromide does not meet IACUC policy	pancuronium bromide will be stored in septum bottles going forward	4/9/2019	Kristin Pilon and Jen Hubbard	IPNF

Spring 2019 Minor Findings Report

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PAM/Semi-annual	[redacted]		Allen Mensinger	3/28/2019	IACUC	prepared pancuronium bromide kept longer than 30 days	amendment submitted to keep drug longer than 30 days	4/15/2019	Kristin Pilon and Jen Hubbard	IPNF
Semi-annual			DeWayne Townsend	3/29/2019	IPNF	sign on animal door identified that a hazardous/toxic substance was in use but did not identify the actual substance	cards have been relabeled to include the hazard name	4/9/2019	Paul Lindstrom and Peggy Norris	IPNF
PAM			Rocio Gomez-Pastor	10/18/18 and 10/29/18	IACUC	pH of Avertin not taken prior to use	pH of avertin will be taken prior to each use	10/29/2018	Kristin Pilon	IPNF
PAM			Andrew Grande	12/18/18 and 12/20/18	IACUC	fur not removed for non-survival surgery procedure	fur will be removed in all future procedures	12/28/2018	Jennifer Borgert	IPNF
Second Surgery Inspection			Alonso Guedes	12/3/2018	IACUC	vaporizer needs to be calibrated (put into use after sitting)	vaporizer will be calibrated before it is used	12/20/2018	Kristin Pilon	IPNF

Spring 2019 Minor Findings Report

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PAM	[redacted]		Alik Widge	1/10/2019	IACUC	SOP not in place for cleaning/disinfection of behavioral equipment	SOP now in place; staff being trained	1/22/2019	Kristin Pilon	IPNF
Initial Surgery/Semi annual			Mark Thomas	3/13/2019	IACUC	emergency plan overdue for review	plan has been reviewed and date changed	3/13/2019	Kristin Pilon and Peggy Norris	IPNF
PAM			Zigang Dong and Kim Klukas	11/28/2018	IACUC	while cage cards kept of those animals used for training, there is no documentation of what was done to the animals including records of sedation, procedure, etc...)	cage cards have been updated with a section where the procedure can be noted; also, an excel spreadsheet will be used to track all procedures and euthanasia	12/4/2018	Kristin Pilon	IPNF-Anesthetic Records
PAM			Micky Trent	12/13/2018	IACUC	anesthetic records missing required monitoring information	memo sent to all faculty and house officers informing them of record keeping requirements	1/10/2019	Paul Lindstrom	IPNF-Anesthetic Records
Second Surgery Inspection			Daniel Vallera	12/19/2018	IACUC	no anesthetic records kept	anesthetic records now available; going forward anesthetic records will be kept	1/10/2019	Paul Lindstrom	IPNF-Anesthetic Records

Spring 2019 Minor Findings Report										
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PAM	[redacted]		Alik Widge	1/10/2019	IACUC	anesthetic records not kept for perfusion procedures	anesthetic records now kept	1/22/2019	Kristin Pilon	IPNF-Anesthetic Records
PAM			Yinduo Ji	2/7/2019	IACUC	anesthetic records not kept	going forward, anesthetic records will be kept of all anesthetic procedures	2/11/2019	Paul Lindstrom	IPNF-Anesthetic Records
PAM			Matthew Aliota	2/13/2019	IACUC	anesthetic records not kept	anesthetic records now kept for all sedation procedures	2/26/2019	Kristin Pilon	IPNF-Anesthetic Records
PAM/Semi-annual			Sandy Mand	2/15/2019	IACUC	anesthetic records not kept	anesthetic records will be kept going forward	2/27/2019	Paul Lindstrom and Don Martin	IPNF-Anesthetic Records
Second Surgery Inspection			Peter Crawford	2/15/2019	IACUC	anesthetic records not kept	anesthetic records are kept by Pilar; they will be given to lab for review during inspections	2/21/2019	Ilana Cohen	IPNF-Anesthetic Records

Spring 2019 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	Category
PAM	[redacted]		R. Scott McIvor	2/19/2019	N/A	anesthetic records not available for review	records submitted to IACUC for review	3/25/2019	Megan McCoy	IPNF-Anesthetic Records
PAM			Rocio Gomez-Pastor	10/18/18 and 10/29/18	IACUC	anesthetic records not kept	anesthetic records will be kept for perfusion procedures	10/29/2018	Kristin Pilon	IPNF-Anesthetic Records
Second Surgery Inspection			Ingunn Stromnes	11/16/2018	IACUC	anesthetic records not kept (repeat finding)	going forward, all anesthetic events will be logged	11/26/2018	Ilana Cohen	IPNF--Anesthetic Records

Spring 2019 Minor Findings Report

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PAM	[redacted]		Tim Starr	11/30/2018	IACUC	exam gloves used for surgical procedures	going forward, surgeon's gloves will be used	12/11/2018	Paul Lindstrom	IPNF-Aseptic Technique
PAM/Semi-annual			Richard Bianco	12/17/2018	IACUC	expired surgical rodent packs in [redacted]	expired items removed to be re-sterilized; lab will be more diligent going forward	1/15/2019	Kristin Pilon and Sara Hashway	IPNF-Aseptic Technique
PAM			Alik Widge	1/10/2019	IACUC	hair covering not worn during surgical procedures	hair covering will be worn going forward	1/22/2019	Kristin Pilon	IPNF-Aseptic Technique
PAM			Alik Widge	1/10/2019	IACUC	sterilize packs did not have preparation date	going forward, preparation dates will be included on sterilized packs	1/22/2019	Kristin Pilon	IPNF-Aseptic Technique

Spring 2019 Minor Findings Report

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PAM/Semi-annual	[redacted]		Ben Hayden	1/16/2019	IACUC	gauze kept in containers with diluted Novalsan are used to clean cap margins but liquid is expired	switching to chloroprep applicators for cleaning margins; will use smaller bags and discard after one week of being opened	1/22/2019	Kristin Pilon and Melanie Graham	IPNF-Aseptic Technique
Second Surgery Inspection			Cheuk Leung	1/24/2019	IACUC	mask and hair covering not worn during surgical procedures	going forward, mask and hair covering will be worn during surgical procedures	2/8/2019	Ilana Cohen	IPNF-Aseptic Technique
Semi-annual/Second Surgery Inspection			Tay Netoff	2/12/2019	IACUC	proper surgical attire not worn during surgical procedures	lab will start using hair covering and sterile surgeon's gloves are used	3/8/2019	Paul Lindstrom and Jen Hubbard	IPNF-Aseptic Technique
PAM			Michael Olin	2/14/2019	IACUC	hair covering not worn during surgical procedures	going forward, hair covering will be worn for all surgeries	3/8/2019	Jennifer Borgert	IPNF-Aseptic Technique
PAM			Michael Olin	2/14/2019	IACUC	operates on more than six animals with same surgical pack	going forward, no more than six animals will be used per sterilized pack	3/8/2019	Jennifer Borgert	IPNF-Aseptic Technique

Spring 2019 Minor Findings Report

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Second Surgery Inspection	[redacted]		Peter Crawford	2/15/2019	IACUC	surgical mask not worn during surgical procedures as required	mask will be worn going forward	2/21/2019	Ilana Cohen	IPNF-Aseptic Technique
Second Surgery Inspection			Michael Kyba	2/28/2019	IACUC	expired betadine in use	expired betadine disposed of and replaced	3/4/2019	Ilana Cohen	IPNF-Aseptic Technique
PAM			Benjamin Saunders	3/6/2019	IACUC	ethanol pads used as part of skin disinfection process were expired	disposed during visit	3/6/2019	Kristin Pilon	IPNF-Aseptic Technique
PAM			Benjamin Saunders	3/6/2019	IACUC	exam gloves worn during surgical procedures	going forward, sterile surgeon gloves will be used	3/13/2019	Kristin Pilon	IPNF-Aseptic Technique
PAM			Benjamin Saunders	3/6/2019	IACUC	surgical instruments not completely sterilized prior to surgery	for future surgeries, instruments will be sterilized either by autoclave or chemical sterilant	3/13/2019	Kristin Pilon	IPNF-Aseptic Technique

Spring 2019 Minor Findings Report

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Initial Surgery/Semi annual	[redacted]		Mark Thomas	3/13/2019	IACUC	sterilize surgical instruments did not have sterilization date on packaging	packs have been labeled	3/13/2019	Kristin Pilon and Peggy Norris	IPNF-Aseptic Technique
Semi-annual			Sheryl Ferguson	3/18/2019	IACUC	expired surgical supplies in [redacted]	expired items removed	3/27/2019	Kristin Pilon and Peggy Norris	IPNF-Aseptic Technique
Semi-annual			Sheryl Ferguson	3/18/2019	IACUC	[redacted] has blood on floor in multiple places	floor has been cleaned	3/27/2019	Kristin Pilon and Peggy Norris	IPNF-Aseptic Technique
Semi-annual			Sheryl Ferguson	3/18/2019	IACUC	cloth chair in surgical area [redacted]	chair has been removed	3/27/2019	Kristin Pilon and Peggy Norris	IPNF-Aseptic Technique
Second Surgery Inspection			Erik Finger	1/28/2019	IACUC	betadine swabs used for surgery expired	new swabs will be purchased	2/15/2019	Megan McCoy	IPNF-Expired Items

Spring 2019 Minor Findings Report										
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PAM	[redacted]		Do-Hyung Kim	10/24/2018	IACUC	personnel training records not in lab (repeat finding)	personnel training records submitted to IACUC and will be kept in lab	11/7/2018	Megan McCoy	IPNF-Personnel Training Records
PAM			Sunil Kumar	11/12/2018	IACUC	personnel training records not kept	training records now available	12/11/2018	Kristin Pilon	IPNF-Personnel Training Records
Second Surgery Inspection			Daniel Vallera	12/19/2018	IACUC	limited personnel training records kept	training records now available for staff	1/10/2019	Paul Lindstrom	IPNF-Personnel Training Records
Second Surgery Inspection			Erik Finger	1/28/2019	IACUC	limited personnel training records	records updated to reflect current training	2/15/2019	Megan McCoy	IPNF-Personnel Training Records
PAM			Matthew Aliota	2/13/2019	IACUC	personnel training records not kept	training documentation now kept and available in lab for review	2/26/2019	Kristin Pilon	IPNF-Personnel Training Records

Spring 2019 Minor Findings Report

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PAM	[redacted]		Shalom Michaeli	2/27/2019	IACUC	training records not kept for new staff member	new staff member now has training record added to binder	3/5/2019	Jennifer Borgert	IPNF-Personnel Training Records
PAM			Whitney Knauer	3/27/2019	IACUC	personnel training records not kept for staff	personnel training records now available to staff on protocol	4/15/2019	Jennifer Borgert	IPNF-Personnel Training Records
PAM			Demetri Yannopoulos	12/10/2018	IACUC	no documentation of intracranial pressure measurements or lidocaine administration for protocol 1802-35586A even though some animals received this procedure	going forward records will include documentation of intracranial pressure measurement and lidocaine administrations	12/20/2018	Kristin Pilon	IPNF-Surgical Records
Second Surgery Inspection			Daniel Vallera	12/19/2018	IACUC	no surgical or post operative records for latest surgery	surgical records now available; going forward, surgical and post-op records will be kept	1/10/2019	Paul Lindstrom	IPNF-Surgical Records
Second Surgery Inspection			Erik Finger	1/28/2019	IACUC	surgical records not kept for non-survival surgery procedures	going forward, records will be kept	2/15/2019	Megan McCoy	IPNF-Surgical Records

Spring 2019 Minor Findings Report

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Semi-annual/Second Surgery Inspection	[redacted]	[redacted]	Tay Netoff	2/12/2019	IACUC	required information missing from surgical records (repeat finding)	going forward, required information will now be included in surgical records	3/8/2019	Paul Lindstrom and Jen Hubbard	IPNF-Surgical Records
Second Surgery Inspection	[redacted]	[redacted]	Phu Tran	2/28/2019	IACUC	missing one day of post operative record keeping	post-op records will be for 3 days post surgery	3/6/2019	Ilana Cohen	IPNF-Surgical Records
PAM	[redacted]	[redacted]	Whitney Knauer	3/27/2019	IACUC	no anesthetic records available for review as they were disposed	paper copies of records were accidently thrown away; going forward, records will also be scanned and saved electronically	4/15/2019	Jennifer Borgert	IPNF-Surgical Records
Second Surgery Inspection	[redacted]	[redacted]	Alonso Guedes	12/3/2018	IACUC	no post operative records kept	3 days of post-op records will be kept going forward	12/20/2018	Kristin Pilon	IPNF--Surgical records
PAM	[redacted]	[redacted]	Benjamin Saunders	3/6/2019	OHS	soiled bedding dumped from behavioral chambers after experiments without using PPE	lab will contact Respiratory Protection Program and follow their recommendations regarding PPE use during bedding changes	3/13/2019	Kristin Pilon	OHS

Spring 2019 Minor Findings Report

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Initial Surgery Inspection	[redacted]		Misha Dunbar	10/9/2018	IACUC	needs to add survival surgery procedure to protocol as one of the endpoints of the study is adoption of animals requiring spay/neuter	amendment submitted adding survival surgery	10/16/2018	Jennifer Borgert	PNF
Second Surgery/Semi-annual			John Collister	10/25/2018	IACUC	person performing surgery on protocol but only listed as staff	going forward, any staff performing surgery will be added as surgeon (current protocol will soon be closed)	10/26/2018	Kristin Pilon and Melanie Graham	PNF
Second Surgery/Semi-annual			John Collister	10/25/2018	IACUC	anesthetic regimen different than approved in protocol	going forward, anesthetic regimen approved in protocol will be followed	10/26/2018	Kristin Pilon and Melanie Graham	PNF
Semi-annual			Gail Boe	10/29/2018	IACUC	needs to update protocol with increased fish numbers	amendment submitted updating fish numbers	11/1/2018	Paul Lindstrom and Felicia Boynton	PNF
Second Surgery Inspection			Ferenc Toth	10/30/2018	IACUC	fentanyl or buprenorphine used pre-op and/or intra-operatively but drugs not outlined in protocol	amendment submitted updating pre-op and intra-op drugs	11/1/2018	Kristin Pilon	PNF

Spring 2019 Minor Findings Report

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Second Surgery Inspection	[redacted]		Ferenc Toth	10/30/2018	IACUC	butorphanol not given for all MRI procedures as stated would be given; no animal welfare issues noted as part of anesthetic record review	amendment submitted updating drugs used in MRI procedure	11/1/2018	Kristin Pilon	PNF
Second Surgery Inspection			Ferenc Toth	10/30/2018	IACUC	blood glucose taken during surgery but could not determine if this was due to clinical issues or for some other purpose; should update the protocol	amendment submitted adding procedure to protocol	11/1/2018	Kristin Pilon	PNF
PAM			Li-Na Wei	11/6/2018	IACUC	needs to update protocol with behavioral test batteries with decreased time in between batteries	amendment submitted updating timing of behavioral test batteries	11/14/2018	Megan McCoy	PNF
PAM			Sunil Kumar	11/12/2018	IACUC	IM injections of TARV conducted but protocol approved for SC or oral	amendment submitted adding IM injections	11/29/2018	Kristin Pilon	PNF
PAM			Sunil Kumar	11/12/2018	IACUC	weekly inoculations conducted but protocol indicates every two weeks	amendment submitted updating time of injections to every week	11/29/2018	Kristin Pilon	PNF

Spring 2019 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	Category
PAM	[redacted]		Sade Spencer	11/13/2018	IACUC	Toradol used as analgesic but protocol is approved for Carprofen	going forward, carprofen will be used as approved	12/3/2018	Kristin Pilon	PNF
Second Surgery Inspection			Ann Parr	11/16/2018	IACUC	person performing surgical procedures but not listed as a surgeon on protocol	amendment submitted adding surgeon	12/4/2018	Ilana Cohen	PNF
PAM			Zigang Dong	11/28/2018	IACUC	animals receiving twice as many tumor cells over two days instead of one injection of cells (and 1/2 the amount) as approved	amendment submitted updating timing and number of cells injected	12/3/2018	Jennifer Borgert	PNF
PAM			Sergio Gradilone	11/28/2018	IACUC	euthanasia method used not approved in protocol	amendment submitted adding euthanasia method	12/18/2018	Jennifer Borgert	PNF
Self Report			Shalom Michaeli	11/30/2018	IACUC	PI performed both the DBS brain stimulation electrode implantation as well as the spinal cord electrode implantation; protocol reads as if one or the other will be done followed by MRI	PI amended protocol to reflect that either one or the other or both will be done during surgery	11/30/2018	Self Report	PNF

Spring 2019 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	Category
PAM	[redacted]		Michael Lee	12/7/2018	IACUC	decapitation of neonates (P0, P1) but euthanasia method not outlined in protocol (repeat finding)	amendment submitted outlining euthanasia method for neonates	1/10/2019	Paul Lindstrom	PNF
PAM			Derrick Green	12/10/2018	IACUC	needs to add Carprofen to induction medication in pigs but buprenorphine given	amendment submitted adding Carprofen to protocol	12/11/2018	Kristin Pilon	PNF
PAM			Demetri Yannopoulos	12/10/2018	IACUC	groups E and F missing from experimental design for protocol 1707 34951A but groups are listed in endpoints section of study; needs to either add or remove groups	amendment submitted removing groups E and F from endpoints section	12/20/2018	Kristin Pilon	PNF
PAM			Demetri Yannopoulos	12/10/2018	IACUC	needs to add buprenorphine to protocol 1802-35586A	amendment submitted adding buprenorphine	12/20/2018	Kristin Pilon	PNF
Second Surgery Inspection			Robert Wilson	12/10/2018	IACUC	Initial CT scan not done as part of protocol and only terminal TAVR procedure completed in last three pigs; Nifedipine not given as part of study; needs to update protocol with optional procedures	amendment submitted updating protocol to indicate the CT is an optional procedure and removing Nifedipine treatment	12/20/2018	Kristin Pilon	PNF

Spring 2019 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	Category
PAM	[redacted]		Cindy Martin	12/17/2018	IACUC	two pigs used for heart tissue collection but group not outlined in protocol	amendment submitted showing that animals not used for the switch procedure will be used for procedural practice or as control animals for tissue collection	1/15/2019	Kristin Pilon	PNF
PAM/Semi-annual			Richard Bianco	12/17/2018	IACUC	three of six pigs had broken ribs after aortic valve implant surgery; needs to update health and monitoring section as a possible complication	amendment submitted updating health and monitoring section to include broken ribs as a potential risk for thoracotomy procedures in pigs	1/15/2019	Kristin Pilon and Sara Hashway	PNF
PAM/Semi-annual			Richard Bianco	12/17/2018	IACUC	midazolam used on one pig on protocol 1804-35832A; needs to update protocol with this drug	midazolam was used one time as recommended by veterinarian to decrease anesthetic recovery time; it was determined that drug did not improve anesthetic recovery [illegible]	1/15/2019	Kristin Pilon and Sara Hashway	PNF
Second Surgery Inspection			Walter Low	12/18/2018	IACUC	hypothermia used for neonatal rats but this anesthesia not approved in protocol	protocol amended to include hypothermia as anesthesia for neonates	1/8/2019	Jennifer Borgert	PNF
Second Surgery Inspection			Walter Low	12/18/2018	IACUC	endpoints of study not followed	protocol amended to extend endpoints	1/8/2019	Jennifer Borgert	PNF

Spring 2019 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	Category
PAM	[redacted]		Christine Sivula--Syntiron	12/20/2018	IACUC	endpoints of study not followed	amendment has been submitted extending endpoints	12/20/2018	Kristin Pilon	PNF
PAM			Christine Sivula--Syntiron	12/20/2018	IACUC	adjuvant used not approved	amendment has been submitted for use of new adjuvant	12/20/2018	Kristin Pilon	PNF
Outside Report of Non-compliance			Raghu Rao	12/26/2018	IACUC	tattooing procedure conducted on mouse pups but procedure not approved in protocol	tattooing procedure will cease until such time as amendment is submitted and approved	12/26/2018	Outside Report of Non-compliance	PNF
Second Surgery Inspection			Ratan Banik	1/10/2019	IACUC	endpoints of study not followed (repeat finding)	amendment submitted on 12/6/18 requesting longer endpoints	1/10/2019	Jennifer Borgert	PNF
PAM			Marija Cvetanovic	1/18/2019	IACUC	behavioral test conducted but not outlined in protocol	amendment submitted adding behavioral tests to protocol	1/25/2019	Jennifer Borgert	PNF

Spring 2019 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	Category
PAM	[redacted]		Marija Cvetanovic	1/18/2019	IACUC	endpoints of study not followed	amendment submitted extending endpoints	1/25/2019	Jennifer Borgert	PNF
PAM			Marija Cvetanovic	1/18/2019	IACUC	buprenorphine SR not given 3-4 hours prior to surgery but given at time of surgery along with Carprofen and lidocaine	surgeon reminded to give buprenorphine 3-4 hours prior to surgery	1/25/2019	Jennifer Borgert	PNF
PAM			David Bereiter	1/23/2019	IACUC	Isoflurane used for maintenance anesthetic during a surgical procedure but protocol indicates that Urethane will be used	amendment will be submitted adding isoflurane to this procedure; surgeries will not be performed until protocol amended	2/12/2019	Jennifer Borgert	PNF
Second Surgery Inspection			Cheuk Leung	1/24/2019	IACUC	ketamine/xylazine used instead of Isoflurane for SC injections	amendment submitted adding ketamine/ xylazine as anesthetic option	2/8/2019	Ilana Cohen	PNF
Second Surgery Inspection			Erik Finger	1/28/2019	IACUC	lidocaine used as part of non-survival surgery procedures but not approved in protocol	lidocaine not used thus no changes will be made to protocol	2/15/2019	Megan McCoy	PNF

Spring 2019 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	Category
Second Surgery Inspection	[redacted]		Erik Finger	1/28/2019	IACUC	SR buprenorphine given at time of surgery but not given at least two hours prior as indicated by vet stipulations	will give drug two hours before as outlined in protocol	4/15/2019	Megan McCoy	PNF
PAM			Jan Czyzyk	2/5/2019	IACUC	breeding of WT mice conducted for embryonic work but embryonic work not described in protocol	amendment submitted to protocol outlining embryonic work and procedures	2/12/2016	Kristin Pilon	PNF
Semi-annual			Mark Desrosiers	2/21/2019	IACUC	has not started taken weekly water quality tests	water quality testing kit has been purchased and staff are now regularly testing for pH, ammonia, nitrate and nitrate	3/15/2019	Kristin Pilon and Felicia Boynton	PNF
PAM			Rita Perlingeiro	2/22/2019	IACUC	person performing surgical procedures not listed as surgeon on protocol	amendment submitted adding surgeon	3/7/2019	Megan McCoy	PNF
Second Surgery Inspection			Michael Kyba	2/28/2019	IACUC	person performing surgical procedures not listed as surgeon on protocol	amendment submitted adding surgeon	3/4/2019	Ilana Cohen	PNF

Spring 2019 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	Category
PAM	[redacted]		Benjamin Saunders	3/6/2019	IACUC	Brevital used to confirm patency of jugular vein catheter not outlined in protocol; flushing with gentamicin/saline is described	amendment submitted detailing the use of brevital for confirming catheter patency	3/13/2019	Kristin Pilon	PNF
Second Surgery Inspection			Dezhi Liao	3/7/2019	IACUC	endpoint of study not followed	amendment submitted requesting longer endpoint	3/26/2019	Ilana Cohen	PNF
PAM			Emilyn Alejandro	3/18/2019	IACUC	endpoint of study not followed	amendment submitted extending endpoints	4/16/2019	Megan McCoy	PNF
PAM			Emilyn Alejandro	3/18/2019	IACUC	euthanasia method used not described in protocol	amendment submitted adding euthanasia method	4/16/2019	Megan McCoy	PNF

Spring 2019 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	Category
Second Surgery Inspection	[redacted]		Lucy Vulchanova	3/21/2019	IACUC	endpoint of study not followed	protocol amended for extended endpoints	4/15/2019	Ilana Cohen	PNF
PAM			David Thomas	3/28/2019	IACUC	lidocaine used for ear vein catheter but analgesic not in protocol	amendments will be submitted updating protocols prior to next procedures taking place	4/18/2019	Jennifer Borgert	PNF
PAM/Semi-annual			Thomas Hrabik	3/28/2019	IACUC	electrofishing done to collect fish but procedure not outlined in protocol	amendment submitted adding electrofishing ot protocol	4/4/2019	Kristin Pilon and Jen Hubbard	PNF
PAM/Semi-annual			Thomas Hrabik	3/28/2019	IACUC	only one hour acclimation period to the tank prior to running trials but protocol states that a 12 hour acclimation will be given	amendment submitted updating acclimation period	4/4/2019	Kristin Pilon and Jen Hubbard	PNF

Spring 2019 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	Category
PAM/Semi-annual	[redacted]		Thomas Hrabik	3/28/2019	IACUC	24 hour fasting of animals	amendment submitted updating protocol	4/4/2019	Kristin Pilon and Jen Hubbard	PNF
Second Surgery Inspection			Ruifeng Cao	3/28/2019	IACUC	buprenorphine, while given, does not necessarily stick to the approved timing	buprenorphine will be administered at intervals approved in protocol	4/1/2019	Jennifer Borgert	PNF
PAM			Cathy Carlson	10/31/2018	OHS	ROHP requirements not met by all staff listed on protocol	non-compliant staff member removed from protocol	11/1/2018	Kristin Pilon	ROHP
PAM/Semi-annual			Ben Hayden	1/16/2019	OHS	ROHP requirements not met by all staff listed on protocol	all staff instructed to complete TB tests ASAP; staff not allowed to work with animals until this is complete	1/22/2019	Kristin Pilon and Melanie Graham	ROHP
Semi-annual			Kenneth Kozak	1/25/2019	OHS	ROHP requirements not met by all staff listed on protocol	all staff now ROHP compliant	3/7/2019	Jennifer Borgert and Jim Perry	ROHP

Spring 2019 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	Category
Second Surgery Inspection	[redacted]		Alfonso Araque	1/31/2019	OHS	ROHP requirements not met by all staff listed on protocol	all staff now ROHP compliant	2/22/2019	Ilana Cohen	ROHP
Second Surgery Inspection			Alex Bianco	2/14/2019	OHS	ROHP requirements not met by all staff listed on protocol	all staff now either ROHP compliant or removed from protocol	2/22/2019	Kristin Pilon	ROHP
PAM			Sarah Heilbronner	2/19/2019	OHS	ROHP requirements not met by all staff listed on protocol	staff had TB test done today	2/19/2019	Kristin Pilon	ROHP
Semi-annual			Mark Desrosiers	2/21/2019	OHS	ROHP requirements not met by all staff listed on protocol	all staff now ROHP compliant	3/15/2019	Kristin Pilon and Felicia Boynton	ROHP
PAM			Shalom Michaeli	2/27/2019	OHS	ROHP requirements not met by all staff listed on protocol	all staff now either ROHP compliant	3/5/2019	Jennifer Borgert	ROHP

Spring 2019 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	Category
Second Surgery Inspection	[redacted]		Phu Tran	2/28/2019	OHS	ROHP requirements not met by all staff listed on protocol	all staff now ROHP compliant	3/11/2019	Ilana Cohen	ROHP
PAM			Natalia Tretyakova	3/6/2019	OHS	ROHP requirements not met by all staff listed on protocol	all staff now ROHP compliant	3/13/2019	Kristin Pilon	ROHP
Second Surgery/Semi-annual			Jerrold Vitek/Matthew Johnson	3/26/2019	OHS	ROHP requirements not met by all staff listed on protocol	all staff now ROHP compliant	4/3/2019	Kristin Pilon and Nathan Koewler	ROHP

Spring 2019 No Findings Report					
Type of Inspection	**Building**	**Room #**	**Responsible Party**	**Date of Inspection**	**Inspectors**
PAM	[redacted]	[redacted]	Craig Bierle	10/9/2018	Paul Lindstrom
Semi-annual	[redacted]	[redacted]	Jennifer Erickson	10/10/2018	Ilana Cohen and Laura Hocum Stone
Second Surgery Inspection	[redacted]	[redacted]	Kevin Wickman	10/11/2018	Ilana Cohen
PAM	[redacted]	[redacted]	William Elmquist	10/10/2018	Paul Lindstrom
Initial Surgery Inspection	[redacted]	[redacted]	Sylvain Lesne	10/11/2018	Paul Lindstrom
Semi-annual	[redacted]	[redacted]	Jennifer Erickson	10/15/2018	Jennifer Borgert and Mimie Pollard
Semi-annual	[redacted]	[redacted]	Tristan McNamara	10/15/2018	Jennifer Borgert and Mimie Pollard
Second Surgery Inspection	[redacted]	[redacted]	David Masopust	10/16/2018	Ilana Cohen
PAM	[redacted]	[redacted]	Megan Paulsen	10/17/2018	Kristin Pilon
Second Surgery Inspection	[redacted]	[redacted]	Michael Garwood	10/17/2018	Jennifer Borgert
Second Surgery Inspection	[redacted]	[redacted]	David Redish	10/17/2018	Megan McCoy

PAM	[redacted]	[redacted]	Peter Igarashi	10/17/2018	Megan McCoy
PAM/Semi-annual	[redacted]	[redacted]	Heather Waye	10/29/2018	Paul Lindstrom and Felicia Boynton
PAM/Semi-annual	[redacted]	[redacted]	Heather Waye	10/29/2018	Paul Lindstrom and Felicia Boynton
PAM/Semi-annual	[redacted]	[redacted]	David Israels-Swenson	10/29/2018	Paul Lindstrom and Felicia Boynton
Semi-annual	[redacted]	[redacted]	Rachel Johnson	10/29/2018	Paul Lindstrom and Felicia Boynton
Ag	[redacted]	[redacted]	Bradley Heins	10/29/2018	Jennifer Borgert and Nathan Koewler
Semi-annual	[redacted]	[redacted]	Jennifer Erickson	10/30/2018	Melanie Graham and Brian Crooker
Semi-annual	[redacted]	[redacted]	Jennifer Erickson	10/30/2018	Melanie Graham and Brian Crooker
Semi-annual	[redacted]	[redacted]	Jennifer Erickson	10/30/2018	Melanie Graham and Brian Crooker
Semi-annual	[redacted]	[redacted]	Jeramy Kulesa	10/30/2018	Melanie Graham and Brian Crooker
PAM	[redacted]	[redacted]	Robert Turesky	11/2/2018	Megan McCoy
PAM/Semi-annual	[redacted]	[redacted]	Carrie Haskell-Luevano	11/1/2018	Paul Lindstrom and Swayam Prabha
Semi-annual	[redacted]	[redacted]	Sivaraj Sivaramakrishnan	11/2/2018	Paul Lindstrom and Carolyn Fairbanks

PAM	[redacted]	[redacted]	Jill Siegfried	11/6/2018	Paul Lindstrom
PAM	[redacted]	[redacted]	Gregory Beilman	11/8/2018	Paul Lindstrom
PAM	[redacted]	[redacted]	Mark Kirstein	11/5/2018	Kristin Pilon
PAM	[redacted]	[redacted]	Janet Dubinsky	11/13/2018	Megan McCoy
Ag	[redacted]	[redacted]	Daniel Braaten	11/15/2018	Kristin Pilon
PAM	[redacted]	[redacted]	Maxim Cheeran	11/15/2018	Jennifer Borgert
PAM	[redacted]	[redacted]	Savita Rao	11/19/2018	Kristin Pilon
PAM	[redacted]	[redacted]	Montse Torremorell	11/20/2018	Paul Lindstrom
PAM	[redacted]	[redacted]	Mohammad Saleem Bhat	11/20/2018	Jennifer Borgert
Semi-annual	[redacted]	[redacted]	Maxim Cheeran	11/26/2018	Paul Lindstrom and Felicia Boynton
PAM/Semi-annual	[redacted]	[redacted]	Alena Talkachova	11/26/2018	Kristin Pilon and Peggy Norris
Second Surgery Inspection	[redacted]	[redacted]	Dawn Lowe	11/29/2018	Ilana Cohen
Second Surgery/Semi-annual	[redacted]	[redacted]	Gordon Smith	11/27/2018	Kristin Pilon and Sara Hashway

Semi-annual	[redacted]	[redacted]	Kim Klukas	11/28/2018	Kristin Pilon and Felicia Boynton
PAM	[redacted]	[redacted]	Vivian Bardwell	11/29/2018	Ilana Cohen
Second Surgery Inspection	[redacted]	[redacted]	Mary Garry	11/27/2018	Jennifer Borgert
Semi-annual	[redacted]	[redacted]	Mark Sanders	11/27/2018	Megan McCoy and Dezhi Liao
Semi-annual	[redacted]	[redacted]	Mark Sanders	11/27/2018	Megan McCoy and Dezhi Liao
Semi-annual	[redacted]	[redacted]	Jennifer Erickson	11/29/2018	Megan McCoy and George Wilcox
Ag	[redacted]	[redacted]	Sally Noll	11/26/2018	Jennifer Borgert and Felicia Boynton
Second Surgery Inspection	[redacted]	[redacted]	Yigitcan Eryaman	12/4/2018	Paul Lindstrom
PAM	[redacted]	[redacted]	Julia Lemos	12/5/2018	Kristin Pilon
PAM	[redacted]	[redacted]	Mark Suckow	12/6/2018	Kristin Pilon
PAM	[redacted]	[redacted]	Laura Niedernhofer	12/6/2018	Kristin Pilon
Second Surgery Inspection	[redacted]	[redacted]	Eric Newman	12/3/2018	Megan McCoy
Semi-annual	[redacted]	[redacted]	Jennifer Rees	12/10/2018	Kristin Pilon and Christine Sivula

PAM	[redacted]	[redacted]	Ganesh Raveendran	12/10/2018	Kristin Pilon
PAM	[redacted]	[redacted]	Robert Tranquillo	12/10/2018	Kristin Pilon
PAM	[redacted]	[redacted]	Xiaoli Chen	12/12/2018	Ilana Cohen
Second Surgery Inspection	[redacted]	[redacted]	Andrew Grande	12/10/2018	Kristin Pilon
Second Surgery Inspection	[redacted]	[redacted]	Peter Sorenson	12/5/2018	Megan McCoy
Second Surgery Inspection	[redacted]	[redacted]	Bruce Walcheck	12/10/2018	Megan McCoy
PAM	[redacted]	[redacted]	Yasuhiko Kawakami	12/5/2018	Megan McCoy
PAM	[redacted]	[redacted]	Yasuhiko Kawakami	12/5/2018	Megan McCoy
Second Surgery/Semi-annual	[redacted]	[redacted]	Hubert Lim	12/11/2018	Paul Lindstrom and Mark Suckow
PAM	[redacted]	[redacted]	Timothy O'Connell	12/12/2018	Paul Lindstrom
Semi-annual	[redacted]	[redacted]	Scott Madill	12/13/2018	Ilana Cohen and Sally Noll
PAM	[redacted]	[redacted]	Peter Bitterman	12/12/2018	Paul Lindstrom
Ag	[redacted]	[redacted]	Brian Crooker	12/14/2018	Paul Lindstrom

Ag	[redacted]	[redacted]	Sally Noll	12/14/2018	Paul Lindstrom
Semi-annual	[redacted]	[redacted]	Jennifer Erickson	12/14/2018	Megan McCoy and Marna Ericson
Ag	[redacted]	[redacted]	Krishona Martinson	12/11/2018	Jennifer Borgert and Sally Noll
Second Surgery Inspection	[redacted]	[redacted]	Jason Bartos	12/18/2018	Kristin Pilon
Ag	[redacted]	[redacted]	Kyle Rozeboom	12/11/2018	Jennifer Borgert and Sally Noll
Ag	[redacted]	[redacted]	Kyle Rozeboom	12/11/2018	Jennifer Borgert and Sally Noll
Second Surgery Inspection	[redacted]	[redacted]	Rosemary Kelly	12/17/2018	Kristin Pilon
Initial Surgery Inspection	[redacted]	[redacted]	Gufa Lin	12/18/2018	Paul Lindstrom
PAM	[redacted]	[redacted]	Ryan Hunter	12/18/2018	Paul Lindstrom
PAM	[redacted]	[redacted]	Arthur Erdman	12/17/2018	Kristin Pilon
Second Surgery Inspection	[redacted]	[redacted]	Harry Orr	12/19/2018	Ilana Cohen
PAM	[redacted]	[redacted]	Martin Wessendorf	12/18/2018	Ilana Cohen
PAM	[redacted]	[redacted]	Martin Wessendorf	12/18/2018	Ilana Cohen

Semi-annual	[redacted]	[redacted]	Jennifer Erickson	12/17/2018	Megan McCoy and Jim Perry
PAM	[redacted]	[redacted]	Melissa Geller	12/20/2018	Ilana Cohen
PAM	[redacted]	[redacted]	Lorene Lanier	12/20/2018	Ilana Cohen
PAM	[redacted]	[redacted]	Ling Li	12/12/2018	Megan McCoy
PAM	[redacted]	[redacted]	Ling Li	12/12/2018	Megan McCoy
Second Surgery Inspection	[redacted]	[redacted]	Yun You	12/19/2018	Megan McCoy
Semi-annual	[redacted]	[redacted]	Jennifer Menken	12/21/2018	Jennifer Borgert and Felicia Boynton
Second Surgery/Semi-annual	[redacted]	[redacted]	Melanie Graham	12/21/2018	Paul Lindstrom and Brian Crooker
Second Surgery/Semi-annual	[redacted]	[redacted]	Melanie Graham	12/21/2018	Paul Lindstrom and Brian Crooker
Semi-annual	[redacted]	[redacted]	Jennifer Erickson	12/21/2018	Paul Lindstrom and Brian Crooker
PAM	[redacted]	[redacted]	Bruce Blazar	12/20/18 and 1/3/19	Jennifer Borgert
PAM	[redacted]	[redacted]	Wei Shen	1/8/2019	Paul Lindstrom
Semi-annual	[redacted]	[redacted]	Richard Bianco	1/8/2019	Kristin Pilon and Dan Montonye

Semi-annual	[redacted]	[redacted]	John Bischof	1/2/2019	Jennifer Borgert and Dan Montonye
Semi-annual	[redacted]	[redacted]	John Bischof	1/2/2019	Jennifer Borgert and Dan Montonye
Second Surgery Inspection	[redacted]	[redacted]	Jop Van Berlo	1/9/2019	Ilana Cohen
Initial Surgery/Semi-annual	[redacted]	[redacted]	Paul Iaizzo	1/4/2019	Jennifer Borgert and Christine Sivula
Semi-annual	[redacted]	[redacted]	Christina Clarkson	1/14/2019	Kristin Pilon and Brian Crooker
Semi-annual	[redacted]	[redacted]	Jennifer Erickson	1/9/2019	Megan McCoy and Laura Hocum Stone
Semi-annual	[redacted]	[redacted]	Jennifer Erickson	1/9/2019	Megan McCoy and Laura Hocum Stone
Second Surgery Inspection	[redacted]	[redacted]	Sergey Khasabov	1/10/2019	Jennifer Borgert
PAM	[redacted]	[redacted]	Donald Simone	1/10/2019	Jennifer Borgert
PAM	[redacted]	[redacted]	Suhasa Kodandaramaiah	1/15/2019	Paul Lindstrom
PAM	[redacted]	[redacted]	Thomas Griffith	1/11/2019	Megan McCoy
Second Surgery Inspection	[redacted]	[redacted]	Yoji Shimizu	1/16/2019	Ilana Cohen
Semi-annual	[redacted]	[redacted]	Jay Maher	1/16/2019	Ilana Cohen and Sam Baidoo

Semi-annual	[redacted]	[redacted]	Marc Schwabenlander	1/16/2018	Paul Lindstrom and Sam Baidoo
Semi-annual	[redacted]	[redacted]	Jennifer Erickson	1/17/2019	Ilana Cohen and Peggy Norris
Semi-annual	[redacted]	[redacted]	Jennifer Erickson	1/17/2019	Ilana Cohen and Peggy Norris
Semi-annual	[redacted]	[redacted]	Jennifer Erickson	1/17/2019	Ilana Cohen and Peggy Norris
Semi-annual	[redacted]	[redacted]	Jennifer Erickson	1/22/2019	Kristin Pilon and Melanie Graham
Semi-annual	[redacted]	[redacted]	John Ward	1/22/2019	Paul Lindstrom and Jim Perry
Second Surgery Inspection	[redacted]	[redacted]	Masato Yamamoto	1/24/2019	Paul Lindstrom
PAM	[redacted]	[redacted]	Faqian Li	1/25/2019	Paul Lindstrom
Semi-annual	[redacted]	[redacted]	Dan Busian	1/22/2019	Jennifer Borgert and Sara Hashway
Semi-annual	[redacted]	[redacted]	Suzannne McGaugh	2/4/2019	Paul Lindstrom and Jim Perry
PAM	[redacted]	[redacted]	Marc Jenkins	2/5/2019	Paul Lindstrom
PAM	[redacted]	[redacted]	Martin Felices	2/7/2019	Kristin Pilon
PAM	[redacted]	[redacted]	Malgorzata Marjanska	2/7/2019	Paul Lindstrom

Semi-annual	[redacted]	[redacted]	Alessandro Bartolomucci	2/8/2019	Kristin Pilon
Semi-annual	[redacted]	[redacted]	Jennifer Erickson	2/5/2019	Megan McCoy and Peggy Norris
PAM	[redacted]	[redacted]	Carol Lange	2/8/2019	Megan McCoy
Initial Surgery Inspection	[redacted]	[redacted]	Alessandro Bartolomucci	2/8/2019	Jennifer Borgert
Second Surgery Inspection	[redacted]	[redacted]	Tay Netoff	2/12/2019	Paul Lindstrom
PAM	[redacted]	[redacted]	Raghu Rao	2/7/2019	Jennifer Borgert
Second Surgery Inspection	[redacted]	[redacted]	Erin Malone	2/14/2019	Kristin Pilon
PAM	[redacted]	[redacted]	Robert Schumacher	2/14/2019	Paul Lindstrom
Semi-annual	[redacted]	[redacted]	David Stephens	2/15/2019	Paul Lindstrom and Scott Madill
PAM/Semi-annual	[redacted]	[redacted]	Sandy Mand	2/15/2019	Paul Lindstrom and Don Martin
Semi-annual	[redacted]	[redacted]	Julia Ponder	2/18/2019	Paul Lindstrom and Kakambi Nagaraja
PAM	[redacted]	[redacted]	Shane McAllister	2/14/2019	Paul Lindstrom
PAM	[redacted]	[redacted]	Shane McAllister	2/19/2019	Paul Lindstrom

Second Surgery Inspection	[redacted]	[redacted]	John Belcher	2/19/2019	Ilana Cohen
Semi-annual	[redacted]	[redacted]	Emily Taras	2/15/2019	Megan McCoy
Semi-annual	[redacted]	[redacted]	Mark Masino	2/19/2019	Jennifer Borgert and Henry Wong
Semi-annual	[redacted]	[redacted]	Mark Masino	2/19/2019	Jennifer Borgert and Henry Wong
PAM/Semi-annual	[redacted]	[redacted]	Cyprian Weaver	2/18/2019	Jennifer Borgert and Dezhi Liao
Second Surgery Inspection	[redacted]	[redacted]	DeWayne Townsend	2/20/2019	Megan McCoy
Second Surgery Inspection	[redacted]	[redacted]	Alexander Primus	2/26/2019	Paul Lindstrom
PAM/Semi-annual	[redacted]	[redacted]	Timothy Ebner and Geoffrey Ghose	2/27/2019	Paul Lindstrom and Felicia Boynton
PAM/Semi-annual	[redacted]	[redacted]	Stephen Katz	2/21/2019	Jennfier Borgert and Sara Hashway
PAM	[redacted]	[redacted]	Sharon Jansa	2/26/2019	Kristin Pilon
Second Surgery/Semi-annual	[redacted]	[redacted]	Esther Krook-Magnuson	2/28/2019	Kristin Pilon and Christine Sivula
Second Surgery Inspection	[redacted]	[redacted]	John Osborn	2/27/2019	Ilana Cohen
Second Surgery Inspection	[redacted]	[redacted]	George Wilcox	2/27/2019	Ilana Cohen

Second Surgery Inspection	[redacted]	[redacted]	Carolyn Fairbanks	2/27/2019	Ilana Cohen
Second Surgery/Semi-annual	[redacted]	[redacted]	Anna Lee	2/25/2019	Jennifer Borgert and Dezhi Liao
Second Surgery/Semi-annual	[redacted]	[redacted]	Anna Lee	2/25/2019	Jennifer Borgert and Dezhi Liao
PAM	[redacted]	[redacted]	Chester Whitley	2/25/2019	Megan McCoy
Second Surgery Inspection	[redacted]	[redacted]	Kaylee Schwertfeger	2/27/2019	Megan McCoy
PAM	[redacted]	[redacted]	Benjamin Hackel	2/28/2019	Jennifer Borgert
Semi-annual	[redacted]	[redacted]	Jennifer Erickson	3/6/2019	Ilana Cohen and Carolyn Fairbanks
Semi-annual	[redacted]	[redacted]	Maxim Cheeran	3/5/2019	Kristin Pilon and Felicia Boynton
Semi-annual	[redacted]	[redacted]	Frank Ondrey	3/6/2019	Kristin Pilon and Sara Hashway
Second Surgery Inspection	[redacted]	[redacted]	Stephen Jameson	3/4/2019	Jennifer Borgert
PAM	[redacted]	[redacted]	Emad Ebbini	3/6/2019	Paul Lindstrom
PAM	[redacted]	[redacted]	Erin Marcotte	3/5/2019	Kristin Pilon
Semi-annual	[redacted]	[redacted]	Deborah Ferrington	3/7/2019	Paul Lindstrom and Robert Schumacher

PAM	[redacted]	[redacted]	Paul Mermelstein	3/13/2019	Ilana Cohen
Semi-annual	[redacted]	[redacted]	Mark Thomas and Julia Lemos	3/13/2019	Kristin Pilon and Peggy Norris
Initial Surgery/Semi-annual	[redacted]	[redacted]	Mark Thomas	3/13/2019	Kristin Pilon and Peggy Norris
PAM	[redacted]	[redacted]	Chang Song	3/14/2019	Ilana Cohen
Semi-annual	[redacted]	[redacted]	Jennifer Erickson	3/13/2019	Jennifer Borgert and Jim Perry
Semi-annual	Veterinary [redacted]	[redacted]	Jennifer Erickson	3/18/2019	Kristin Pilon and Peggy Norris
Semi-annual	[redacted]	[redacted]	Brenda Mielke	3/18/2019	Kristin Pilon and Peggy Norris
Semi-annual	[redacted]	[redacted]	Flannery Miley	3/18/2019	Kristin Pilon and Peggy Norris
Semi-annual	[redacted]	[redacted]	Denise Obitz-Cooney	3/18/2019	Kristin Pilon and Peggy Norris
Semi-annual	[redacted]	[redacted]	Ned Patterson	3/18/2019	Kristin Pilon and Peggy Norris
Semi-annual	[redacted]	[redacted]	Michael Conzemius	3/19/2019	Paul Lindstrom and Scott Madill
Second Surgery Inspection	[redacted]	[redacted]	Afshin Divani	3/18/2019	Paul Lindstrom
Second Surgery Inspection	[redacted]	[redacted]	Dale Gregerson	3/15/2019	Megan McCoy

Second Surgery/Semi-annual	[redacted]	[redacted]	Patrick Rothwell	3/19/2019	Kristin Pilon and Misha Dunbar
Semi-annual	[redacted]	[redacted]	Rick Abrahamson	3/20/2019	Kristin Pilon and Jen Hubbard
PAM	[redacted]	[redacted]	Tate Gisslen	3/25/2019	Ilana Cohen
PAM/Semi-annual	[redacted]	[redacted]	Ann Fallon	3/21/2019	Jennifer Borgert and Nathan Koewler
Semi-annual	[redacted]	[redacted]	Erin Malone	3/25/2019	Kristin Pilon and Felicia Boynton
Semi-annual	[redacted]	[redacted]	Sandra Allweiler and Kim Colvard	3/25/2019	Kristin Pilon and Felicia Boynton
PAM	[redacted]	[redacted]	Wanda Gordon-Evans	3/25/2019	Kristin Pilon and Felicia Boynton
Initial Surgery/Semi-annual	[redacted]	[redacted]	Timothy Ebner	3/25/2019	Paul Lindstrom and Nathan Koewler
Semi-annual	[redacted]	[redacted]	Timothy Kurtti and Ulrike Munderloh	3/21/2019	Jennifer Borgert and Nathan Koewler
PAM	[redacted]	[redacted]	Amanda Klein	3/28/2019	Paul Lindstrom
PAM	[redacted]	[redacted]	Janet Fitzakerley	3/28/2019	Paul Lindstrom
Semi-annual	[redacted]	[redacted]	Mark Hove	3/26/2019	Jennifer Borgert and Felicia Boynton
Second Surgery Inspection	[redacted]	[redacted]	Yi-Mei Yang	3/28/2019	Ilana Cohen

PAM	[redacted]	[redacted]	Venkatram Mereddy	3/28/2019	Ilana Cohen
Semi-annual	[redacted]	[redacted]	Jennifer Liang	3/28/2019	Kristin Pilon and Jen Hubbard
Semi-annual	[redacted]	[redacted]	Frank Maragi	3/28/2019	Kristin Pilon and Jen Hubbard
Semi-annual	[redacted]	[redacted]	Teresa Rose Hellekant	3/28/2019	Kristin Pilon and Jen Hubbard
Initial Surgery Inspection	[redacted]	[redacted]	Jean Regal	3/28/2019	Jennifer Borgert
Semi-annual	[redacted]	[redacted]	Mark Bee	3/27/2019	Jennifer Borgert and Mimie Pollard
Semi-annual	[redacted]	[redacted]	Mark Bee	3/27/2019	Jennifer Borgert and Mimie Pollard
PAM	[redacted]	[redacted]	Lester Drewes	3/28/2019	Ilana Cohen
Second Surgery Inspection	[redacted]	[redacted]	Michael Benneyworth	3/28/2019	Megan McCoy
PAM	[redacted]	[redacted]	Daniel Schmidt	3/27/2019	Megan McCoy

NOTES WRITTEN TO FILE

Investigator Name	Date of Inspection/submission	Protocol number (s)	Notes written to file
Pierre-Gilles Henry	10/15/2018	1703-34682A	PI requests 20 additional mice for breeding
Julia Lemos	12/10/2018	1801-35436A	Noted during inspection that language in the protocol indicates that analgesics only given day 0-2 but upon review of records, animals receive analgesics from day 0-3. Language changed in protocol to reflect difference in analgesic administration
Yasuhiko Kawakami	12/11/2018	1706-34894A	Noted during inspection that the experimental design indicates that tamoxifen injection will be given to pregnant females at E13-5 or E15.5 but current practices is that this injection happens between E7 and E15.5. Protocol changed to reflect current practice
George Wilcox	12/21/2018	1606-33886A	PI requests change in recent CIP as it is unlikely to work for them. In the change, the PI described mice being housed singly for up to 2 weeks with daily 23 hour access to a running wheel. They would like the option to reduce the amount of time that the mice have access to the running wheels to 1-6 hours daily. They would like to keep the mice housed socially in normal, small cages with free access to food and water most of the day and night. Then daily for 1-6 daytime hours, each mouse would be placed alone in a colony cage with a running wheel and with free access to food and water. The rest of the experimental manipulations described in the CIP would remain unchanged: uni- or bi-lateral intraplantar injections of CFA, SC injections of saline or drug combinations, von Frey assessments of mechanical hyperalgesia and measurement of distance run per session.

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Christine Sivula	2/4/2019	1811-36515A	PI requests change to the skin incision closure pattern to either simple interrupted or intradermal and the body wall incision closure pattern to simple continuous or simple interrupted. Additionally, the incision will be 1-3 cm long. RAR has also adapted an anesthesia form to be used for recording anesthesia and surgical procedural details.
Brian Betts	2/13/2019	1807-36180A	PI requests change to number of cells administered to 1-5 x 10^6 rather than 10^7 and will euthanize animals on days 10-12 or 21 rather than just on day 21 post transplant
Peter Crawford	2/25/2019	1710-35218A	PI requests change to update the names of those personnel who will be transporting animals, the TAC surgery location updated to the [redacted] and that the Isoflurane use has been changed from [redacted]
Cheuk Leung	3/12/2019	1610-34245A	PI requests the addition of nude mice in addition to the NOD/SCID already approved as a host for SC tumor induction experiments. This will not result in an increase in numbers. Additionally, the animal age range at time of experiments will be changed to 6-12 weeks from the 8-12 weeks that is currently approved. They do not anticipate any health issues with the new strain.
Jayanth Panyam	3/12/2019	1611-34356A	PI requests an additional 20 mice
Alfonso Araque	3/13/2019	1701-34507A	PI requests new strains of animals (IP3R2 and GFAP/CreERT:CB1 flox/flox and NPY-GFP) to study. Additional strains will not affect numbers already approved and there are no inherent issues with these strains
Steven Graves	3/15/2019	1803-35680A	PI requests adding strain pAS1NB m Rosella I to use as a substitution for Mito-Keima and adding Matrix-ro GFP as a secondary option to breeding transgenic mice. Numbers will not change and no inherent problems are expected with the new strains

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Steven Graves	3/18/2018	1805-35971A	PI requests adding the Cre dependent viral construct Matrix-RO GFP, a secondary option to breeding transgenic mice. Numbers will not change and no inherent problems are expected with the new strain
Whitney Knauer	3/21/2019	1808-36275A	PI requests that two client owned goats be swapped out on this study upon receiving them at the UMN for healthier animals. The returned goats were treated and sent back with the owner.
Robert Lloyd	3/26/2019	1610-34270A	PI requests 10 additional rats
Mark Thomas	3/28/2019	1711-35337A	PI requests to add a new room used for a behavioral procedure ([redacted]) in the [redacted]
Erin Malone/Alex Bianco	3/29/2019	1606-33881A	PI requests removal of [redacted]) from protocol

Date of Recommendation	Investigator	Species	Protocol Number	Recommendation
10/3/2018	George Wilcox	swine	1610-34249A	The recommendation is to change from using post operative antibiotics to peri-operative antibiotics only. The specific peri-operative antibiotic recommendation is cephazolin 22 mg/kg give slowly IV at induction.
10/10/2018	Paolo Provenzano	mouse	1509-32989A	In an effort to decrease the risk of gastrointestinal and renal side effects associated with ketoprofen, I recommend switching to Carprofen for analgesia following any approved surgical procedures where ketoprofen is currently approved. The recommended dose of Carprofen is 5 mg/kg given SC once daily for three days. The laboratory is in process of renewing their protocol and will update it to reflect this recommendation but unitl the protocol has been approved, carprofen will be administrered instead of ketoprofen
10/15/2018	[redacted]	NHP	1707-34950A	This recommendation is to allow the scheduled explantation surgery on 10/17/18 for a NHP that has a broken headpost. Due to the post being broken the animal is not being used on study and would require twice weekly sedations for headpost cleanings until the animal is used terminally. These repeated sedative events as well as the twice weekly fasting could implact animal welfare. An amendment has already been submitted but will not be approved in time for the scheduled event. In addition, during the explantation procedure, DREADDs (viral tracers which are already approved on the protocol) will also be injected at the same time to prevent the need for an additional surgical procedure down the line. Following the procedure, the animal will be housed for its humane endpoint approximately 2 months later

10/17/2018	Paul Iaizzo	sheep	1707-35001A	Currently there are two sheep procedures approved on this protocol (Prototype Transcatheter Device testing and Medial Sternotomy and general surgical procedures: Heart explantation). Each of these procedures lists different premedication and induction agents. The recommendation is to allow the use of both premedication/induction regimens for etiehr procedure as both could be appropriate based on the animals individual needs and different responses to different medications--the PI or his designee will amend the protocol to reflect these changes by 1/17/19; Premedication: Ketamine 10mg/kg IM OR ketamine 5 mg/kg IV and diazepam 0.25 mg/kg IV (give diazepam first, wait 3-5 minutes then give ketamine); Induction: propofol 2-6 mg/kg IV to effect (may not be needed if using ketamine/diazepam combination)
10/19/2018	Matthew Aliota	mouse	1804-35828A	Delayed (28 day) wean for all pups on this protocol. Pups are frequently smaller than average, and are expected to experience experimental illness of varying severity. Delayed weaning minimizes stress of separation from the dam, which is potentially exacerbated in ill animals. Delayed weaning can lead to greater weight gain before separation, and uperior thermoregulation from dam and littermates. (Ability to maintain appropriate body temperature may be compromised in small and or ill pups)
10/25/2018	[redacted]	NHP	1703-34633A	This recommendation is to include the supportive agents dexamethasone (2 mg/kg) IM pre-operatively and the option to include mannitol (1.5-2.2 mg/kg) IV given slowly over 20-30 minutes during the procedure. Although the surgeris on this protocol are terminal, these agents are used to help prevent perioperative brain swelling which could negatively impact the status of the animal under anesthesia as well as interfere with the proposed surgical technique during the procedure

10/26/2018	[redacted]	NHP	1601-33436A	This recommendation is to allow the use of a box chair for conscious chair restraint that will be beneficial for both experimental and clinical reasons. Typically animals are removed from their home cage using the pole and collar method to guide them into their individualized chairs. Occasionally, there are animals that may have their collars removed for clinical reasons and are undergoing treatment. To prevent the need for repeated sedations every time the animal needs to be evaluated have their headpost margins and chambers cleaned, or treatment for lesions that may have been a result of the collar the use of a box to get the animal into the chair is preferred. this allows the animal the ability to walk into the box and into the seat rather than be foled and will not require the use of a collar. This will be beneficial to larger NHPs whose collars do not fit well, those who do not train well with pole or those who do not have a collar. The lab will utilize approved box chairs from other NHP labs on campus until they can get the chair they have constructed approved by the IACUC. NHPs will be acclimated and trained to use the box chair configuration. The immediate implementation of this recommendation will be valuable as animals with headposts and/or those with a clinical concern need to be chaired multiple times a week for cleanings/treatment. If an animals does not have a collar on it would have to be sedated every time and over time this may have a negative impact on the animal.
10/30/2018	Alonso Guedes	mouse	1612-34440A	Animals undergoing spared nerve injury surgery may receive cefazolin as described in the protocol, alternative antibiotics as prescribed by RAR veterinarian, or no antibiotics. Peri-operative antibiotics are generally not indicated for rodent surgery when aseptic technique is used (this surgery will be performed suing aseptic technique). The lab will contact RAR veterinarian if any complications occur, indicated post operative infection

11/12/2018	Wei Chen	cat	1606-33914A	This recommendation allows for the discontinuation/removal of the pre-emptive treatment with dualcillin, Lasix and convenia for kittens undergoing MRI procedures. If a clinical concern arises with one of the kittens while under anesthesia, in the immediate recovery stage, or post operatively/post anesthetic event, RAR veterinary staff will be consulted and treatment of the anial will be conducted as necessary based on clinical findings. The drugs listed above were used historically and may not be consistent with specific treatments prescribed going forward which will be handled on a case to case basis and may not be reflected in the protocol. This recommendation will have a positive impact on animal welfare as clinical concerns will be handled directly and appropriately by vet staff and kittens will not receivve unnecessary treatments when undergoing MRI procedures
11/30/2018	Ferenc Toth	pig	1703-34645A	Carprofen (2-3 mg/kg SC or PO SID) may be used for post-operative analgesia instead of flunixin meglamine. This NSAID only needs to be dosed once daily instead of twice, negating the logistic challenge of dosing q12 hours. In addition, carprofen may be adminsitered orally, reducing the number of injections the animal receives

12/13/2018	Mark Thomas	mouse	1711-35337A	The recommendation is to add the use of Isoflurane anesthesia as an option to surgical procedures. Additionally, this recommendationa also adds carprofen as an alternative NSAID analgesic to Ketoprofen. The specific recommendation is to use Isoflurane, either in combination with ketamine/xylazine, or as a sole anesthetic agent. If using in combination, the mouse is given an inital dose of ketamine/xylaine and then maintained on Isoflurane for the rest of the procedure. If used by itself, mice are induced with Isoflurane and then maintained on Isolurane throughout the procedure. The specific recommendation for Carprofen is to use it as an alternaive NSAID to ketoprofen at a dose of 5mg/kg SC every 24 hours. this would be administered at the same times pre-surgery and post surgery as stated in the protocol for ketoprofen.
1/18/2019	[redacted]	NHP	1601-33436A	The recommendation is to update to the previous box chair veterinary recommendation for the specific use of the B and M model of the box chair for all animals on this protocol (already approved ruring IACUC visit). Use of this box chair allows the animals to be consciously chair restrained and will be beneficial for both experimental and clinical reasons. Typically animals are removed from their home cage using the poll and collar method to guide them into their individual chairs. This refinement will help to decrease the need for yoking with a pole and for animals that do not have collars they can easily by trained to jump into a transport box and into the chair. This will decrease the stress of the previous method to get the animals into the chair since the animal has the ability to walk into the box and into the seat rather than being pulled and will not require the use of a collar. This will also be beneficial to larger NHPs whose collars do not fit well, those who do not train well with pole or those who do not have a collar for clinical reasons. NHPS will be acclimated and trained to use the box chair configuration

1/18/2019	[redacted]	NHP	1605-33678A	Recommendation is to update to the previous box chair veterinary recommendation for the specific use of the B and M model of the box chair for all animals on this protocol (already approved ruring IACUC visit). Use of this box chair allows the animals to be consciously chair restrained and will be beneficial for both experimental and clinical reasons. Typically animals are removed from their home cage using the poll and collar method to guide them into their individual chairs. This refinement will help to decrease the need for yoking with a pole and for animals that do not have collars they can easily by trained to jump into a transport box and into the chair. This will decrease the stress of the previous method to get the animals into the chair since the animal has the ability to walk into the box and into the seat rather than being pulled and will not require the use of a collar. This will also be beneficial to larger NHPs whose collars do not fit well, those who do not train well with pole or those who do not have a collar for clinical reasons. NHPS will be acclimated and trained to use the box chair configuration
3/1/2019	[redacted]	NHP	1706-34897A	The recommendation is to allow for a staged approach to the upcoming implantation of the cranial electrode microarray. Upon pre-planning for this surgery it was determined tha a two part staged approach would provide for better welfare of the animal and lessen the prolonged concern of hemodynamic, thermoregulatory, recovery and potential increased rate of infection associated with such a substantial time of impairment. Instead of one long (up to 18 hour) surgery, surgeries will be separated by three weeks (3/6 and 3/26) and will be shortened to an approximately 4 hour proceudres and a 10 hour procedure +/- a few hours. In addition a bacteriostatic material called copalite will be used as a veneer to cover the future craniotomy site to ensure no tissue regrowth and keep the site sterile

3/19/2019	Paul Iaizzo	dog	1707-35001A	The recommendation is to allow the use of additional anesthetic regimens for the procedure as they could also be appropriate based on the animals individual needs and different responses to different medications. Currently approved for only Ketamine/Xylazine but veterinarian recommendation allows for Acepromazine/Butorphanoal (dose: acepromazine: 0.005-0.060mg/kg, butorphanol: 0.1-0.4 mg/kg; routes: IV/SC/IM or Dexmedetomidine (dose 2-10 mg/kg route SC/IM/IV; Induction with propofol (dose 1-6mg/kg IV to effect)

Guideline Exceptions
September 2018- March 2019

Protocol ID and Form Type	Principal Investigator	Species	Guideline	Exception Request with Justification
1902-36776A	Bardwell, Vivian	Mice	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	There is no restriction so no weight loss is expected (Tamoxifen in chow)
1902-36754A	Kotz, Catherine	Mice	SOCIAL HOUSING	Housing the animals together can influence their thermogenic capacity, which is a factor that impacts the endpoints (locomotor activity, calorimetry, body composition and body weight) in these proposed studies.
1902-36750A	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. (Lymphadenectomy)
1901-36722A	Lowe, Dawn	Mice	MULTIPLE SURGERY	Simultaneous with (0 time point) or 1,3,5, or 7 days after barium chloride injury we will measure physiological function of the muscle in the anesthetized mouse (in vivo contractile analysis). This is an extremely minimally invasive procedure in which only two small electrodes are place subcutaneously around the peroneal nerve of the leg. Immediately after this measurement, while the mouse is still anesthetized the skin will be open and barium chloride delivered. The barium chloride delivery will take less than 5 minutes beyond the physiological measurements. (Barium Chloride Muscle Injury)
1901-36722A	Lowe, Dawn	Mice	72 HOUR POST-OP ANALGESIA POLICY	Because we will be examining the role of macrophages in skeletal muscle autophagy/damage/regeneration, such as that which is induced by barium chloride injury, it is necessary to restrict the use of analgesia unless serious negative consequences result. We will continually work with the vet staff in order to be sure that there is adequate attention paid to the extent of post-surgical pain. □ □ If an analgesic is prescribed by RAR, analgesics that have fewer anti-inflammatory effects could be used in these cases, such as sustained release buprenorphine will be used first. Local anesthetics such as lidocaine or bupivicaine (sodium channel blockers) may also be used as regional analgesia if an analgesic is deemed necessary or if sustained release buprenorphine is not suitable/working. The most commonly used local anesthetic agents are Lidocaine and Bupivacaine. Lidocaine acts faster (within 2-5 minutes of injection) but its effects only last up to 2 hours. Bupivacaine, has a slower onset of action (about 5-10 minutes after injection) but its effects last much longer, for about 4-8 hours. We'll also continually work with the vet staff in order to be sure an adequate attention has been paid to post-surgical pain. If prescribed by RAR, the doses are typically 5-20 ul of 0.5% Bupivacaine or 15-20 ul of 1% Lidocaine will be given by subcutaneous injection. (Barium Chloride Muscle Injury)
1901-36717A	[redacted]	Nonhuman Primate (Macaques)	MULTIPLE SURGERY	Multiple survival surgeries are required to record the needed number of neurons. The first recording chamber does not produce any deficits and placing additional chambers maximizes the use of these valuable animals. The additional surgery is done only if the animal is in excellent health. Having the ability to reposition the chamber greatly increases the efficiency and productivity of the experimental protocol. These 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 for a particular study. □ □ In addition, posts and chambers may loosen over time and require tightening or reattachment. (Post/Chamber Implant)
1901-36717A	[redacted]	Nonhuman Primate (Macaques)	FOOD/FLUID RESTRICTION RECORDKEEPING	Food and water are provided by both RAR and the Ebner lab staff as detailed in the attachment: Primate SOP Food and Water. (Water Restriction)

1901-36714A	[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
1901-36714A	[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.
1901-36714A	[redacted]	Nonhuman Primate (Macaques)	MULTIPLE SURGERY	Since the experiments required for our studies last 1-3 years, there are instances when another surgical procedure will allow us to collect the necessary data instead of starting all over with another animal. This can be considered a means to reduce the overall number of animals used in our studies. (Chamber Surgery) Please see above for the microdrive and repair procedures. Since the experiments required for our studies last 1-3 years, there are instances when another surgical procedure will allow us to collect the necessary data instead of starting all over with another animal. This can be considered a means to reduce the overall number of animals used in our studies. (Microdrive Placement / Headcap Repair)
1901-36714A	[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.
1901-36697A	Patterson, Ned	Dog, Dog, Dog, 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.

				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 (one now deceased, the other on the current protocol). 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 at here under this protocol. The three current dogs had one previous intracranial surgery before coming here, and would have 2 maximum here with the second here if necessary only after the PI and RAR vet consult as indicated in the protocol. Any future dogs would only have up to 2 intracranial surgeries here and none before. (implantation and maintenance of an implanted intracranial electroencephalograph (iEEG) seizure prediction and neurostimulation devices) 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 (one now deceased, the other on the current protocol). □
1901-36697A	Patterson, Ned	Dog, Dog, Dog, Dog	MULTIPLE SURGERY	□
1901-36697A	Patterson, Ned	Dog, Dog, Dog, 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.
1901-36695A	Ponder, Julia	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).
1901-36695A	Ponder, Julia	Bird (Other), Chicken	SOCIAL HOUSING	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.
1901-36695A	Ponder, Julia	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.
1901-36688A	Lin, Gufa	Mice	MULTIPLE SURGERY	The major objectives of this study is to investigate whether limb/digit regeneration can be enhanced by cell transplantations, with or without further application of growth factors. We have shown that the cell transplants did not survive well if cells were applied at the same time when the digit was amputated. The best time for cell transplantation in the mouse digit stumps is around 2 weeks after amputation. This has also been reported recently by Dr. Ken Muneoka's groups, published in the journal Regeneration. 2017 Aug 20;4(3):140–50. Thus it is essential that cell transplantation is performed on the same mouse that has previously undergone limb or digit amputation. (Mouse limb amputation and cell/matrix transplantation)
1901-36688A	Lin, Gufa	Mice	72 HOUR POST-OP ANALGESIA POLICY	In general there is no need for pain relief medications, as PN1-PN7 mice are considering lacking centralized pain reflexes. □ [Mahmoud AI, Porrello ER, Kimura W, Olson EN, Sadek HA. Surgical models for cardiac regeneration in neonatal mice. Nat Protoc. Nature Publishing Group; 2014 Jan 16;9(2):305–11]. (Neonatal mouse vagotomy and cardiac injury)

1901-36688A	Lin, Gufa	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	Avertin is used in this study, in addition to using isoflurane, as an anesthetic methods, to accommodate the imaging process, especially the fluorescence imaging under directing microscope, when proper isoflurane set up is difficult to set up to allow efficient imaging of the animals. □ Careful observation of the experimented mice in our previous work has indicated that there is no complications of ileitis, peritonitis or muscle necrosis. No signs of these conditions have been indicated in our post-mortem examination of the animal body and tissues collected. □ Since Avertin is no longer commercially available, and therefore, we will need to use the non-pharmaceutical grade powder. Thus we request an exception for the use of pharmaceutical grade Avertvin.□ (In Utero Transplantation) Avertin is used in this study, in addition to using isoflurane, as an anesthetic methods, to accommodate the imaging process, especially the fluorescence imaging under directing microscope, when proper isoflurane set up is difficult to set up to allow efficient imaging of the animals. □ Careful observation of the experimented mice in our previous work has indicated that there is no complications of ileitis, peritonitis or muscle necrosis. No signs of these conditions have been indicated in our post-mortem examination of the animal body and tissues collected. □ Since Avertin is no longer commercially available, and therefore, we will need to use the non-pharmaceutical grade powder. Thus we request an exception for the use of pharmaceutical grade Avertvin.□ (In Utero Transplantation)
1901-36686A	Denton, Robert	Amphibian (Other)	SANITATION FREQUENCY	Sanitation is not performed by RAR. Water bowls are washed weekly with hot soapy water and rinsed well. Paper towel bedding is changed weekly or as needed when soiled. Once per month, all enclosures are completely sanitized using chlorihexadine (Nolvasan brand).
1901-36686A	Denton, Robert	Amphibian (Other)	ENVIRONMENTAL ENRICHMENT	The PVC pipe sections provide a surface to climb and to hide within. Mole salamanders are particularly inactive, as they spend more than ten months per year underground in a state of near-hibernation. The substrate for each container will be several layers of moistened, bleach-free paper towel.
1901-36686A	Denton, Robert	Amphibian (Other)	SOCIAL HOUSING	Salamanders are not social animals and are housed individually in the case of cross-contamination of skin microbiota.
1901-36681A	[redacted]	Nonhuman Primate (Macaques)	MULTIPLE SURGERY	see protocol for details
1901-36672A	Gallaher, Daniel	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)
1901-36672A	Gallaher, Daniel	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.
1901-36655A	Waye, Heather	salamander	ENVIRONMENTAL ENRICHMENT	Salamanders are not social animals. Enrichment is provided. Layer of moss allows for burrowing behavior. Deep water bowl allows swimming.
1812-36628A	Osborn Jr, John	Rat, Mice	MULTIPLE SURGERY	see protocol for details
1812-36628A	Osborn Jr, John	Rat, Mice	SOCIAL HOUSING	Animals instrumented with telemeters will need to be single housed for recording of blood pressure.
1812-36614A	Chester-Jones, Hugh	Cow (Agricultural)	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	Standard protocol for calf studies are biweekly body weights which is adequate to detect response differences. (Performance of Calves Pre- and Post-Weaning Fed Texturized Calf Starters and Milk Replacer Supplemented Conventionally or with Blueprint® technology)

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. (2 Photon Microscopy/Calcium Imaging)
1812-36595A	Chen, Clark	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. (Intracranial injection 1) 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. (Intratumoral injection of Natural Killer (NK) cells 1)
1812-36587A	Gallaher, Daniel	Rat	SOCIAL HOUSING	For the protein quality assessment (PDCAAS), we need to do fecal collections from each animal. For the health benefits study (2nd part), we need to measure food intake individually.
1812-36583A	McLoon, Linda	Rabbit, Mice	MULTIPLE SURGERY	in order to assess if eye movement function has been improved as a result of our neurotrophic or other treatment, we need to do optokinetic nystagmus testing. To perform this testing of eye movements, we need to hold the head steady, which requires the head posts to be attached. The eye movement testing is the functional readout of treatment efficacy. (Headpost Surgery) in order to assess if eye movement function has been improved as a result of our neurotrophic or other treatment, we need to do optokinetic nystagmus testing. To perform this testing of eye movements, we need to hold the head steady, which requires the head posts to be attached. The eye movement testing is the functional readout of treatment efficacy. The treatments of the muscles within the orbit is relatively non-invasive, but since the conjunctiva must be opened, it is a surgery. We let the head post surgery site completely heal prior to treatment of the muscles in the orbit. (Mouse Muscle Injections or Pellet Implantation)
1812-36575A	Modiano, Jaime	Mice	EUTHANASIA METHOD	1. Cervical dislocation is used because organ congestion must be avoided to assess tumor dissemination and architecture. A common side effect of sedatives, barbiturates, and CO2 inhalation is congestion, which can obscures pathologic changes in vascular organs and tumor vasculature, and can thus render experiments moot (unable to analyze vascular effects of genetic alteration or treatment). □ □ 2. When performed by experienced personnel, cervical dislocation leads to instantaneous death. Sedation can increase anxiety
1811-36553A	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. The workshop participants work with live birds and would not have anesthesia available at their farms. The workshop participants work with live birds and would not have anesthesia available at their farms.
1811-36549A	Kerlin, Aaron	Mice	MULTIPLE SURGERY	see protocol for details
1811-36549A	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.

1811-36515A	Sivula, Christine	Hamster	72 HOUR POST-OP ANALGESIA POLICY	We will not be administering analgesics, due to the fact that our intent is to observe behavior and other parameters of hamsters that have undergone a painful procedure. The results of this study intend to develop an ethogram and facial grimace scoring system for Syrian hamsters and investigate other welfare parameters to monitor in order to better recognize and ameliorate pain in Syrian hamsters, and assist in clinical evaluation of the efficacy of analgesics for the species in the future. Analgesics would introduce a variable that will directly affect the purpose of our study. (Laparotomy)
1811-36512A	Phillips, Hannah	Cat	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	Since this study is only for 24 hours, the weight of the cat will not help indicate the health status. (Feeding enrichment)
1811-36504A	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.
1811-36504A	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. Fish are also housed individually during isolation of zebrafish procedure.
1811-36504A	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. (Imaging of Adult Fish) 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. (Imaging of Embryos, larvae and juvenile fish) 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. (Fin clip or wounding (for immune response)) 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. (Adipose staining) 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. (Sleep Deprivation)
1811-36490A	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. (Implantation of s.c. osmotic pumps for continuous morphine (or buprenorphine) infusion)
1811-36490A	Pravetoni, Marco	Rat, Mice	BLOOD COLLECTION LIMIT	Animal will be euthanized by this method and will not survive this blood collection. (Trunk blood collection following pharmacokinetic studies) Animal will be euthanized by this method and will not survive this blood collection. (Trunk blood collection following pharmacokinetic studies)
1811-36489A	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. (Atrial Septectomy and Pulmonary Banding)

1811-36486A	Mermelstein, Paul	Rat, Rat, Mice	MULTIPLE SURGERY	For self-administration experiments in which animals receive intracranial injections, two survival procedures will be performed on the same animal: stereotaxic injections and jugular catheterization. Stereotaxic injection allows direct manipulations of the brain that result in changes in drug self-administration behavior. The inhaled anesthetics used for both of these surgeries are well tolerated. Any animals showing signs of distress or lack of wound healing will not be subjected to additional procedures until fully healed. (Surgeries (IMHA Housing)) For self-administration experiments in which animals receive intracranial injections, two survival procedures will be performed on the same animal: stereotaxic injections and jugular catheterization. Stereotaxic injection allows direct manipulations of the brain that result in changes in drug self-administration behavior. The inhaled anesthetics used for both of these surgeries are well tolerated. Any animals showing signs of distress or lack of wound healing will not be subjected to additional procedures until fully healed. (Intravenous (I.V.) Cannulation (IMHA))
1810-36480A	El-Ashry, Dorraya	Mice	TUMOR ENDPOINT CRITERIA	In order to assess the relationship between metastatic burden as measured by IVIS (photon flux) and the visualization of macrometastases, we will be performing a pilot study which will allow the animals to live up to 10 weeks past injection of tumor cells. This is necessary (Tail vein injection of breast cancer cells) In order to assess the full extent of which FAP-AT reduces tumor burden and 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 FAP-AT treated animals that arise late or that have acquired resistance to the treatment. (Intracardiac injection of breast cancer cells)
1810-36480A	El-Ashry, Dorraya	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	In order to assess the full extent of which FAP-AT reduces tumor burden and metastases, we need to be able to determine a curve of metastatic burden as measured by IVIS versus macro-metastases that can be observed by eye. This will enable us to choose an endpoint where we can measure the full extent of drug efficacy by IVIS without having large numbers of animals become moribund. However, because we have not kept injected animals past 7 weeks before, it is possible that some of these animals may become moribund
1810-36479A	Mensinger, Allen	Fish (Other)	Three-Days Post-Op Analgesia	The PI is interested in the effects of multimodal sensory input on freely swimming, naturally behaving fish. Any use of post op analgesia would depress the level of sensitivity in the mechanosensory lateral line and render the experiments much less effective. The toadfish tolerate the procedure extremely well with only a small incision (2 cm) needed to access the cranium and implant the electrodes. They will resume swimming without 2 hrs of being removed from anesthesia and will actively attack prey and eat within 12 hrs of surgery. We do not use post surgery antibiotics as we have never observed a post op infection manifest itself in less than 7 days. It is believed the toadfish mucous contains antibiotic properties as captured fish often bear severe head scars from intraspecfic fighting but do not show infection. Post op examination of fish after three to 5 days shows clear CSF and no sign of external infection. Many antibiotics also damage hair cells and would interfere with our experiments
1810-36461A	Parr, Ann	Rat	MULTIPLE SURGERY	The rat must first be injured and recover to model a chronic spinal cord injury so that we can test our scar ablation techniques and cell transplantation. Pain and distress will be controlled through analgesics and antibiotics.□ (Spinal Cord Injury) The rat must first be injured and the injury allowed to become chronic to test rose bengal scar clearance efficacy, then, the animal must be allowed to recover/secondary inflammatory response must diminish before injection of cell transplants. Pain and distress will be controlled through analgesics and antibiotics. (Injection of Rose Bengal/sNPCs)

1810-36460A	Townsend, DeWayne	Mice, Mice	MULTIPLE SURGERY	Ovariectomy 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. (Ovariectomy) 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. (Orchiectomy)
1810-36460A	Townsend, DeWayne	Mice, 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.
1810-36460A	Townsend, DeWayne	Mice, Mice	SOCIAL HOUSING	There are several procedures that will require the mice be housed individually to allow specific measurements to be made from each individual mouse. Where possible the duration of these changes will be minimized. Mice will be singly housed if they 1) are in a study in which drugs are given in the water; 2) receive ovariectomy, although these mice will be reunited with littermates once healed; 3) receive an osmotic pump; 4) receive orchiectomy, there is concern that reintroducing group housing after surgery will increase fighting in male mice.
1810-36452A	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.
1810-36452A	Collister, John	Rat	ENVIRONMENTAL ENRICHMENT	Since food and water intake will be strictly monitored, any environmental enrichment (e.g. gnawing, chewing) could adversely affect the data, and due to the nature of the continual recording of blood pressure and heart rate in each animal individually, social housing will be unacceptable due to cross-talk of the radiotelemetric data transmission.
1810-36452A	Collister, John	Rat	SOCIAL HOUSING	Due to the nature of the continual recording of blood pressure and heart rate in each animal individually, social housing will be unacceptable due to cross-talk of the radiotelemetric data transmission specific from each transmitter to its matched receiver.
1810-36452A	Collister, John	Rat	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	Food is 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. (NaCl/KCl drinking water and specialized NaCl food) 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. (NaCl/KCl drinking water and specialized NaCl food)

				separately below. □ □ First, Project 1 involves comparison of several patterns of opioid delivery. Our 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.□ □ Second, Projects 2 and 3 involve viral expression of light-sensitive ion channels ("opsins"), to permit "optogenetic" control of specific brain cell types and synaptic connections. One caveat to this approach is that, even with viral expression driven by a strong transcriptional promoter, it takes time to accumulate sufficient opsin expression in brain cells to enable optogenetic stimulation. Thus, in the proposed experiments, it becomes necessary to wait two weeks after intracranial virus injection before beginning opioid exposure, including implantation of pumps for opioid administration. It is not scientifically feasible to perform intracranial virus injection and minipump implantation during the same surgical procedure, as there would be insufficient opsin expression at the time points to be analyzed. 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. This is especially critical in Project 3, which uses Alzet osomotic minipumps that have some variability in duration of drug delivery and rate of offset. However, please note that these latter surgical procedures (minipump implantation and removal) do not involve penetration of the body cavity, and generate only minor impairments of physical function, and thus are not necessarily a major survival surgery. (Subcutaneous Implantation & Removal of Miniaturized Pumps (Survival))
1810-36447A	Rothwell, Patrick	Mice	MULTIPLE SURGERY	Projects 2 and 3 involve viral expression of light-sensitive ion channels ("opsins"), to permit "optogenetic" control of specific brain cell types and synaptic connections. One caveat to this approach is that, even with viral expression
1810-36445A	Chester-Jones, Hugh	Cow (Agricultural)	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	Standard protocol for calf studies are biweekly body weights which is adequate to detect response differences. (Performance and Health of Calves Pre- and Post-Weaning Fed Milk Replacers Supplemented Differing Fat Sources and Concentrations in the First Two Months of Life)
1810-36442A	Aldrich, Courtney	Rat	SOCIAL HOUSING	Rats will be individually housed. Individual housing is preferred because it prevents the animals from chewing each others catheter and quickly damaging them. Rats will not be tethered, but allowed to move freely in their cages
1810-36435A	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.
1810-36429A	Meisel, Robert	Hamster	EUTHANASIA METHOD	The animals will simply be receiving an injection of a euthanasia solution. This method will only be used in experiment 2. Here, because we are measuring very labile molecular events (including phosphorylation) that require precise timing of sacrifice, sedatives or anesthesia would interfere with the scientific goals of the experiment.□ □ Only individuals trained in decapitation will sacrifice the animals. In addition the guillotine used for decapitation will be maintained by professional sharpening at least once per year and with manual sharpening when needed in the interim.
1810-36429A	Meisel, Robert	Hamster	SOCIAL HOUSING	Hamsters live alone in the wild so housing the females singly reflects their normal social condition. Stimulus males will be housed in groups of 2-4 per cage.

1810-36426A	Hoeppner, Luke	Fish (Zebra fish)	NON-PHARMACAUTICAL GRADE COMPOUNDS	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.□ 1. Ruparelia et al. Zebrafish models of BAG3 myofibrillar myopathy suggest a toxic gain of function leading to BAG3 insufficiency. Acta Neuropathol. 2014. 128:821-33.□ 2. Miesfeld et al. Yap and Taz regulate retinal pigment epithelial cell fate. Development. 2015. 142:3021-32.□ 3. Shahid et al. Zebrafish biosensor for toxicant induced muscle hyperactivity. Sci Rep. 2016. 6:23768 (Breeding zebrafish) 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.□ 1. Ruparelia et al. Zebrafish models of BAG3 myofibrillar myopathy suggest a toxic gain of function leading to BAG3 insufficiency. Acta Neuropathol. 2014. 128:821-33.□ 2. Miesfeld et al. Yap and Taz regulate retinal pigment epithelial cell fate. Development. 2015. 142:3021-32.□ 3. Shahid et al. Zebrafish biosensor for toxicant induced muscle hyperactivity. Sci Rep. 2016. 6:23768 (Non-invasive microscopic visualization of embryos)
1810-36420A	Bianco, Richard	Sheep (Biomedical)	MULTIPLE SURGERY	All of the procedures performed on one animal are directly related to evaluation of the device. Clinically, this pulmonary valve would be implanted in a child, and when that child grows, they would undergo a minimally invasive procedure to increase the diameter of the valve. □ The second procedure is a cut down to a vein and is minimally invasive. This procedure will be performed under sterile conditions and analgesia will be administered post operatively. (Pulmonary Valve Replacement) All of the procedures performed on one animal are directly related to evaluation of the device. Clinically, this pulmonary valve would be implanted in a child, and when that child grows, they would undergo a minimally invasive procedure to increase the diameter of the valve. The subsequent expansions are to determine if the valve can be expanded multiple times, as this is the performance expectation for this device for clinical patients. □ □ The second procedure is a cut down to a vein and is minimally invasive. This procedure will be performed under sterile conditions and analgesia will be administered post operatively. (Angiography and pulmonary valve expansion (with balloon)) All of the procedures performed on one animal are directly related to evaluation of the device. Clinically, this interpositional pulmonary conduit would be implanted in a child, and when that child grows, they would undergo a minimally invasive procedure to increase the diameter of the conduit. □ The second procedure is a cut down to a vein and is minimally invasive. This procedure will be performed under sterile conditions and analgesia will be administered post operatively. (CT imaging)

1810-36403A	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.
1810-36395A	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. (Breeding)
1810-36395A	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 we are studying may induce 25% weight loss at day 5 after inoculation of Candida The experiment is only 5 days long and in mice that on day 4 are at 25% wight loss will be euthanized.
1810-36394A	Harris, Reuben	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	If RAR veterinary staff require euthanasia of moribund mice, we will follow through in the allowed time.
1809-36386A	Deng, Yibin	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	Our animal studies are trying to determine whether and how the genetic alterations or chemoprevention/chemotherapy will provide any survival benefit for the mouse cohorts. In order to generate a credible mouse survival curve, we need to observe the mouse cohorts up to "natural death". However, these mice are valuable and needed for pathological and biochemical analyses, we cannot allow them to die spontaneously and risk organ deterioration. Rather, we will harvest mice when they are determined to be moribund-"close to death endpoint". One Criterion from UMN IACUC guideline will potentially affect our studies to observe survival benefits. Based on "UMN IACUC Euthanasia Guideline", we have provided a very strict criteria to determine the moribund state, and these must include at least one of the first two criteria and at least one of the three remaining criteria: (1) progressive weight reductions up to 10% of body weight measured on two separate occasions over a period of one week; (2) sudden, unexplained weight loss of at least 10% of body weight over a period of one week; (3) failure to gain weight appropriately over a 3 week period; (4) persistent, hunched posture with rapid breathing over a 1 hr observation period; and (5) excessive tumor burden (palpable abdominal mass, size ~2 cm in maximum dimension). These criteria are based on over 12 years of personal experience monitoring 10 independently derived genetically engineered mouse cancer models (over 9,000 mice analyzed by the PI). We have documented on 254 independent occasions mice that fit the moribund criteria will die within ~2 days (1.55 days ± 0.8). Therefore, we are confident that performing this censorship, although not ideal, is a necessary compromise to obtain mice for pathological/biochemical studies as well as to generate a credible survival curve.
1809-36366A	Portoghese, Philip	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. (Spared nerve injury)

1809-36351A	Syedain, Zeeshan	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/Graft explant)
1809-36347A	Andrade, Rafael	Rabbit	SOCIAL HOUSING	We do not plan on housing animals singly for this study. In the event we have issues with rabbits chewing on the suture/wound of their cage mate, we may house separate these animals. We will consult our area veterinarian and will try other options e.g. e-collars, bitter spray, etc. before opting to house them singly.
1809-36344A	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. 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.
1809-36341A	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 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.
1809-36341A	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□ □ Preparation:□ Sterile filter with 0.2 micron filter.□ Store and use under sterile conditions.□ Store in the dark bottle or foil covered container.□ Store stock and working stock solutions at 4oC.□ Do not use if the solution becomes discolored or has a precipitate.□ Check pH before each use and use only when greater than pH 5.□ Discard all solutions after 4 months, including the stock solution.□ Label all containers with name and concentration of drug, date prepared and initials of person making the solution.
1809-36335A	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. (RO Antibody titer test mice)
1808-36334A	Gordon-Evans, Wanda	Dog, Cat	SOCIAL HOUSING	Postoperatively, the dogs or cats may damage the others incision and so should be housed separately.

1808-36332A	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. For example, 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 elective sacrifice. We have noticed that new lab members who cannot rapidly harvest bone marrow and lymph nodes frequently have poor experimental results. 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, requiring more repetitions and hence more mice, reagents, space in the colony and resources. 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. RAR is aware of our procedure and practice of using cervical dislocation for these scientific reasons. 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).
1808-36294A	Gorr, Sven-Ulrik	Mice	SOCIAL HOUSING	Mice will be group housed unless they damage each others wound. They will then be housed individually for up to 96 hours. We will use female mice, which tend to be less aggressive than males, to minimize risk of damage to the wounds.
1808-36291A	[redacted]	Nonhuman Primate (Macaques)	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: Renal transplant (and bilateral nephrectomy of native kidneys))
1808-36277A	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. (Hind Limb Amputation SA 18, 20)
1808-36276A	Primus, Alexander	Fish (Other), Fish (Other)	BLOOD COLLECTION LIMIT	Blood collection will be immediately followed by euthanasia. The fish in this study will be small and have very low volume of blood, however we will collect as much blood as possible to ensure that we can carry out the necessary molecular tests.□ If fish will be removed from water for more than a few seconds, they will be kept moist. (Blood collection from experiment survivors common carp) Blood collection will be immediately followed by euthanasia. The fish in this study will be small and have very low volume of blood, however we will collect as much blood as possible to ensure that we can carry out the necessary molecular tests.□ If fish will be removed from water for more than a few seconds, they will be kept moist. (Blood collection from experiment survivors fathead minnow)
1808-36276A	Primus, Alexander	Fish (Other), Fish (Other)	EUTHANASIA DEATH/MORIBUND ENDPOINT	Since the purpose of this study is to monitor the progression and subsequent physical effects of the disease, any intervention to alleviate distress prior to a moribund state may introduce bias into the treated group. It is unknown what affects distress-relieving intervention may have on the pathogen-host interaction.

1808-36275A	Knauer, Whitney	Goat	BLOOD COLLECTION LIMIT	The aggressive sampling scheme is necessary to capture the extent and duration of stress (measured by cortisol) and pain (measured by PGE2) associated with disbudding. We need 1ml of serum for both measures, so a volume of 3ml of whole blood is necessary. This aggressive sampling method has been described (Alvarez et al, 2009; Hempstead et al., 2018) with no apparent ill effects for the kids. □ □ Kids will be monitored for pallor (pale oral mucous membranes) and lethargy throughout the sampling period. Kids will be fed a high plane of nutrition (20% BW per day) as well as have free access to water through the study period. □ □ (Jugular Venipuncture)
1808-36261A	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 and would thus like to have the option of using it. Avertin will be prepared and stored using these guidelines: 1. Sterile filter with 0.2 micron filter 2. Store and use under sterile conditions 3. Store in the dark bottle or foil covered container 4. Store stock and working stock solutions at 4°C 5. Do not use if the solution becomes discolored or has a precipitate 6. Check pH before each use and use only when greater than pH 5 7. Discard all solutions after 4 months, including the stock solution 8. Label all containers with name & concentration of drug, date prepared and initials of person making the solution
1808-36260A	Erdman, Arthur	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 ketoprofen on an "as needed" basis. □ (Subdermal Patch implant)
1808-36260A	Erdman, Arthur	Rat	SOCIAL HOUSING	We do not plan on housing animals singly for this study. In the event we have issues rats chewing on the suture/wound clips of their cage mate, we may house separate these animals.
1808-36248A	Michaeli, Shalom	Rat	NON-PHARMACAUTICAL GRADE COMPOUNDS	Urethane is a widely used anesthetic in laboratory animal practice, especially in electrophysiologic studies (Maggi and Meli, 1986). 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 (Maggi and Meli, 1986, Hara and Harris, 2002). 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 (Maggi and Meli, 1986). Nevertheless, urethane also has undesirable side effects. It causes hyperglycemia, and intraperitoneal injection induces necrosis in intra-abdominal organs (Maggi and Meli, 1986, Field and Lang, 1988). Urethane anesthesia is thus recommended to be terminal, which precludes follow-up studies (Field and Lang, 1988).□ □ Urethane has mild effects on multiple ion channels, a feature distinguishing it from many other anesthetics (Hara and Harris, 2002, Masamoto and Kanno, 2012). 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%) (Maggi and Meli, 1986, Hara and Harris, 2002). 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 (Maggi and Meli, 1986, Hara and Harris, 2002, Masamoto and Kanno, 2012).□

1808-36242A	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)
1808-36236A	Tranquillo, Robert	Sheep (Biomedical)	MULTIPLE SURGERY	To evaluate function and patency of the engineered vein valve, angiogram will be performed which requires animal to be anesthetized. At 1-2 weeks, baseline will be established and ensure there is no early clotting or dysfunction of valve. After that the frequency of every 4 weeks allows for insertion site to heal. (II. 1-2 Week, 4 Week, and 8 Week Angiogram to Evaluate Valve Function) To evaluate function and patency of the engineered vein valve, an angiogram will be performed at 1, 4, 8, and 12 weeks which requires animal to be anesthetized. (I. Implant of Engineered Vein Valve)
1807-36224A	Elmquist, William	Mice	BLOOD COLLECTION LIMIT	Blood collection will be performed post euthanasia. (Distributional Pharmacokinetics of anti-cancer agents)
1807-36224A	Elmquist, William	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	In efficacy studies, the improvement in survival upon treatment with novel anti-cancer agents will be evaluated. In these studies, tumor-bearing mice with deviations from normal health will be euthanized at moribund.
1807-36214A	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.)
1807-36214A	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.
1807-36211A	Suckow, Mark	Mice	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	Animals will be continuously monitored and LORR and return to righting noted. Because potentially painful procedures will not be part of this work, the depth of anesthesia will not be monitored. (Administration of test compound) Animals will be continuously monitored and LORR and return to righting noted. Because potentially painful procedures will not be part of this work, the depth of anesthesia will not be monitored. (Evaluation of Loss of Righting)
1807-36205A	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).
1807-36197A	[redacted]	Mice, Rat, Dog, Cat, Rabbit, Guinea Pig, Chinchilla, Nonhuman Primate (Macaques), Pig (Biomedical), Sheep (Biomedical), Chicken, Turkey	SOCIAL HOUSING	Every effort will be made to socially house animals. However, animals transferred to this protocol from protocols with approved social housing exceptions may require continuation of that exception while on this protocol.
1807-36193A	[redacted]	Nonhuman Primate (Macaques)	MULTIPLE SURGERY	see protocol for details
1807-36152A	Niedernhofer, Laura	Mice	EUTHANASIA METHOD	Culling purposes only. Preformed only on pups < 3 days.
1807-36150A	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.

1807-36127A	Tran, Phu	Mice	EUTHANASIA METHOD	Sedation may interfere with plasma hormone analysis. A large pair scissors will be used to decapitate mice at the end of the experiment.
1807-36119A	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 30% 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 30%. 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.
1807-36119A	Pennell, Christopher	Mice	EUTHANASIA METHOD	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 30% weight loss as one criterion for euthanasia (please note this exemption was granted in previously approved protocols). 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 30%. 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 30% body weight. Therefore, mice will be euthanized when one or more of the following criteria are met:□ 1) they have lost 30% of their body weight□ 2) they score 8 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)□ □ Our clinical scoring system is based on a well-established system used to assess graft versus host disease in mice. Scores of 0-2 are assigned to each of four criteria: activity, fur texture, posture, and weight. Summed scores of 0 and 8 indicate healthy and moribund mice, respectively. Score assignment follows.□ Activity: "0" if normal; "1" mild to moderately decreased; "2" stationary unless
1807-36116A	Jenkins, Marc	Mice	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	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)
1807-36110A	Gradilone, Sergio	Rat	MULTIPLE SURGERY	In order to test the efficiency of the virus to infect and express GFP on tumor tissue, we propose to use an orthotopic rat model injecting BDEneu cells. For this approach we need two surgeries, the first surgery will be the injection of the cells on the liver lobe and the second surgery will be the injection of the AAV virus on the portal vein or jugular vein. Anesthetics will be titrated carefully and mice monitored continuosly throughout monitoring and recovery time on a heating pad surface. After each of the surgeries the rats are going to be injected with Carprofen 5 mg/Kg for 3 days. (Cholangiocarcinoma orthotopic model)
1807-36110A	Gradilone, Sergio	Rat	72 HOUR POST-OP ANALGESIA POLICY	For the jugular vein injection procedure we spoke with the veterinarian and he told us that giving carprofen before the surgery and the day after would be enough for this procedure. (Intrajugular AAV injection)
1807-36097A	Grande, Andrew	Mice	EUTHANASIA METHOD	Euthanasia occurs instantly.

1806-36072A	Alejandro, Emilyn	Mice, 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.
1806-36049A	O-Uchi, Jin	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	sensitivity to halogenated anesthetics (e.g. Isoflurane) to produce human malignant hyperthermia-like phenotype after exposure to these drugs (Chelu MG et al, FASEB J. 2006). In addition, in the prior studies, we have frequently experienced that this mouse lines has sensitivity to reduce cardiac function and hemodynamics during surgery (unpublished data). Only avertin among the drugs we tested did not change the basal cardiac function and hemodynamics compared to WT. Therefore, we will use avertin for all procedures we proposed in this animal protocol.□ 100% Tribromoethanol (avertin) stock solution will be prepared as follows. First, we will add non-pharmaceutical grade avertin (Sigma) to non-pharmaceutical grade tertiary amyl alcohol (Sigma) and completely dissolve it by heating and stirring. To use, we will dilute 100% stock to 2.5%, v/v, in diluent (0.8% NaCl, 1mM Tris (pH 7.4), 0.25mM EDTA, check the pH and will adjust to pH 7.4.) stirring vigorously until it is dissolved. The injection solution will be filtered through a 0.22 um filter (Millex-GV, Millipore Corp). We will store both 100% avertin stock and injection solution (2.5% avertin) at 4° C wrapped in foil (light sensitive solution). 100% avertin stock solution will be stored and used within a month and 2.5% diluted avertin solution will be used within 30 days of initial preparation and be properly stored. Solution may have to be warmed before injection. (Thoracotomy for Heart Cell Isolation) There is no pharmaceutical grade avertin available. This animal line has high sensitivity to halogenated anesthetics (e.g. Isoflurane) to produce human malignant hyperthermia-like phenotype after exposure to these drugs (Chelu MG et al, FASEB J. 2006). In addition, in the prior studies, we have frequently experienced that this mouse lines has sensitivity to reduce cardiac function and hemodynamics during surgery (unpublished data). Only avertin among the drugs we tested did not change the basal cardiac function and hemodynamics compared to WT. Therefore, we will use avertin for all procedures we proposed in this animal protocol.□ 100% Tribromoethanol (avertin) stock solution will be prepared as follows. First, we will add non-pharmaceutical grade avertin (Sigma) to non-pharmaceutical
1806-36045A	Noll, Sally	Turkey, Chicken	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	As indicated the birds are at a minimum of 2.5 Kg at the time of initial 24 hr fast. Once in the cages, we don't weigh them any more as there is an increased risk of injury taking them in and out of the cage repeatedly. Also with handling, feathers, scale, dander will contaminate the excreta collected leading to increased variability in the chemical composition. (Assay procedure-Turkey) As indicated the birds are at a minimum of 2.5 Kg at the time of initial 24 hr fast. Once in the cages, we don't weigh them any more as there is an increased risk of injury taking them in and out of the cage repeatedly. Also with handling, feathers, scale, dander will contaminate the excreta collected leading to increased variability in the chemical composition. (Assay procedure-chicken)
1806-36039A	Fairbanks, Carolyn	Mice, Rat	72 HOUR POST-OP ANALGESIA POLICY	Post-operative analgesic therapy is contraindicated since provision of analgesics would inhibit the neurochemical changes required to develop the hypersensitive states to be studied. (Spared Nerve Injury Surgery□)
1806-36038A	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.

1806-36038A	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.
1806-36038A	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 and 1507-32810A). 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. □ □ Avertin will be prepared according to the IACUC Guidelines. Briefly, ten grams of 2,2,2-Tribromoethanol will be suspended in 10 ml of tert-amyl alcohol and serves as the stock solution. The working solution is made by diluting the stock to 2.5% in PBS, filter sterilized through a 0.2 um filter, and stored at 4 C in a dark bottle. The working solution is used for no more than one month.□ (EAE model) Mice will be deeply anesthetized with intraperitoneal injections of (Avertin, 425 mg/kg) prior to perfusion. (transcardial perfusion)
1806-36038A	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. (transcardial perfusion)
1806-36033A	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.
1806-36033A	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. □ □ Excerpt from the NIH guideline:□ Mouse, Rat, and Hamster Neonates up to 10 days of age: Acceptable methods for euthanasia include: injection of chemical anesthetics (e.g., pentobarbital), decapitation or cervical dislocation. Additionally, these animals are sensitive to inhalant anesthetics; e.g., CO2, or isoflurane from a vaporizer (used with appropriate safety considerations) although prolonged exposure, up to 50 minutes may be necessary. 2,15-17 A secondary physical method of euthanasia is recommended to ensure death (e.g. cervical dislocation, decapitation, bilateral pneumothorax). Death must be verified prior to disposal. “Fetuses that are believed to be unconscious and altricial neonates

1806-36019A	Siegfried, Jill	Mice	72 HOUR POST-OP ANALGESIA POLICY	Our incisions are very small and seal right away with vetbond. Others who has performed this surgery did not needed 3 days of analgenics (Implanting viably frozen xenograft tumors)
1806-36007A	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.
1806-36007A	Blazar, Bruce	Mice	SOCIAL HOUSING	Although we prefer not to house mice singly, on rare occasion there is no alternative. For example, 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. 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.
1806-36007A	Blazar, Bruce	Mice	EUTHANASIA METHOD	see protocol for details
1806-35986A	Graves, Steven	Mice	MULTIPLE SURGERY	Multiple surgeries are required to test the influence of chronic pain on the development of addictive behaviors at two time points. SNI + catheter implantation groups are used to investigate how early stages of chronic pain influence addictive behaviors whereas animals receiving SNI followed by catheter implantation 25d later are used to study how neuronal plasticity induced by SNI affects addictive behaviors after SNI-induced plasticity has stabilized. (Spared Nerve Injury)
1805-35962A	Dong, Zigang	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. (The preventative effects of Ashitaba chalcones on melamoma development) 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, 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. (The therapeutic & preventive effects of Ashitaba chalcones on melanoma development)
1805-35959A	Pieters, Maria	Pig (Agricultural)	EUTHANASIA METHOD	Personnel is trained to perform euthanasia (DVMs) directly in large swine.
1805-35927A	Malone, Erin	Horse, Cow (Biomedical), Goat, Sheep (Biomedical), Camelid (llamas & alpacas)	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	Standing sedation only. Clinical cases are not monitored to this level. Sedation is only used to the level needed to relax the animal, not to perform surgery

1805-35921A	Meisel, Robert	Hamster	SOCIAL HOUSING	Hamsters live alone in the wild so singly housing our experimental animals reflects their normal social condition. Stimulus males will be group-housed up to 4 males/cage. This group housing drastically reduces the levels of aggression in male hamsters meaning that our stimulus aniimals neven initiate fights. We are asking for an exception to group house our male stimulus hamsters.
1805-35921A	Meisel, Robert	Hamster	EUTHANASIA METHOD	The animals will simply be receiving an injection of a euthanasia solution. This method will only be used in Experiment 2. Here because we are measuring very labile molecular events that require precise timing of sacrifice, sedatives or anesthetics would interfere with the goals of the experiment.
1805-35914A	Khoruts, Alexander	Hamster	EUTHANASIA DEATH/MORIBUND ENDPOINT	C. difficile infection results in pseudomembranous enterocolitis in hamsters, which is typically a fatal condition. It is a rapid disease that generally peaks at 48 hours, and death/moribound state is the standard end-point in the literature. Of note, the human equivalent, which is responsible for ~ 30,000 deaths annually in the US, has 50% mortality with best standard therapy. Therefore, while we will monitor the mice frequently and follow the IACUC criteria for euthanasia, our expectation is that the animals might actually achieve the moribound state.
1805-35914A	Khoruts, Alexander	Hamster	SOCIAL HOUSING	Once infected the animals need to be housed individually. This is the standard in the hamster C. difficile infection model to minimize cross-contamination with C. difficile bacteria being consumed through coprophagy as well as allow the sicker animals not to be disturbed by healthier neighbors
1805-35907A	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). (Breeding)
1805-35907A	Garry, Daniel	Mice	EUTHANASIA METHOD	Cervical dislocation will be performed by technically competent staff to ensure quick and complete euthanasia
1805-35905A	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 each surgery, great care will be taken to minimize the pain and discomfort to animals, as described below.□
1805-35905A	Saunders, Benjamin	Rat, Mice	SOCIAL HOUSING	Animals that are food restricted for some experiments will need to be singly housed to ensure that each individual receives adequate amounts of food. Animals with surgical implants will need to be singly housed after implantation to avoid damage to the implants by the other subjects (who may attempt to chew on the implants).
1805-35904A	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. (Uninephrectomy) 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. (Implantation of renal interstitial catheter)

1805-35897A	DiCostanzo, Alfredo	Cow (Agricultural)	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	There is no dietary restriction, only dietary modification. Energy concentration in diets is sufficient to maintain growth rates of 3.5 lb daily or more. Weekly weighing could actually impact growth rate negatively because of the need to move cattle from their home pen to the weighing facility. (Growing cattle diets)
1805-35891A	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.
1805-35891A	Blazar, Bruce	Mice	SOCIAL HOUSING	Although we prefer not to house mice singly, sometimes there's no alternative. 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.
1805-35891A	Blazar, Bruce	Mice	EUTHANASIA METHOD	see protocol for details
1805-35872A	Beilman, Gregory	Pig (Biomedical)	BLOOD COLLECTION LIMIT	It is necessary to collect this many bloods to adequately study the parameters outlined in our study. Animals will receive resuscitation fluids during the protocol as well as flushes after each blood draw. Animals will not be allowed to waken after the experiments. (Blood draws for experiments)
1804-35861A	Spencer, Sade	Rat	MULTIPLE SURGERY	Re-catheterization in case of catheter failure. Intervals are based on the animals catheter patentcy.□ Typically recatheterization surgeries only occur within the 3 weeks of the original surgery if at all. Each rat would undergo a maximum of 1 re-catheterization using the alternate jugular vein. The initial surgery utilizes the rat's right jugular vein and the re-catheterization surgery (if necessary) uses the left side. Animals□ are anesthetized for the procedure. Breathing rate and animals sensitivity to touch will be monitored to□ determine the state of anesthesia and overall well being of the animal. We will use a heating pad from the□ time of anesthesia till the animal is awake and moving around normally. (Intravenous catheter surgery) Multiple surgical procedures are usually performed in immediate succession (i.e. catheter surgery be followed by viral injection). (Intracranial surgery: virus, cannula implant, optrode implant) Not applicable to non-survival surgical procedure. (Perfusion)
1804-35861A	Spencer, Sade	Rat	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. (Rat Breeding)
1804-35861A	Spencer, Sade	Rat	SOCIAL HOUSING	Individuals with catheter and/or fiber implantations often need to be individual housed because we observe that rats are chewing on each others implantations, rendering them unusable.

1804-35861A	Spencer, Sade	Rat	ENVIRONMENTAL ENRICHMENT	Enrichment is prohibited for rats in behavioral and drug addiction studies including operant self-administration, locomotor sensitization and conditioned place preference. However, breeders are permitted to have nesting material and other enrichment. Environmental enrichment alters brain function and reduces drug reward and reinforcement and drug-seeking behavior. Enrichment can be used as an intervention to reduce addiction-related processes (see Thiel et al, 2009, IJNP) therefore it may confound interpretation of our results.
1804-35859A	[redacted]	Nonhuman Primate (Macaques)	MULTIPLE SURGERY	Microarray implantations are a refinement we have implemented in which the electrodes are chronically implanted and sealed negating the need for chamber cleanings, and thus reducing the number of times that animal is required to leave its home cage. In all cases, revision surgeries may be necessary if one of the chambers is misaligned or becomes damaged during the course of the studies. These revision surgeries, however, are rare in our experience. (Chamber Implant) Most animals will undergo just one chamber placement surgery. Animals may require repair surgeries for their headcap. Each animal will be limited to a maximum of two chamber repositionings, and the area veterinarian will be consulted beforehand to assess whether the animal is healthy enough for that procedure. It should be noted that we have other methods including adjusting the angle of the microdrive to allow access to other brain regions, which should negate the need for repositionings. And, repositioning cases are expected to be rare given our previous successes with maintaining headcaps for many years in non-human primates. To minimize pain, distress, and functional deficits, these procedures utilize the same aseptic techniques, anesthesia administration, and post-operative analgesia and care that is documented in the chamber implant procedure. (Headcap repair)
1804-35852A	Lin, Gufa	Mice	MULTIPLE SURGERY	The major objectives of this study is to investigate whether limb/digit regeneration can be enhanced by cell transplantations, with or without further application of growth factors. We have shown that the cell transplants did not survive well if cells were applied at the same time when the digit was amputated. The best time for cell transplantation in the mouse digit stumps is around 2 weeks after amputation. This has also been reported recently by Dr. Ken Muneoka's groups, published in the journal Regeneration. 2017 Aug 20;4(3):140–50. Thus it is essential that cell transplantation is performed on the same mouse that has previously undergone limb or digit amputation. (Mouse limb amputation and cell/matrix transplantation)
1804-35852A	Lin, Gufa	Mice	NON-PHARMACAUTICAL-GRADE COMPOUNDS	Avertin is used in this study, in addition to using isoflurane, as an anesthetic methods, to accommodate the imaging process, especially the fluorescence imaging under directing microscope, when proper isoflurane set up is difficult to set up to allow efficient imaging of the animals. □ Carefull observation of the experimented mice in our previous work has indicated that there is no complications of ileitis, peritonitis or muscle necrosis. No signs of these conditions have been indicated in our post-mortem examination of the animal body and tissues collected. □ Since Avertin is no longer commercially available, and therefore, we will need to use the non-pharmaceutical grade powder. Thus we request an exception for the use of pharmaceutical grade Avertvin.□ (Imaging with Fluorescence or X-ray)
1804-35833A	Noll, Sally	Turkey	FOOD/FLUID RESTRICTION RECORDKEEPING	Not applicable (Diets for Objective 2 growth study)
1804-35828A	Aliota, Matthew	Mice	SOCIAL HOUSING	For experiments assessing the capacity of ZIKV strains to cause neurovirulence in neonatal mice, pregnant dams need to be housed individually to keep litters separate. Dams will arrive pregnant from [redacted] and housed individual until gestation is complete. This is to ensure that litters are succumbing to viral infection and not because of an artifact of being-housed with another dam.
1804-35819A	Wong, Henry	Mice	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	Animals will only be sedated momentarily in order to allow for a single injection. A single entry at the time of anesthesia and one during recovery will be sufficient.

1804-35814A	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.
1804-35814A	Blazar, Bruce	Mice	EUTHANASIA METHOD	see protocol for details
1804-35814A	Blazar, Bruce	Mice	SOCIAL HOUSING	Although we prefer not to house mice singly, on rare occasion there is no alternative. For example, 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. 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.
1803-35739A	Dong, Zigang	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. (Injection of Human/Murine Cancer Cells)
1803-35719A	Wong, Henry	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. (Spared nerve injury)
1803-35712A	Yamamoto, Masato	Mice, Hamster	TUMOR ENDPOINT CRITERIA	see protocol for details
1803-35699A	Martin, Cindy	Pig (Biomedical), 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. (Atrial Septectomy and Pulmonary Banding)
1803-35671A	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. (Restricted Housing Cage)
1803-35667A	Davydova, Julia	Mice, Hamster	TUMOR ENDPOINT CRITERIA	see protocol for details

1803-35638A	Ebner, Timothy	Mice	MULTIPLE SURGERY	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. (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))
1803-35638A	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. The procedure will also be carried out in 373 ME.
1802-35633A	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)
1802-35610A	Bianco, Richard	Pig (Biomedical)	SOCIAL HOUSING	The boar 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.
1802-35608A	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 ketoprofen on an "as needed" basis. □ (Subdermal Patch implant)
1802-35603A	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 30% 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 30%. 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.
1802-35603A	Pennell, Christopher	Mice	EUTHANASIA METHOD	see protocol for details

1802-35597A	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. (Cranioplasty) 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. (Tumor implantation surgery)
1802-35597A	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].
1802-35591A	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 mcroliters only. This is standard GTT assay, which allows for evaluation of severity of diabetes. Pressure will be applied to the freshly cut end by pinching. (Blood collection)
1802-35559A	Igarashi, Peter	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
1802-35557A	Bereiter, David	Rat	72 HOUR POST-OP ANALGESIA POLICY	We have received previous permission (7.22.13) from IACUC that a single dose of ketoprofen is sufficient for the minor surgeries we propose. We will change the protocol to use carprofen instead. (Exorbital Gland removal)
1802-35557A	Bereiter, David	Rat	NON-PHARMACAUTICAL GRADE COMPOUNDS	see protocol for details
1802-35546A	Wolf, Tiffany	Goat, Bird (Other), Goat	EUTHANASIA METHOD	Ducks or geese will only be euthanized if they are attacked by a predator and mortally wounded in the field. In this case, the duration of pain will be shorter if euthanasia occurs upon discovery of a mortally wounded animal as opposed to taking time to administer an analgesic and waiting for it to take effect. We intend to limit the probability of this outcome occurring, but predators can be wily about getting around defenses.
1802-35545A	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

1802-35545A	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.
1801-35539A	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
1801-35539A	Chen, Xiaoli	Mice	SOCIAL HOUSING	Mice will be singly housed for 5 hours during the cold exposure experiment. Since we attempt to determine the effect of the gene Knocking out on energy metabolism and the ability of mice to maintain their body temperature, group housing will significantly affect this assessment. Thus, single housing is required for this experiment. And also the experiment period is short (only 5 hours). We don't think this will have a significant impact on social behavior of mice. For the cold exposure that is one week in duration, the mice will be housed individually with free access to water and regular chow diet at 4C. The rectal temperature will be monitored twice a day for 7 days. The activity, mental attitude, food consumption, and elimination will be evaluated daily with each mouse for 7 days. Animals will also need to be singly housed during the behavioral procedures in the core.
1801-35505A	Ashe, Karen	Mice, Rabbit	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.
1801-35505A	Ashe, Karen	Mice, Rabbit	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.
1801-35484A	Wickman, Kevin	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	Non-pharmaceutical grade halothane (>99% purity) has been used during certain terminal procedures in our laboratory for over 8 years, which has been a source of consistency between previous and ongoing experiments. Pharmaceutical grade halothane is no longer available in the US. 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.
1801-35436A	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. (Mouse colony)
1801-35436A	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.
1801-35436A	Lemos, Julia	Mice	ENVIRONMENTAL ENRICHMENT	Animals recovering from surgery will be placed on an isopad for the first 24 hours post surgery instead of normal bedding and nesting material. Experience with this method at the investigator's prior institute (National Institutes of Health) demonstrated less attrition, less infection around the incision and headcaps, and an overall better ability to assess health (i.e. normal urination/defecation) immediately post-surgery.
1801-35429A	Wisenden, Brian	Fish (Other), Rodent (Other - Non-USDA), Fish (Other)	EUTHANASIA METHOD	In preparation of skin extract for the predator-prey exercise, we have kill a few (about 5) minnows by cervical dislocation.

1712-35415A	Ondrey, Frank	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	Avertin is the preferred anesthetic for our application as it has a rapid induction, produces a short surgical anesthesia, and has a rapid recovery. We only require a few minutes of surgical anesthesia. Avertin will be prepared fresh each procedure day under sterile conditions. Solutions will be monitored for pH and formation of precipitates. The pH of the Avertin stock solution and working dilution are determined prior to use each day, we will include this information in our anesthetic record. Avertin pH is determined using microliter quantities added to pH paper. Working dilution is prepared and pH determined in the same manner. The pH must be >5 for use.
1712-35414A	Kim, Do-Hyung	Mice, Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	non pharmaceutical-grade urethane is used as an anesthesia in our non-survival surgeries. Urethane comes in crystal form stored in secondary containment at room temperature. To prepare urethane from solid crystal, in a chemical fume hood, 0.9g urethane is diluted in 5mL of saline and filtered using 0.22 micron Millex GP filter. Urethane in liquid form is stored at room temperature. 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)) (Terminal Epilepsy Analysis/electrophysiology)
1712-35414A	Kim, Do-Hyung	Mice, 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.
1712-35413A	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.
1712-35413A	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.
1712-35408A	Mereddy, Venkatram	Mice	BLOOD COLLECTION LIMIT	In order to minimize the total number of mice needed blood collection volume may exceed 0.5% but not over 1% of the body weight During the time span of 48 hours. Mice will be euthanized immediately after this last collection.
1712-35406A	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
1712-35400A	Noll, Sally	Turkey	EUTHANASIA METHOD	Cervical dislocation of young poultry is necessary 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.
1712-35389A	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 Dr. Nate Koewler to confirm that we do not need analgesics. (Neonatal adeno-associated virus (AAV) injections to the brain)
1712-35375A	Klein, Amanda	Mice	72 HOUR POST-OP ANALGESIA POLICY	Using analgesic drugs may antagonize the pain hypersensitivity and spinal neuronal sensitization thus prevent us from examining drug effects in alleviating pain and confound data interpretation (Spinal Nerve Ligation)

1712-35370A	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. (Implantation of loop recorder or other telemetry device)
1712-35370A	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. (Implantation of loop recorder or other telemetry device)
1712-35370A	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. (Implantation of loop recorder or other telemetry device)
1712-35369A	Trent, Ava	Horse, Cow (Biomedical), Goat, Sheep (Biomedical), Camelids (llamas, alpacas)	SOCIAL HOUSING	Animals remain under the donation protocol for a limited amount of time (hours to several days). During this time they will be housed individually unless they are compatible animals that are donated as a pair or small group (goats, sheep, camelids).
1711-35358A	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. (Virus Vector Infusion (Rats, Survival)) 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. (Optical Fiber Implantation (Rats, Survival))
1711-35353A	Waye, Heather	Reptile (Other), Reptile (Other), Amphibian (Other), Frog (Other)	ENVIRONMENTAL ENRICHMENT	
1711-35347A	Dehm, Scott	Mice	MULTIPLE SURGERY	 Longitudinal biopsies may be performed to reduce numbers of mice needed for studies monitoring the evolution of tumor subclonal architecture during experimental therapy. (Castration) 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. Castration will be performed at the same time as CRISPR/Cas9 injection. (CRISPR/Cas9 Engineering of Mouse Prostate Epithelial Cells)

1711-35337A	Thomas, Mark	Mice, Mice	MULTIPLE SURGERY	A subset of animals will receive virus infusion and catheter 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 the catheter.□ Pain and distress will be monitored identically for each individual procedure, and animals will receive the same postoperative care, monitoring, and pain management.
1711-35337A	Thomas, Mark	Mice, Mice	SOCIAL HOUSING	Animals with implanted devices (optical fibers, cannulae) will be singly housed for their own safety and for ease of daily observation. C57 mice will be curious about and gnaw on other animals' implants.
1711-35311A	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. (Spinal Cord Injury)
1711-35305A	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.
1711-35304A	Beilman, Gregory	Pig (Biomedical)	MULTIPLE SURGERY	Occlusion is uncommon, occurring in less than 10% of implants less than 180 days duration. In the case of a sluggish draw or any resistance on infusion, a thrombolytic agent (Alteplase 1mg/ml) may be infused to fill the volume of the catheter (~0.3ml). This can be repeated up to 3x in a 24 hr. period until the occlusion resolves (don't give up too easily – keep working it). If the occlusion is not resolved after 3-4 attempts to clear, the port is occluded. If port is infusion patent, the port may still be used for infusions. □ In case of malfunction (kinked, clotted or infected), animals may be re-operated on to fix the port. This may include replacing parts as needed or even removing the old port and implanting another port in the opposite side from that previously used. □ (Indwelling venous catheter placement)
1711-35301A	Benneyworth, Michael	Mice	SOCIAL HOUSING	Animals with IV catheters must be singly housing to prevent damage being done to the back ports by cagemates
1711-35286A	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.
1710-35273A	Banik, Ratan	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. Capsaicin and methylene blue may provide analgesia in experimental animals. □ Analgesic will be used if animals show excessive pain like behaviors (eg. vocalization, restlessness etc.). We and others lab extensively used this model. Based on our experience and available data, animals tolerate well this surgical procedure and do not show excessive pain behaviors. (Capsaicin and methylene blue infiltration to incision site)
1710-35264A	Xie, Jiashu	Mice	SOCIAL HOUSING	Mice in the biopsy section will be housed individually after the biopsies are taken to prevent disturbance to the wound site and bandages
1710-35258A	Low, Walter	Rat	MULTIPLE SURGERY	One group of 12 rats will each have an electrode surgically implanted into its striatum. This procedure is detailed separately. This is performed in a second surgical procedure due to different groups performing the surgeries. Neurosurgery lab staff will inject the glioma cells, and MRI lab staff will perform the electrode implantation surgery in one subset of rats. Rats will be under anesthesia and have analgesics administered at time of each procedure. (Induction of brain tumor cell line, rats) Rats will have 9L glioma cell line introduced surgically. Procedure is detailed in separate description. Anesthesia will be administered. (Intracranial electrode implantation)

1710-35258A	Low, Walter	Rat	EUTHANASIA DEATH/MORIBUND ENDPOINT	A state of moribundity may be reached to determine if treated animals experience tumor reduction and/or ablation, and whether they live longer than their untreated counterparts. Each animal will be euthanized as quickly as possible once this state is achieved. Animals which respond to treatment and show signs of tumor ablation will be allowed to live up to 16 weeks after gliosarcoma cell injection as long as they remain healthy.
1710-35224A	Lange, Carol	Mice	TUMOR ENDPOINT CRITERIA	In general, established breast cancer cell lines will primarily metastasize to the lung; the advantage of PDX models is that they have the potential to metastasize to a broader range of distant organs such as axillary lymph nodes, the peritoneum, the liver or brain. Because our studies involve understanding the role of PTK6 in the process of tumor invasion and metastasis, it is important to observe the point at which the tumors are maximally invasive to distant organs, which in these cases requires that the tumor be allowed to grow up to a diameter of 2.5 cm, provided that the animal does not exhibit criteria for euthanasia (including poor activity, difficulty breathing, loss of mobility that interferes with eating/drinking, or tumor ulceration). Our collaborator, Tiffany Seagroves, has substantial experience with these models and has observed that the growth of large mammary tumors typically do not interfere with grooming, eating, drinking, motility or lower the overall BC score until they approach these sizes (see attached Collaboration Agreement). (Requirement for PTK6 in TNBC metastasis using patient-derived xenografts)
1710-35224A	Lange, Carol	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	In general, established breast cancer cell lines will primarily metastasize to the lung; PDX models have potential to metastasize to a broader range of distant organs such as axillary lymph nodes, the peritoneum, the liver or brain. Because our studies involve understanding the role of PTK6 in the process of tumor invasion and metastasis, it is important to observe the point at which the tumors are maximally invasive to distant organs, which in these cases, requires that the tumor be allowed to grow up to a diameter of 2.5 cm. In general, established breast cancer cell lines will primarily metastasize to the lung, PDX models have potential to metastasize to a broader range of distant organs, making them a better model to study metastases. We expect animals to become moribund due to these distant metastases. Since our studies are designed to observe maximal metastatic burden, an earlier endpoint would not afford us with the ability to see metastases that are lethal rather than microscopic.
1710-35223A	Noll, Sally	Turkey	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	Not applicable - Because the effects are expected to be slightly reduced growth (5%) and the the weekly handling of all turkeys may cause more harm than good (increased risk of injury and stress to the birds and people) (Dietary modifications)
1710-35207A	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
1710-35191A	Hackel, Benjamin	Mice	TUMOR ENDPOINT CRITERIA	If skin ulceration occurs at tumor inoculation site, triple antibiotic ointment will be applied daily; if significant improvement is not observed in three days, the animal will be euthanized. Subcutaneously xenografted tumors of these cell lines have occasionally led to ulceration in the past without significant other detriment. Animals have recovered from ulceration with antibiotic ointment. Thus, this approach reduces animal use – by allowing more animals to be used to their desired endpoint – while maintaining appropriate conditions. (Tumor induction)
1709-35148A	Gewirtz, Jonathan	Mice, 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)
1709-35148A	Gewirtz, Jonathan	Mice, Rat	SOCIAL HOUSING	Rats with indwelling catheters will be housed individually. If they are housed together they may damage each other's catheter harness, which may then harm the rat if his/her catheter is pulled out.

1709-35123A	[redacted]	Nonhuman Primate (Macaques)	MULTIPLE SURGERY	Animals will arrive on the protocol with an implanted vascular access port (VAP). The placement of a 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. 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. (Omental bursa microcapsule implantation) Animals will undergo retrieval of the graft site, a followup to the primary transplant surgical procedure. This is essential in both evaluating the contribution of the islet graft to glycemic control and more importantly demonstrating the retrievability of this site. Site retrievability has relevance for translation to the intended clinical population in the event that safety issues with the graft tissue are identified the graft can be fully retrieved without damage. (Omental bursa graft explant)
1709-35117A	Sivula, Christine	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.).
1708-35087A	Liang, Yuying	Guinea Pig, Mice, Turkey	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.
1708-35068A	Smith, Gordon	Other* (USDA)	MULTIPLE SURGERY	see protocol for details
1708-35068A	Smith, Gordon	Other* (USDA)	72 HOUR POST-OP ANALGESIA POLICY	see protocol for details
1708-35068A	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. (Craniotomy (terminal)) Paralytic agents, such as 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. (Data Collection - Anesthetized)

1708-35063A	Gomez-Pastor, Rocio	Mice, Rat	NON-PHARMACAUTICAL GRADE COMPOUNDS	Avertin is appropriate for short procedures in mice, especially surgical procedures where no survival is required. It's best used in situations where it will be given only on a single occasion. Two chemicals are necessary to prepare Avertin. The first is 2,2,2 Tribromoethanol; the second is 2-methyl-2-buthanol, both obtainable from Aldrich Chemical. The preparation of Avertin will be conducted following IACUC guidelines. A filtered sterile solution will be administered by IP injection at a dose of 250 mg/Kg. This amounts to 0.5 ml of the described solution to a 25 g mouse. The solution will be kept under refrigeration in the dark and it will be replaced every 14 days. Due to the experiments proposed in the protocol, where rapid preparation of the brain tissue is requested in order to preserve synapse formation and neuronal morphology as well as the integrity of the proteins that are studied, using a rapid anesthetic is necessary. Induction with Avertin requires only 1-2 minutes and allows surgical anesthesia lasts for 15-45 minutes with a sleep time of 60-120 minutes. This anesthetic provides rapid anesthesia and it is appropriate to conduct non-survival surgery as proposed in the protocol using intracardiac perfusion. The use of Avertin will only be used for non-survival procedures as described in the protocol. In addition, I have previously conducted a long-term ongoing study where a significant amount of data has been collected with the use of avertin (Gomez-Pastor et al., 2017 Nature Communications). Therefore, the new data generated in the studies conducted in this protocol must be compared with historic data collected using this anesthetic. (Immunohistochemistry)
1708-35063A	Gomez-Pastor, Rocio	Mice, Rat	EUTHANASIA METHOD	Decapitation without euthanasia will be used for the Neuroanatomical analysis using Golgi cox staining and for primary neurons and glial cells isolation. This procedure is highly important for our research goals since it determines the morphology and maturation of essential neurons that are affected by Huntington´s disease. It has been proven that sedation interferes and compromise the scientific goals of the experiment [Potez and Larkum (2008) Effect of Common Anesthetics on Dendritic Properties in Layer 5 Neocortical Pyramidal Neurons. Journal of Neurophysiology, 99:1394-1407]. Therefore we will not administer anesthesia for these experiments. Decapitation will be performed with a certified guillotine and no anticipated pain or distress during the procedure is expected. All personnel will be specifically trained to perform such procedure. Decapitation without euthanasia will be used for the primary neurons and glial cells isolation. This procedure is highly important for our research goals since it will determine the role of glial cells in neuronal death during protein aggregation. It has been proven that sedation interferes and compromise the scientific goals of the experiment [Potez and Larkum (2008) Effect of Common Anesthetics on Dendritic Properties in Layer 5 Neocortical Pyramidal Neurons. Journal of Neurophysiology, 99:1394-1407]. Therefore we will not administer anesthesia for these experiments. Decapitation will be performed with a certified guillotine and no anticipated pain or distress during the procedure is expected. All personnel will be specifically trained to perform such procedure.
1708-35046A	Kyba, Michael	Mice, 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. (Transplantation of muscle stem cells)
1708-35046A	Kyba, Michael	Mice, 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. (Transplantation of muscle stem cells)
1708-35046A	Kyba, Michael	Mice, Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	Our objective is not to have any moribund animals, but on occasion, due to unforseen effects of particular treatments, death is possible, and we would euthanize mice prior to death, i.e. if they should enter a moribund state.
1708-35046A	Kyba, Michael	Mice, Mice	SOCIAL HOUSING	Necessary for housing mice in environmental chambers to study metabolism.
1708-35046A	Kyba, Michael	Mice, Mice	EUTHANASIA METHOD	Embryos 15 days of gestation or greater will be decapitated.

1708-35044A	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.
1708-35043A	Osborn Jr, John	Mice	SOCIAL HOUSING	Mice undergoing radio telemetry will need to be single housed, additional enrichment will be provided.
1708-35036A	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 will be prepared and stored using these guidelines: 1. Sterile filter with 0.2 micron filter 2. Store and use under sterile conditions 3. Store in the dark bottle or foil covered container 4. Store stock and working stock solutions at 4°C 5. Do not use if the solution becomes discolored or has a precipitate 6. Check pH before each use and use only when greater than pH 5 7. Discard all solutions after 4 months, including the stock solution 8. Label all containers with name & concentration of drug, date prepared and initials of person making the solution (Imaging)
1708-35036A	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.
1708-35024A	Morris, Rebecca	Mice	MULTIPLE SURGERY	Blood chimerism occurs at 10 to 14 days and we will be studying mammary tumor progression at different time points (up to 13 months). Keeping the mice joined together for the duration of the study, after blood chimerism has occurred, would put undue stress on the mice. Therefore, it is necessary for the mice to undergo a second survival surgery, 2 to 4 weeks after the initial surgery, to separate the joined mice. After the joined mice are separated, they will recover for 1 to 2 weeks and cohabitate together for the duration of their different time points (up to 13 months). At which point, they will be euthanized for sample collection. (Parabiosis Reversal)
1708-35022A	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. (Fetal blood collection)
1708-35022A	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.
1708-35014A	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)

1708-35013A	Panyam, Jayanth	Mice	TUMOR ENDPOINT CRITERIA	In our studies, we find that tumor bearing animals may develop involutions and ulcerations of the tumor as part of successful experimental treatment. Thus, it is important to follow these animals to document successful therapy. Animals with involuted/ulcerated tumors will be treated with topical collasate at least every other day until resolved. This protects the compromised tissue from infection or trauma, prevents the involutions from progressing, and in some instances allows the involutions to heal. Allowing these animals to remain on study prevents projects from having to be repeated on additional animals. Laboratory personnel will provide treatments in consultation with the veterinary staff. (Subcutaneous tumor induction) In our studies, we find that tumor bearing animals may develop involutions and ulcerations of the tumor as part of successful experimental treatment. Animals with involuted/ulcerated tumors will be treated with topical collasate at least every other day until resolved. This protects the compromised tissue from infection or trauma, prevents the involutions from progressing, and in some instances allows the involutions to heal. Allowing these animals to remain on study prevents projects from having to be repeated on additional animals. Laboratory personnel will provide treatments in consultation with the veterinary staff. (Intravenous and intraventricular tumor induction and PDX models)
1707-34988A	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. (Spinal cord injury) The rat must first be injured and recover to model a spinal cord injury so that we can test functional alterations after motor cortex stimulation. Pain and distress will be controlled through analgesics and antibiotics. (Motor Evoked Potential (MEP) Recording) The rat must first be injured and recover to model a spinal cord injury and viral vectors allowed time for transduction so that we can test optogenetic modulation of the motor cortex. Pain and distress will be controlled through analgesics and antibiotics.□ (AAV viral injection into the motor cortex and electrode implantation) 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. (Spinal cord injury/Electrode Implantation)
1707-34952A	Pluhar, Liz	Dog	EUTHANASIA METHOD	It is generally unnecessary to sedate pet dogs to place an IV catheter to administer the euthanasia solution.
1707-34950A	[redacted]	Nonhuman Primate (Macaques)	MULTIPLE SURGERY	see protocol for details
1707-34941A	Lowe, Dawn	Mice	MULTIPLE SURGERY	The goal of one study is to determine plasmalemma excitability and the only way to do this is my activating muscle confraction via the implanted nerve cuff and simultaneously recording electrical activity of the muscle via the EMG electrodes. Thus, this second surgery to implant EMG recording electrodes, which is minimally invasive, is needed following nerve cuff surgery (which also has an incision in one hindlimb). (EMG electrode implantation) The goal of one study is to determine plasmalemma excitability and the only way to do this is my activating muscle contraction via the implanted nerve cuff and simultaneously recording electrical activity of the muscle via the EMG electrodes. Thus, this second surgery to implant EMG recording electrodes, which is minimally invasive, is needed following nerve cuff surgery (which also has an incision in one hindlimb). (Nerve cuff implantation)
1707-34941A	Lowe, Dawn	Mice	ENVIRONMENTAL ENRICHMENT	The environment will influence the physical activity and mice with muscular dystrophy are susceptible to exercise-induced muscle injury, which could confound our studies. Placing paper towels or gauze in the cages for mice to shred is OK, but further enhancement of the environment needs to be avoided in our studies.

1706-34934A	Johnson, Tim	Turkey, Turkey	EUTHANASIA METHOD	Cervical dislocation will be done on any poults to be euthanized before 3 days of age per the unit SOP. Poults are resistent to carbon dioxide asphyxiation due to their hatching under a high CO2 environment and cervical dislocation is needed in order to have the poults euthanized in a short time period. Cervical dislocation is allowed for poultry under AVMA euthanasia guidelines. Cervical dislocation will be done by trained personnel only (Noll, Radovic, or J. Brannon).
1706-34930A	Bartolomucci, Alessandro	Mice	MULTIPLE SURGERY	We request an exception to allow for our use of AAV viral infusion and surgical optic fiber implantation for optogenetic studies. 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 ketoprofen (5 mg/kg, s.c.) to counteract any post-operative dehydration or pain, respectively. (Viral Vector Infusion and LED device implantation)
1706-34930A	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).
1706-34929A	Everson, Paul	Mice	EUTHANASIA METHOD	I have discontinued use of Isofluorane, since it is not necessary prior to euthanasia by cervical dislocation.
1706-34914A	Clarkson, Christina	Horse, Cow (Biomedical), Pig (Biomedical), Goat, Sheep (Biomedical)	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	A sedative is administered prior to IV injection of pentobarbitol for euthanasia.
1706-34906A	Lee, Anna	Mice	EUTHANASIA METHOD	Decapitation will be used for P0 or E15 mice using sharp scissors. The addition of sedation to these animals caninterfere with the success of neuronal culturing experiments
1706-34906A	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.
1706-34904A	Gupta, Kalpna	Mice	72 HOUR POST-OP ANALGESIA POLICY	In this study we are examining the effect of topical opioids on wound healing. Therefore, comparisons will be made between vehicle (without opioid or any analgesic) and opioid treated wounds on mice. The vehicle group therefore cannot receive any analgesics because that will interfere with the research question. We will make every effort and based on our past experience placing mice on warm pads is helpful and signs of distress are not seen on vehicle treated mice. (Wounding)
1706-34904A	Gupta, Kalpna	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	Since to goal of Study #1 is to examine the effect of chronic treatment with morphine or cannabinoids on survival, it is necessary that the animals be allowed to survive as long possible. They will be euthazied as soon as morbidity is determined.
1706-34897A	[redacted]	Nonhuman Primate (Macaques)	MULTIPLE SURGERY	see protocol for details
1706-34883A	Metzger, Joseph	Mice, Rat, Mice	TUMOR ENDPOINT CRITERIA	see protocol for details

1706-34883A	Metzger, Joseph	Mice, Rat, Mice	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.
1706-34883A	Metzger, Joseph	Mice, Rat, Mice	SOCIAL HOUSING	MHA will only be used for running wheel experiments,plethsmography and indirect calorimetry which will be no longer than two weeks. Prior to this, all animals will be in standard social housing according to the Animal Use Guidelines on Housing and Husbandry. 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
1705-34846A	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.
1705-34846A	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.
1705-34846A	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.
1705-34840A	Lanier, Lorene	Mice	EUTHANASIA METHOD	Cervical dislocation is faster than asphixiation with CO2 and, when done properly, the animal experiences less distress than with asphixiation. I have >25 years experience with this techniques.
1705-34830A	Hamilton Hart, Sara	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	In this model of cerebral malaria, 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 the experimental endpoint. Similarly, the time point for death following intra-cranial LCMV infection is anticipated to occur during the first 2 weeks following infection, but regular checks will be used to monitor the mouse conditions.
1705-34830A	Hamilton Hart, Sara	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). (Procedure 3c: Bone marrow chimeras to test response to IL-10 in malaria)
1705-34801A	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 fibrin transplant. Pain and distress will be controlled through analgesics and antibiotics. (Spinal cord injury)
1705-34800A	McGaugh, Suzanne	Fish (Other), Fish (Other)	SANITATION FREQUENCY	We use either or both under-gravel filters where the sediment waste on the gravel is siphoned out monthly or hang-on-tank charcoal filter systems where the charcoal cartridges are changed ~monthly. We will also have zeolite on hand to add to filters as needed, to protect further against ammonia build up in the tanks. Outside of tanks and the space in general will be cleaned on a regular basis, and as needed.

1704-34752A	Ferrington, Deborah	Mice	72 HOUR POST-OP ANALGESIA POLICY	Post-operative pain management has been addressed by our collaborator, Dr. Dale Gregerson. In their protocol, Dr. Gregerson explains the following. Regarding use of buprenorphine: An ophthalmologist (cornea surgeon), Dr. Steven Kaufman, at U of M, and also Dr. Roland Gunther, have been consulted about post-surgical analgesia for the intraocular injections we have proposed. Both confirm that only topical proparacaine is needed. We proposed to use topical proparacaine, and also ketamine & xylazine for restraint, as the procedure requires precision. No post-operative analgesia is needed. For reference, note that patients do not receive general anesthesia or post-op meds for such injections, even when done repeatedly and for months to years. Only topical anesthetic drops, such as proparacaine, is used for them. For these reasons, we see no need for post-op meds in these mice. Further, there is a growing literature on the beneficial effects of opioid receptor agonists on the survival of stress or injured neurons. Since the goal of this research is to discover the activities of the endogenous factors that support neuron survival, these new findings raise the possibility that the use of buprenorphine, or other opiates, will complicate our findings. Further, a recent paper suggests that opiates given at the time of injury, which would be post-op in our case, have the most significant effect. As a result, we request suspension of use of buprenorphine or similar agents post-op for this survival surgeical procedure. Use of anti-inflammatories as post-op analgesics have been considered, including NSAIDS and glucocorticosteroids, but they have also been shown to affect neuron survival post-injurery, For these reasons, we request exception to the common practice of using opiates for this post-op procedure. (Corneal Pocket for Drug Delivery)
1704-34752A	Ferrington, Deborah	Mice	EUTHANASIA METHOD	Any chemicals used for euthanasia and/or sedation may affect the cells and inhibit the success of cell growth
1704-34740A	Griffith, Thomas	Mice	MULTIPLE SURGERY	In some situations, mice will have two surgeries performed, intrarenal (i.r.) tumor implantation followed by i.r. immunotherapy treatment. The second survival surgery is necessary to facilitate injection of the immunotherapeutic directly into the tumor-bearing kidney. It is important to emphasize that all injections will be through the peritoneum. The peritoneum will not be opened in any mice. (Intrarenal Murine Renal Adenocarcinoma Tumor Implant)
1704-34740A	Griffith, Thomas	Mice	72 HOUR POST-OP ANALGESIA POLICY	The surgical procedure involves a simple skin incision to administer the intratumoral therapy/treatment into the kidney through the intact peritoneum. No incision is made in the peritoneum. The skin incision is then sealed with Vetbond. We will administer Bupivicaine (1.25 mg/kg) at the incision site on the day of surgery. We are requesting only a single administration of Bupivicaine. This decision was reached after consultation with [redacted] veterinarians Dr. C. Sivula and Dr. S. Hashway. (Intrarenal Murine Renal Adenocarcinoma Tumor Implant)
1704-34740A	Griffith, Thomas	Mice	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	Since we are not restricting the amount of food/water, but rather changing the type of food they eat to one that most likely will increase their body weight, we will not be measuring body weights weekly. (High Fat Diet)
1704-34740A	Griffith, Thomas	Mice	EUTHANASIA METHOD	All staff have been trained in and are competent at cervical dislocation.
1704-34730A	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.
1704-34729A	Mashek, Douglas	Mice, Mice	SOCIAL HOUSING	Some mice will have running wheels placed in their cages for exercise training. This is not feasible for group housed mice as they will compete for time on the wheel. Thus, for training studies involving running wheels, mice will be individually housed. In addition, 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. Finally, we will need to monitor individual food intake in some some dietary studies (protocols 3 and 10), thus, some mice will be individually housed to do so.
1704-34728A	Kawakami, Yasuhiko	Fish (Zebra fish)	72 HOUR POST-OP ANALGESIA POLICY	For zebrafish, the same treatment for other animals, such as mice, are not available, because zebrafish are aquatic animals. Thus, analgesia cannot be provided to zebrafish. If fish show distress or abnormal behavior after surgery (floating belly up or random swimming among the group of fish in a tank), we will euthanize the fish. (fin amputation)

1704-34724A	Dougherty, Brendan	Rat	MULTIPLE SURGERY	see protocol for details
1704-34724A	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.
1704-34724A	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. (Acute neurophysiological measures) 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. (Acute neurophysiological measures)
1704-34711A	Ebbini, Emad	Rat, Mice	MULTIPLE SURGERY	This procedure will be used in conjunction with the focused ultrasound procedure. (Ultrasound marker) This surgery will be used in conjunction with the focused ultrasound procedure (Telemetry Transmitter Implant)
1704-34710A	Dudley, Samuel	Mice, Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	Sudden cardiac death due to malignant arrhythmia is a useful phenotype to evaluate the effect of an genetic or pharmaceutical interference.
1704-34710A	Dudley, Samuel	Mice, Mice	SOCIAL HOUSING	Mouse during telemetry recording will be housed singly to avoid cross talkings between transmitters.
1704-34710A	Dudley, Samuel	Mice, Mice	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	Before surgery and during surgery, continuous documentation of appropriate anesthesia will be recorded every 10 minutes (at least every 15 minutes). (B cell isolation from mouse peritoneal cavity)
1703-34703A	Patnayak, Devi	Pig (Biomedical)	EUTHANASIA METHOD	After being held properly, animals will be euthanized by Intravenous administration of barbiturate.
1703-34693A	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). (Antibiotic water)
1703-34685A	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. (Tricuspid Valve; Surgical Implant on CPB) The revascularization procedure is an essential component of this study to evaluate the effects of bypass on hibernating myocardium and how stem cells or mitochondrial transplant 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)

1703-34677A	Lin, Gufa	Frog (Xenopus), Amphibian (Other)	MULTIPLE SURGERY	Multiple surgery is unusual, but there are occasional experiments that require it where the experimental treatment is expected to modify the cellular constitution of the first regenerate in such a way as to make a second regenerate different in size, character or structure (e.g. by depletion of a specific cell population during the first regeneration process). An example is an experiment we performed with dominant negative pax7 gene. We found that in the first regenerate the muscle satellite cell number was diminished. This meant that the second regenerate was devoid of muscle. This could not have been shown without successive extirpations. Chen, Y., Lin, G. F. and Slack, J. M. W. (2006). Control of muscle regeneration in the Xenopus tadpole tail by Pax7. Development 133, 2303-2313. (Tail or limb amputation and cell transplantation)
1703-34677A	Lin, Gufa	Frog (Xenopus), Amphibian (Other)	72 HOUR POST-OP ANALGESIA POLICY	Tail or limb bud amputation in tadpoles and axolotl larvae are of a micro scale, no bigger than 1 mm in length, and the animals cover the wound very quickly, in 4-5 hours. Post-operation infection is also very rare in tadpoles and axolotl larvae. There is no literature on tadpole pain perception, though it is known that the Rohon-Beard cells of the spinal cord are pharmacologically very similar to the nociceptive afferent fibres in mammals. They are primary afferent mechanosensory cells that are substance P positive, use glutamate as their neurotransmitter and are inhibited by 5HT. They connect directly to motor neurons activating escape responses. This means that observations of movement may provide a sensitive indicator of potential discomfort, although of course not all rapid movements by tadpoles are due to pain or suffering. In our previous studies (for example 1211A23962, and earlier ones) we have not noticed tadpoles or axolotls suffering from pain at 24 hours after tail and limb amputation.
1703-34677A	Lin, Gufa	Frog (Xenopus), Amphibian (Other)	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	see protocol for details
1703-34647A	Dudley, Samuel	Mice, Mice	MULTIPLE SURGERY	see protocol for details
1703-34647A	Dudley, Samuel	Mice, Mice	SOCIAL HOUSING	Mouse during telemetry recording will be housed singly to avoid cross talkings between transmitters.
1703-34641A	Liang, Jennifer	Fish (Zebra fish)	MULTIPLE SURGERY	The fish recover from this procedure in a couple of minutes, and will breed and eat immediately after they wake up. There are no signs of any affects after they wake up. (Fin clips for genotyping)
1703-34641A	Liang, Jennifer	Fish (Zebra fish)	72 HOUR POST-OP ANALGESIA POLICY	The fish completely recover after 1-2 minutes. They behave normally, including eating and spawning. Thus, there is no sign that they are in pain. (Fin clips for genotyping)
1703-34641A	Liang, Jennifer	Fish (Zebra fish)	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	The fish immediately recover and are not altered in any way, so do not need pain management. (Anesthesia and imaging of developing and adult fish) The fish are not harmed by this procedure and typically recover completely in a few minutes. They do not need long term pain management. (Anesthesia and imaging of adult fish) The fish completely recover after 1-2 minutes. They behave normally, including eating and spawning. Thus, there is no sign that they are in pain. (Fin clips for genotyping)
1703-34627A	Vossel, Keith	Mice	EUTHANASIA METHOD	E18-21 mouse embryos and neonatal mouse pups P0-1 days will be euthanized by rapid decapitation using a large surgical-grade scissors 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. The use, cleaning,and sharpness inspection of decapitation scissors will be recorded in a log. Scissors will be sharpened or replaced at least annually or as needed based upon inspection.

1703-34627A	Vossel, Keith	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	Avertin is not available as a pharmaceutical grade agent. We have used Avertin as an anesthetic for many years and find that it very quick and effective relative to the other anesthetics. It is a reliable agent for inducing anesthesia with low risk of respiratory suppression or occupational exposure, in comparison with using inhaled anesthetics for inducing anesthesia. Avertin stock solution has an assigned expiration date of 6 months and is stored at 4 degrees Celsius protected from light. Working solutions of Avertin will be made in a biosafety cabinet and will be sterile filtered. The pH of the working solution will checked before each use, and the solution will only used when when the pH is >5. The working solution has an expiration date of 30 days and is stored in a 4 degree refrigerator. If any precipitate forms, the solutions are discarded. (Transcardial perfusion) Avertin is not available as a pharmaceutical grade agent. We have used Avertin as an anesthetic for many years and find that it very quick and effective relative to the other anesthetics. It is a reliable agent for inducing anesthesia with low risk of respiratory suppression or occupational exposure, in comparison with using inhaled anesthetics for inducing anesthesia. Additionally, the prolonged effect of Avertin keeps mice sedated after the EEG electrodes are implanted, allowing us to apply dental cement in the flow hood. Avertin stock solution has an assigned expiration date of 6 months and is stored at 4 degrees Celsius protected from light. Working solutions of Avertin will be made in a biosafety cabinet and will be sterile filtered. The pH of the working solution will checked before each use, and the solution will only used when when the pH is >5. The working solution has an expiration date of 30 days and is stored in a 4 degree refrigerator. If any precipitate forms, the solutions are discarded. (Electroencephalogram (EEG) recording)
1703-34616A	Vulchanova, Lucy	Mice, Rat	MULTIPLE SURGERY	see protocol for details
1703-34616A	Vulchanova, Lucy	Mice, Rat	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.
1703-34616A	Vulchanova, Lucy	Mice, Rat	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. (Sciatic nerve injection)
1703-34616A	Vulchanova, Lucy	Mice, Rat	SOCIAL HOUSING	Mice with in-dwelling canullae will be single-housed for approximately 3 weeks.
1702-34614A	Parr, Ann	Mice, Rat	MULTIPLE SURGERY	The rat must first be injured and recover to model a spinal cord injury so that we can test our cell transplants. Pain and distress will be controlled through analgesics and antibiotics. (Spinal Cord injury and Scaffold Transplantation) Three survival surgeries are necessary because a spinal cord injury is necessary to evaluate whether sNPC/scaffold transplantation is effective at resolving the CNS deficits associated with spinal cord injury. Then, anterograde axonal tracing is utilized to confirm that transplanted sNPCs are forming functional synaptic connections with the endogenous corticospinal tract (by injecting virus into the motor cortex) - thus repairing some of the lost circuitry involved in contusive spinal cord injury damage. Pain and distress will be controlled through the use of analgesics and antibiotics. (□ Axonal Tracing)

1702-34610A	Deng, Yibin	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	Our animal studies are trying to determine whether and how the genetic alterations or chemoprevention/chemotherapy will provide any survival benefit for the mouse cohorts. In order to generate a credible mouse survival curve, we need to observe the mouse cohorts up to "natural death". However, these mice are valuable and needed for pathological and biochemical analyses, we cannot allow them to die spontaneously and risk organ deterioration. Rather, we will harvest mice when they are determined to be moribund-"close to death endpoint". One Criterion from UMN IACUC guideline will potentially affect our studies to observe survival benefits. Based on "UMN IACUC Euthanasia Guideline", we have provided a very strict criteria to determine the moribund state, and these must include at least one of the first two criteria and at least one of the three remaining criteria: (1) progressive weight reductions up to 10% of body weight measured on two separate occasions over a period of one week; (2) sudden, unexplained weight loss of at least 10% of body weight over a period of one week; (3) failure to gain weight appropriately over a 3 week period; (4) persistent, hunched posture with rapid breathing over a 1 hr observation period; and (5) excessive tumor burden (palpable abdominal mass, size ~2 cm in maximum dimension). These criteria are based on over 8 years of personal experience monitoring 8 independently derived genetically engineered mouse cancer models (over 8,000 mice analyzed by the PI). We have documented on 254 independent occasions mice that fit the moribund criteria will die within ~2 days (1.55 days ± 0.8). Therefore, we are confident that performing this censorship, although not ideal, is a necessary compromise to obtain mice for pathological/biochemical studies as well as to generate a credible survival curve.
1702-34600A	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.
1702-34600A	Starr, Tim	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	see protocol for details
1702-34587A	Lokensgard, James	Mice	EUTHANASIA METHOD	Decapitation is used on one-day old pups to collect brain tissue for cell cultures.
1702-34582A	Ruan, Hai-Bin	Rabbit, Mice	SOCIAL HOUSING	In order to measure food intake, locomoter activity, and energy expenditure in CLAMS metabolic cages, mice need to singly housed in these cages for up to a week.
1702-34582A	Ruan, Hai-Bin	Rabbit, Mice	EUTHANASIA METHOD	Barbiturate will anesthetize animals. Barbiturate will be administered IV or IP.
1702-34582A	Ruan, Hai-Bin	Rabbit, Mice	ENVIRONMENTAL ENRICHMENT	In order to measure food intake, locomoter activity, and energy expenditure in CLAMS metabolic cages, no bedding or nesting material will be provide for up to a week. This is due to technical limitations for such measurements using metabolic cages.
1702-34580A	Perlingeiro, Rita	Mice	MULTIPLE SURGERY	In some few cases (Serial Injury) we will re-injure the muscle with cardiotoxin after 8-weeks, then 8-week, then 8 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. (Cardiotoxin Injection)

1702-34580A	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). (Tumor Induction)
1702-34580A	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. TBE is reconstituted in sterile conditions as 2,2,2 Tribromoethanol 0.5 g in 1 mL of 2 methyl-2 butanol, mixed at 37 C and diluted with 40 mL distilled sterile water. The final solution is then filtered through 0.22 micron filter and kept refrigerated (4c) and protected from light. It can be stored up to 2 weeks but it is generally freshly prepared prior to use. Additionally, we do not use if the solution becomes discolored or has a precipitate and we check pH before each use and use only when greater than pH 5. We discard all solutions after 4 months, including the stock solution and label all containers with name and concentration of drug, date prepared and initials of person making the solution. (see attached SOP for prep) (Muscle/Tissue collection, live, non-survival)
1702-34571A	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%).
1702-34552A	Haskell-Luevano, Carrie	Mice, Mice	EUTHANASIA METHOD	Any use of anesthetic will inhibit or block certain blood chemistry that we are studying.
1702-34546A	Portoghese, Philip	Mice, 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. (Spared nerve injury)
1702-34545A	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.

1701-34539A	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. (Intracerebroventricular stereotaxic injection of MCMV) 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. The use of analgesics would interfere with some of the endpoints and immune assessments in this study and will not be routinely used. (lentivirus injection into the mouse striatum)
1701-34532A	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. (Procedure #4. Islet Transplantation)
1701-34532A	Fife, Brian	Mice	EUTHANASIA METHOD	RAR protocol no longer requires sedation prior to cervical dislocation for trained lab staff. Per email from Dr. Gillett DVM: As a result of changes in the 2013 report of the Americal Veterinary Medical Association Panel on Euthanasia, the IACUC and RAR have made revisions to the chart of Acceptable methods of euthanasia for research and teaching animals. 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.
1701-34527A	Kotz, Catherine	Mice	SOCIAL HOUSING	Housing the animals together can influence their thermogenic capacity, which is a factor that impacts the endpoints (locomotor activity, calorimetry, body composition and body weight) in these proposed studies. Further, animals will have chronic indwelling cannulae that need to be protected from other mouse activity that may damage or dislodge the cannulae.
1701-34524A	Sivula, Christine	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	This is a vaccine development study that focuses on non-lethal endpoints as metrics of efficacy whenever possible, however, prevention of mortality due to sepsis or pneumonia is an important model of human disease for this pathogen and will be used only for limited testing of those vaccine formulations that are highly efficacious in the non-lethal models.
1701-34522A	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.□ (CNS virus delivery and icv peptide delivery with osmotic minipumps)
1701-34514A	Andersen, David	Bird (Other)	EUTHANASIA DEATH/MORIBUND ENDPOINT	PTT-marked sandhill cranes would be removed from our study upon their death.

1701-34513A	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. The use of analgesics would interfere with some of the endpoints and immune assessments in this study and will not be routinely used. (Intracerebroventricular injection of MCMV)
1701-34509A	[redacted]	Nonhuman Primate (Macaques)	MULTIPLE SURGERY	Animals have previously been instrumented with a central vascular access port for cooperative blood collection with to avoid multiple catheter starts. Animals have undergone surgical transplant of macrobeads (using a similar method as described here). It is necessary for us to retrieve macrobeads using this minimally invasive technique to fully characterize the graft in phase while allowing for ongoing followup of the animals which supports our understanding of metabolic efficacy, while allowing ongoing monitoring of safety (long-term exposure to live pig tissue). (Macrobead biopsy)
1701-34507A	Araque, Alfonso	Mice	MULTIPLE SURGERY	We would like to request an exception to IACUC's Policy on Multiple Surgical Procedures. 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. (Stereotaxic Surgeries)
1701-34507A	Araque, Alfonso	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	see protocol for details
1701-34507A	Araque, Alfonso	Mice	SOCIAL HOUSING	Mice with optic fibre head implants, will be singly housed to reduce injury to head. Double-housed mice have been observed to pull on each other's implants, ripping them out of the head, and causing severe damage requiring euthanasia.
1701-34499A	Tranquillo, Robert	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) Goal of study is to harvest adipose stem cells from individual animal and seeded these cells onto the lumen of tissue engineered graft, which is subsequently implanted in the same animal. (Vascular Graft Implant) 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/Graft explant)

1701-34456A	Bee, Mark	Amphibian (Other)	SANITATION FREQUENCY	A small net or gloved hand is used to remove large debris (e.g., floating moss, leftover cricket carcasses) from each tank on a daily basis. Each tank is cleaned weekly using hot water and vigorously scrubbing with a brush or sponge. On the same designated “cleaning day” each week, frogs are temporarily housed in a small, empty terrarium while their home tank is cleaned. New sphagnum moss is added each week to prevent the build-up of waste products in the bedding materials. A minimum of 2 times/year, each tank is sanitized using bleach 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, we believe our current sanitation practices balance this trade-off quite well.
1701-34456A	Bee, Mark	Amphibian (Other)	NON-PHARMACAUTICAL GRADE COMPOUNDS	Based on previous conversations with Kristin Pilon, 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. (Immobilization) 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. (Immobilization)
1612-34444A	Mereddy, Venkatram	Mice	TUMOR ENDPOINT CRITERIA	WiDr cells have MCT1 expression and is known to have HIF1-alpha expression and/or create hypoxia in tumors. In some cases, this may lead to tumor ulceration. If a mouse has tumor ulceration, it will be monitored for the size of ulceration, if it reaches >5mm, the mouse will be euthanized. (MDA-MB-231 cells Tumor induction in mice)
1612-34444A	Mereddy, Venkatram	Mice	SOCIAL HOUSING	*If a mouse is to be euthanized in between the study period, the female will not be included with mice from other group. As per our previous experiments, when we did include the single female mouse with other female mice in between the study, we observed aggression among the mice.
1612-34440A	Guedes, Alonso	Mice	72 HOUR POST-OP ANALGESIA POLICY	This is a model of hyperalgesia that is being used to investigate the role of CD38 in neuropathic pain. The use of analgesics will preclude achieving this goal. (Spare Nerve Injury)
1612-34440A	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. Preparation of Avertin will be made following the university and IACUC guidelines: -Sterile fileter with 0.2 micron filter. -Store and use under sterile conditions. -Store in the dark bottle of foil covered container -Do not use if the solution becomes discolored or has a precipitate. -Check pH before each use and use only when greater than pH 5 -Discard all solutions after 4 months, including the stock solution. -Label all containers with name and concentration of drug, date prepared and initials of person making the solution. (Intracardial Perfusion)
1612-34435A	Walcheck, Bruce	Mice	MULTIPLE SURGERY	Mice will be administered a small molecule inhibitor to block ADAM17 activity, which will be delivered by an osmotic pump. 12 hours later, mice will be subjected to cecal ligation and puncture to induce polymicrobial sepsis, our model of systemic inflammation. (Cecal ligation and puncture)

1612-34435A	Walcheck, Bruce	Mice	72 HOUR POST-OP ANALGESIA POLICY	Use of post-surgical analgesics will depend on their effects on induced inflammation described in the protocol. Option A will be initially performed, but if the Butorphanol is found to affect our inflammation parameters then option B will be performed. If option B affects our inflammation parameters than option C will be performed.□ A. Butorphanol will be administered at 2 mg/kg sc. immediately post-surgery every 4 hrs (2X) on the day of surgery and every 12 hours afterward up to 72 hours. NSAIDs such as ketoprofen will not be used due to their effects on inflammation. □ □ B. Buprenorphine-HCL (Buprenex) will be dosed in mice at 0.05-0.1 mg/kg sc. immediately post-surgery, every 4 hrs (2X) on the day of surgery and every 12 hours afterward up to 72 hours.□ □ C. Exclude post-op analgesia.. If we should observe excessive signs of pain or discomfort (e.g., hunching, lethargy), the affected mice will be immediately euthanized. If analgesia is excluded, mice will be constantly monitored until endpoint is achieved.□ (Cecal ligation and puncture)
1612-34435A	Walcheck, Bruce	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	As a result of the cecal-ligation puncture procedure, the mice will become septic. Sepsis is characterized by decreased spontaneous movement in the cage, rapid breathing, and piloerection. These symptoms are normal and expected, and will not result in removal of the animals from the experiment. It is possible the mice will become moribund, as determined by weight (body weight will be measured with a balance at the initiation of the experiment), consciousness, activity, and response to stimulus. Mice with any of these characteristics will be euthanized.
1612-34428A	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 by Gilbert 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. (Reduced Uterine Perfusion Pressure (RUPP) surgery)
1612-34428A	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.
1612-34416A	Osborn Jr, John	Mice	MULTIPLE SURGERY	These experiements require a procedure to implant telemetry and a separate procedure for treatment groups, for baseline recordings two or more separate procedures are needed. (Transmitter Implant)
1612-34402A	Ikramuddin, Sayeed	Mice, Mice	72 HOUR POST-OP ANALGESIA POLICY	SR Bup is administered up to 4 hours prior to surgery, it lasts for 72 hours which means it may not be effective the entire 72 hours post op. Mice are assessed twice a day for the duration of the study. If animals appear painful they will be given additional pain medication. However, standard recovery of these mice has shown that they are not painful after 72 hours post op with the single injection of SR bup. (Vertical Sleeve Gastrectomy and Sham Procedure)

1612-34393A	Ingolfsland, Ellen	Rat	BLOOD COLLECTION LIMIT	Severe anemia is desired to mimic the degree of anemia seen clinically in preterm neonates. This phlebotomy protocol has been validated and published (Wallin DJ, Tkac I, Stucker S, et al. Phlebotomy-induced anemia alters hippocampal neurochemistry in neonatal mice. Pediatric research. 2015;77(6):765-771.) and is used in our lab under IACUC protocol 1412-32111A in mice. As mice have tolerated this procedure, we expect the rats too as well, though they may be at increased risk of death given anemia + hyperoxia/ hypoxia chamber. Further, to justify the amendment to the protocol to increase volume phlebotomize/ 24 hour period, a study of iron deficiency anemia which fed dams an iron deficient diet and then after weaning, fed pups an iron deficient diet, found pups to have hematocrits of 18% at 6 weeks of life (Oh S, Shin P, Chung J. Effects of developmental iron deficiency and post-weaning iron repletion on the levels of iron transporter proteins in rats. Nutr Res Pract. 2015; 9(6):613-618.) There have been no studies reporting phlebotomy of neonatal rat pups. As our first batch of pups have tolerated phlebotomy with 6uL/g 3x/day (total volume 18 uL/g/day), we suspect they will tolerate more. We will initially start with volumes of 5uL/g 4x/day (total volume of 20 uL/g/day). If this is not sufficient to induce the desired degree of anemia, we will increase to 6uL/g at each of these time points. (Phlebotomy to induce anemia)
1612-34391A	Lund, Troy	Mice	TAIL BIOPSY	tail clip: The tail tip will be immersed in ice cold isopropyl alcohol or for 10 seconds (this will also serve to disinfect the tail). 3 mm of tail tip will be cleanly cut using clean gloves and a sterile sharp scalpel or razor blade. Bleeding to be controlled with direct pressure. Mouse to be observed in the cage after releasing to assure hemostasis. It may be necessary to cauterize the tail with styptic powder or silver nitrate. (Breeding)
1612-34381A	Weaver, Cyprian	Amphibian (Other)	72 HOUR POST-OP ANALGESIA POLICY	We are requesting an exception because we will apply analgesia (lidocaine) if signs of pain are exhibited by those newts surgically resected (heart) and/or appendicular amputation. (Cardiac resection and limb amputation)
1612-34372A	Thayer, Stanley	Rat, Mice	EUTHANASIA METHOD	This method of euthanasia will only be used for harvesting tissue from neonatal mice. Neonates are resistant to CO2 induced death and thus rapid decapitation with sharp scissors is considered more appropriate for 1-to-3-day-old mice.
1612-34368A	Rosenberg, Michael	Pig (Biomedical)	MULTIPLE SURGERY	The initial day procedures will be performed as described above. If a nephrostomy tube requires replacement, it will be replaced so that it can be maintained for at least 1 month. This may require simply repositioning the tube through the same tract under fluoroscopy or creating a new puncture to the renal collecting system. (Percutaneous nephrostomy tube placement with ultrasound and fluoroscopic guidance.) Nephrostograms will be performed at 4 and 12 weeks. (Laser ablation of the ureters) If the emergency procedure corrects the issue and may allow for the animal to continue in the study, the decision to survive the animal will be determined through consult with the PI and an RAR veterinarian. (Percutaneous nephrostomy tube placement with ultrasound and fluoroscopic guidance.)
1612-34368A	Rosenberg, Michael	Pig (Biomedical)	SOCIAL HOUSING	Animals are unable to be pair housed due to the external nephrostomy bags and tubes
1611-34356A	Panyam, Jayanth	Mice	TUMOR ENDPOINT CRITERIA	We would like to request exemption for euthanizing the animals with ulcerated/involuted tumors. Tumor bearing animals on this protocol may develop involutions of the tumor as part of successful experimental treatment. Thus, it is important to follow these animals to document successful therapy. Animals with involuted tumors will be treated with topical collasate at least every other day until resolved. This protects the compromised tissue from infection or trauma, prevents the involutions from progressing, and in some instances allows the involutions to heal. Allowing these animals to remain on study prevents projects from having to be repeated on additional animals. Laboratory personnel will provide treatments in consultation with the veterinary staff. Laboratory personnel will submit an amendment to include treatment with collasate on the protocol before this veterinary recommendation expires. (Subcutaneous tumor induction)

1611-34335A	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.
1611-34310A	Low, Walter	Mice, Pig (Biomedical)	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. We will only use this method on harvested embryos.
1611-34309A	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.
1611-34309A	Vezys, Vaiva	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	Avertin has been used in on-going and previous studies performed by our lab, therefore, in order to avoid introduction of a new variable and to allow for cross comparison with previous and current experiments, we request to continue the use of Avertin as an anesthetic vs other available anesthetic agents.
1611-34300A	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. Water is changed out on a weekly basis and each week the water is tested.
1611-34300A	Mand, Sandy	Fish (Other)	SOCIAL HOUSING	We have a few varieties of electric fish. As mentioned elsewhere in this protocol, when electric fish are presented with the electrical signal of another fish, one will change its signal in the "jamming avoidance response." Since this is what we study in the class, it is important to allow the fish time alone before we begin our experiments. The ghost knives and elephant noses usually can be socially housed except just before and during the experimental period when we need their electrical signalling to settle into their innate pattern. So one request is to take these fish out of social housing during the experimental period, returning them to social housing afterward if they will settle in together (note that we currently have one ghost knife that is picked on by all fish so it is never socially housed. We need to be able to use our best judgement on putting individual fish together.) The third variety of electric fish we have, the glass knives, are too aggressive to be housed together. While the ghost knives and elephant noses will be initially aggressive when put into the same tank, they will settle in okay provided there are enough hiding places (which we provide.) The glass knives never settle in and within a month, one or more of the fish will be dead. Thus we request to keep the glass knives in separate tanks.

1611-34281A	Deng, Yibin	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	Our animal studies are trying to determine whether and how the genetic alterations or chemoprevention/chemotherapy will provide any survival benefit for the mouse cohorts. In order to generate a credible mouse survival curve, we need to observe the mouse cohorts up to "natural death". However, these mice are valuable and needed for pathological and biochemical analyses, we cannot allow them to die spontaneously and risk organ deterioration. Rather, we will harvest mice when they are determined to be moribund-"close to death endpoint". One Criterion from UMN IACUC guideline will potentially affect our studies to observe survival benefits. Based on "UMN IACUC Euthanasia Guideline", we have provided a very strict criteria to determine the moribund state, and these must include at least one of the first two criteria and at least one of the three remaining criteria: (1) progressive weight reductions up to 10% of body weight measured on two separate occasions over a period of one week; (2) sudden, unexplained weight loss of at least 10% of body weight over a period of one week; (3) failure to gain weight appropriately over a 3 week period; (4) persistent, hunched posture with rapid breathing over a 1 hr observation period; and (5) excessive tumor burden (palpable abdominal mass, size ~2 cm in maximum dimension). These criteria are based on over 8 years of personal experience monitoring 8 independently derived genetically engineered mouse cancer models (over 8,000 mice analyzed by the PI). We have documented on 254 independent occasions mice that fit the moribund criteria will die within ~2 days (1.55 days ± 0.8). Therefore, we are confident that performing this censorship, although not ideal, is a necessary compromise to obtain mice for pathological/biochemical studies as well as to generate a credible survival curve.
1611-34280A	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. 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 this method to maximize the speed of tissue collection.
1610-34270A	Lloyd, Robert	Rat	EUTHANASIA METHOD	anesthesia would artifactually compormise the brain assay
1610-34256A	Low, Walter	Mice	MULTIPLE SURGERY	To collect useful data, we must surgically expose animal's vagus nerve in order to directly stimulate it. Animals will be administered anesthesia and analgesics to minimize distress. (Induced permanent ischemic occlusion (mice))
1610-34251A	Lin, Jizhen	Mice	TUMOR ENDPOINT CRITERIA	see protocol for details
1610-34250A	Low, Walter	Mice	EUTHANASIA DEATH/MORIBUND ENDPOINT	A state of moribundity must be reached to determine if mice treated with ultrasound experience tumor reduction and/or ablation, and whether they live longer than their untreated counterparts. Each mouse will be euthanized as quickly as possible once this state is achieved.
1610-34249A	Wilcox, George	Pig (Biomedical)	72 HOUR POST-OP ANALGESIA POLICY	Technically analgesics will be given for 72 hours after the surgical procedure, but we acknowledge that IV opioid administration produces analgesia of short duration and once-daily dosing will not be sufficient to ameliorate all post-operative pain. The development of pain is necessary in order to successfully test analgesic efficacy. (Porcine model of post-operative pain)
1610-34249A	Wilcox, George	Pig (Biomedical)	SOCIAL HOUSING	Pigs will be implanted with externalized ports. We require that pigs be housed singly, if pigs were group housed there is concern that pen mates may chew off the port.

1610-34229A	Cheeran, Maxim	Mice	72 HOUR POST-OP ANALGESIA POLICY	Animals will receive an application of lidocaine gel (2%) in and around the skin incision to alleviate the irritation and pain associated with the surgery. From past experience animals recover from the surgery and return to normal behaviors (feeding, etc) within 12-24 h. Feeding and watering schedules will not be altered for the surgery or post-surgery. 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. In addition to monitoring animals post-anesthesia, daily monitoring for loose cannulas, wound infections, or mutilations will be performed up to 7 d post-surgery. Animals that lose their cannula before the treatment protocol is complete will be anesthetized and euthanized. (Canulation surgery) The animals will be monitored until they can independently maintain sternal recumbency or can stand and move about before leaving the surgery room. 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 to alleviate the irritation and pain associated with the surgery. From past experience animals recover from the surgery and return to normal behaviors (feeding, etc) within 12-24 h. Feeding and watering schedules will not be altered for the surgery or post-surgery. 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. In addition to monitoring animals post-anesthesia, daily monitoring for neurological symptoms that may be associated with complications resulting from transplants will be done. (Intra cranial injection)
1610-34226A	Redish, David	Rat	MULTIPLE SURGERY	Some animals will receive two surgeries – one to provide DREADD-based 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. (Neural or LED implantation (Hyperdrive, silicon probes, miniscopes, etc)) 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. (Intracranial infusion of DREADDs)
1610-34212A	Kawakami, Yasuhiko	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. (Digit tip amputation)
1610-34212A	Kawakami, Yasuhiko	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	see protocol for details
1610-34210A	Subramanian, Subree	Mice	WEEKLY WEIGHING EXCEPTION (FOOD/FLUID)	Antibiotic cocktail added to water is not shown to reduce animal weight. (Broad spectrum antibiotics treatment) The supplementation will only last for 3 weekly cycles. (AOM/DSS treatment)

1609-34184A	Masopust, David	Mice, Mice	MULTIPLE SURGERY	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 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.□
1609-34184A	Masopust, David	Mice, 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. Preparation Sterile filter with 0.2 micron filter. Store and use under sterile conditions. Store in the dark bottle or foil covered container. Store stock and working stock solutions at 4oC. Do not use if the solution becomes discolored or has a precipitate. Check pH before each use and use only when greater than pH 5. Discard all solutions after 4 months, including the stock solution. Label all containers with name and concentration of drug, date prepared and initials of person making the solution. (Parabiosis surgery in [redacted])
1609-34184A	Masopust, David	Mice, Mice	EUTHANASIA METHOD	All personnel performing cervical dislocation must prove themselves extremely competent to prevent inhumane euthanasia
1609-34178A	Farrar, Michael	Mice, Mice	SOCIAL HOUSING	In general we will house mice in pairs or groups. The only potential exception might be a circumstance where a number of male mice are co-housed and all but one are euthanized as they reach our experimental endpoint. The remaining mouse would need to be kept alive until the final study endpoint. We can't simply add new males to the cage as they would fight. Adding females would cause issues with pregnancy.
1609-34176A	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. (In vivo electroporation)
1609-34176A	Hallstrom, Timothy	Mice	EUTHANASIA METHOD	used only on day 0 neonates and instant procedure.

1609-34173A	[redacted]	Nonhuman Primate (Macaques)	MULTIPLE SURGERY	Animals will arrive on the protocol with an implanted vascular access port (VAP). The placement of a 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. 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 in SA#2 will undergo retrieval of the graft site, a second surgical procedure which is essential in both evaluating the contribution of the islet graft to glycemic control and more importantly demonstrating the retrievability of this site. Site retrievability has relevance for translation to the intended clinical population in the event that safety issues with the graft tissue are identified the graft can be fully retrieved without damage.
1609-34140A	Gewirtz, Jonathan	Mice	MULTIPLE SURGERY	If requesting exception, please explain. 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. References: Tye KM. 2012. Optogenetic investigation of neural circuits underlying brain disease in animal models. Nature Reviews. 13: 251-266. (Stereotaxic viral injection and optical fiber implantation)
1609-34140A	Gewirtz, Jonathan	Mice	SOCIAL HOUSING	3 days prior to recording USVs (as described in the procedures section of this protocol), we request that male mice are single-housed. Since male mouse bedding is moved to a female cage before testing, we need to avoid confounding odor from multiple male mice. Thus, experimental precision requires that we house male mice separately for the aforementioned duration prior to commencing testing.
1609-34137A	Newman, Eric	Mice	MULTIPLE SURGERY	see protocol for details
1609-34120A	Schwertfeger, Kaylee	Mice, 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)
1609-34115A	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).
1608-34110A	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.

1608-34108A	Mereddy, Venkatram	Mice	TUMOR ENDPOINT CRITERIA	WiDr cells have MCT1 expression and is known to have HIF1-alpha expression and/or create hypoxia in tumors. In some cases, this may lead to tumor ulceration. If a mouse has tumor ulceration, it will be monitored for the size of ulceration, if it reaches >5mm, the mouse will be euthanized. (MDA-MB-231 cells Tumor induction in mice)
1608-34108A	Mereddy, Venkatram	Mice	SOCIAL HOUSING	***If a mouse is to be euthanized in between the study period, the female will not be included with mice from other group. As per our previous experiments, when we did include the single female mouse with other female mice in between the study, we observed aggression among the mice.
1608-34074A	Koewler, Nathan	Mice, Rat	EUTHANASIA METHOD	RAR veterinary staff are proficient in this procedure and in the case of health conditions where CO2 may not be readily available this procedure will be used to provide immediate euthanasia.
1608-34062A	Griffith, Thomas	Mice, Mice	EUTHANASIA METHOD	All staff have been trained in and are competent at cervical dislocation.
1608-34050A	Knauer, Whitney	Camelid (Llama and Alpaca)	72 HOUR POST-OP ANALGESIA POLICY	99% of post-op camelids do not experience complications after castration. They will recover more quickly when returned to their home/herd environment within 24 hours of the procedure. All client animals will be released to care of client within 6-12 hours of castration surgery. PI's are available for phone consultation or follow-up visit if necessary. □ Systemic and local anesthesia are provided at time of surgery. □ Biopsies are minor surgical procedures and analgesia is provided at the time (local) with no further need after procedure. (Camelid Castration)
1607-34016A	Rose-Hellekant, Teresa	Mice	SOCIAL HOUSING	Females from the same litter or from litters and assigned to the same treatment are grouped together initially. Some females are the only female carrying the transgene in the litter. These individuals would be housed alone if there is not another aged match individual in which to she can cohabitate. When an animal develops a tumor which leads it to be euthanized, it may lead to a singly housed animal remaining in the cage. Reintroduction of another adult female can cause far more stress than single housing. Males from the same litter are housed together. Single males from a litter are house alone after weaning. The stress of reintroducing novel adult males often results in aggression and fighting.
1607-34013A	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 cell transplants. Pain and distress will be controlled through analgesics and antibiotics. (Spinal cord injury) Retrograde tracing with Fluorogold will be utilized to identify neurons in the cortex and brainstem that have intact axons through the site of injury. Anterograde tracing will be utilized to identify neurons in the motor cortex that have grown into the transplanted cells. Pain and distress will be controlled through the use of analgesics and antibiotics. (Axonal Tracing)
1607-33976A	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. (Fasting of mice prior to testing)
1607-33963A	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.
1607-33948A	Eckfeldt, Craig	Mice	EUTHANASIA METHOD	only individuals with proper training and a high degree of technical proficiency will perform cervical dislocation
1607-33935A	Lowe, Dawn	Mice, Mice	MULTIPLE SURGERY	see protocol for details
1607-33935A	Lowe, Dawn	Mice, Mice	72 HOUR POST-OP ANALGESIA POLICY	see protocol for details

1607-33935A	Lowe, Dawn	Mice, 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.
1607-33935A	Lowe, Dawn	Mice, Mice	SOCIAL HOUSING	To monitor physical activities (wheel running capacity or cage activities), mice will be housed individually.
1606-33914A	Chen, Wei	Cat	NON-PHARMACAUTICAL GRADE COMPOUNDS	The pharmaceutical-grade Pancuronium Bromide does not available, thus, non-pharmaceutical compound will be used. The non-pharmaceutical grade pancuronium will be prepared acutely using sterilized saline and container. (General preparation)
1606-33889A	Malone, Erin	Cow (Biomedical), Cow (Biomedical)	PRIMARY ENCLOSURE SIZE/SPACE	3/pen would be 48 square foot/animal. We may want to house 4/pen for the short duration of their stay (4 days). The calves usually prefer to be close to other calves and do not seem stressed by the group housing.
1606-33889A	Malone, Erin	Cow (Biomedical), Cow (Biomedical)	SANITATION FREQUENCY	After animals are removed, stalls are stripped and sterilized by barn crew. Stalls are cleaned and all surfaces are treated with a quarternary ammonia between animals (or on a monthly basis). A phenolic disinfectant is used to clean stalls and feeding equipment between cases in the [redacted]. Stalls are mucked out by personnel twice a day; feeders and water buckets are exchanged or cleaned as needed.
1606-33889A	Malone, Erin	Cow (Biomedical), Cow (Biomedical)	72 HOUR POST-OP ANALGESIA POLICY	The standard of care for bovine standing surgery is preoperative flunixin meglumine and no postoperative analgesics unless indicated by clinical signs. Most drugs are not approved for use in cattle and most cattle do not need postoperative analgesics. We propose following this standard (this is the same as we would use in clinical cases). (Right flank exploratory, typhlotomy, omentopexy lab (Cows, RAR)) Part of veterinary student training is to detect and administer pain relief. This is difficult to teach without the ability to show the difference. Students will be expected to monitor their calves for any signs of discomfort and treat appropriately; however, we would like to avoid mandating a protocol or timing. The PI will also be monitoring the calves for signs of discomfort and can alert the students as needed. Students will be evaluated on their pain management plans as part of their grade. Generally, calves will be undergoing their terminal procedure the following day, as well. (Calf anesthesia and minor surgery lab (Cows, IMHA))
1606-33889A	Malone, Erin	Cow (Biomedical), 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).
1606-33886A	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.
1606-33886A	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.
1606-33858A	Cheeran, Maxim	Mice	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	This is a simple procedure taht is completed in less than a minute. anesthesia (if given) depth will only be measured at the beginning of the procedure. (Maintaining Breeding mouse colony)
1605-33816A	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 also 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. This also has automatic temperature control, pH and conductivity.

1605-33800A	Rao, Savita	Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	In the past we have used pharmaceutical grade pancuronium bromide from Sicor™, Sicor Pharmaceuticals, Inc., Irvine, CA. However, this company was acquired by another company which no longer manufactures this product. We have been unable to find other sources for procuring pharmaceutical grade pancuronium bromide. Therefore, we use pancuronium bromide from Sigma-Aldrich, St. Louis, MO (Cat. No. P1918). Pancuronium bromide will be dissolved in tissue culture grade water at a concentration of 2 mg/ml. The solution will be sterile filtered, aliquoted into sterile vials and stored in a lock box at 4°C in refrigerator in [redacted]. Please note that pancuronium bromide is administered to anesthetized mice in terminal studies. (Assessment of airway hyperresponsiveness by invasive plethysmography)
1605-33738A	Wei, Li-Na	Mice	SOCIAL HOUSING	in the experiment for wound healing, animals needed to be singally housed after skin wound creation to prevent fighting and biting. After wound is fully healed, animals will be returned to typical group housing.
1605-33716A	Nagaraja, Kakambi	Rabbit	EUTHANASIA METHOD	Overdose of Barbiturates is sufficient enough to euthanize without sedation
1605-33712A	Masino, Mark	Fish (Zebra fish), zebrafish embryos/larvae	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	NA; these are larval fish. NA; Tricaine used to euthanize fish.
1604-33669A	Dong, Zigang	Mice	MULTIPLE SURGERY	We will attempt to increase vascularity by first inducing a stromal reaction by implanting either a subcutaneous glass disc or Gelfoam dressing 2 weeks prior to the xenograft. Patel, Girish K et al. "A Humanized Stromal Bed Is Required for Engraftment of Isolated Human Primary Squamous Cell Carcinoma Cells in Immunocompromised Mice." The Journal of investigative dermatology 132.2 (2012): 284–290. PMC. Web. 30 May 2017. The implant will sit in the subcutaneous space and the incision will be small, therefore we do not anticipate much pain or distress as this type of procedure is generally well tolerated. Sustained release buprenorphine will be given at 2mg/kg prior to both procedures. (Establishing a patient-derived xenograft model of skin cancer)
1604-33640A	Finger, Erik	Mice	MULTIPLE SURGERY	In order to validate tolerance in long term graft survivors, a small subset of long term survivors will have a second skin grafting or islet transplant performed. This is to document donor specific tolerance and is an crucial immunologic outcome. Additionally, some islet transplant recipients will have a unilateral nephrectomy in order to document that long term graft function is due to the graft and not regeneration of native pancreas islets. In these mice the islet transplant will be removed and the following day the mouse will be sacrificed after determination of blood glucose.
1604-33640A	Finger, Erik	Mice	72 HOUR POST-OP ANALGESIA POLICY	No incisions are made. Insulin pellets are placed by subcutaneous injection (with 14 g trochar). No pain medication has been required and pellets are well tolerated in many 100's of mice. (Placement of Subcutaneous Insulin Pellet)
1604-33640A	Finger, Erik	Mice	EUTHANASIA METHOD	Sedation is used for training the cervical dislocation technique. Isoflurane is used at 3-4X MAC and then dislocation performed under anesthesia. In accordance with changes in IACUC policy, technicians proficient in cervical dislocation may forgo isoflurane.
1604-33639A	O'Connell, Timothy	Mice	SOCIAL HOUSING	In our years of experience with the TAC model, we've found that individual housing is best for the mice after TAC surgery. We find that the wounds heal faster and the sutures are less likely to be "groomed out" by others in the cage when the mice are housed singly. In addition, the single housing rules out any physiological effects on the heart tissue due to hierarchy/dominance battles that may occur in the cage with multiple mice, especially in the case of the males following surgery.
1604-33632A	Ward, John	Frog (Xenopus)	Multiple Surgery Guideline	My protocol includes survival surgery. The justification is that individual frogs maintain high quality oocytes for an extended time (up to several years). Re-use of individual frogs with high quality oocytes minimizes he number of animals necessary for this study. The surgical procedure is rapid and the frogs recover quickly and normally do not display physical or behavioral effects of the surgery. Frogs will recieve xylazine (10 mg/kg) for three days following surgery. I am requesting a time between surgeries of two months. Frogs recover completely within one month so a two month recovery between surgeries seems more than enough.

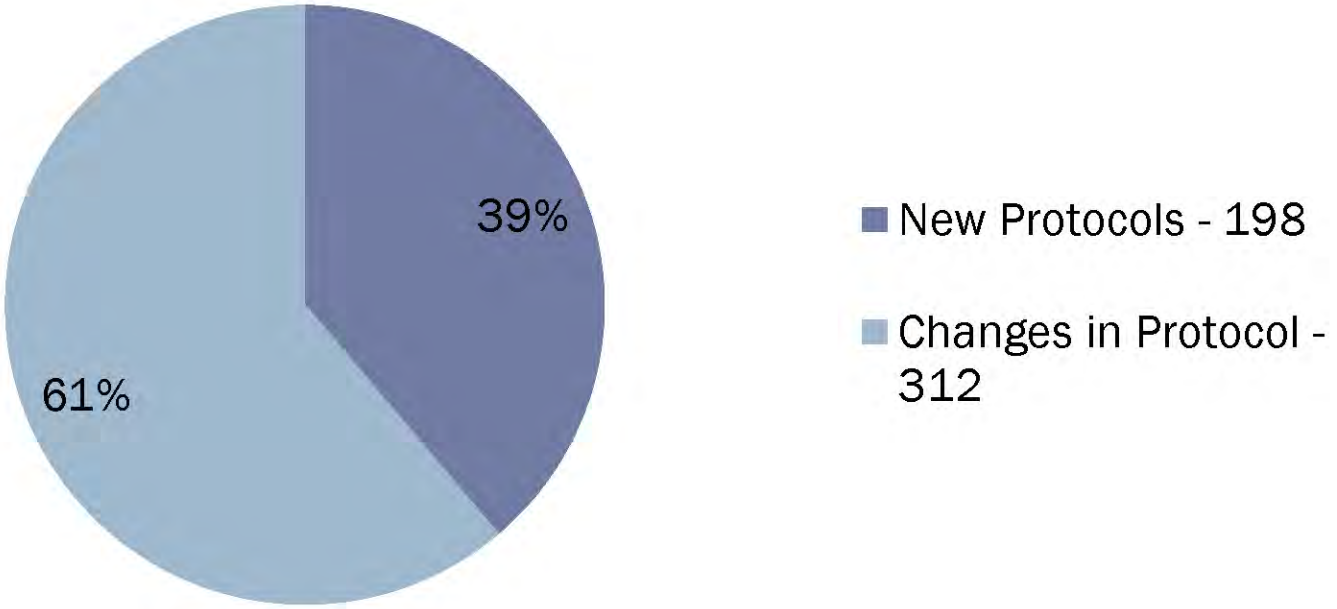
1603-33606A	van Berlo, Jop	Mice, Rat	MULTIPLE SURGERY	we sometimes add osmotic minipumps to other more invasive procedures, such as cardiac pressure overload or cardiac ischemic injury. The goal would be to add thymidine anologs such as BrdU or EdU to perform pulse chase experiments of proliferative cells to measure regeneration. Alternatively, we could add neurohormonal stimulation in strains of mice that are especially resistant to cardiac injury. This is a minimally invasive procedure that we sometimes add to other more invasive procedures, such as cardiac pressure overload 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.
1603-33606A	van Berlo, Jop	Mice, Rat	EUTHANASIA METHOD	We will only perform decapitation using sharp scissors in neonatal pups We will only use this method of euthanasia in newborn pups, where we will use sharp scissors to quickly decapitate the pup.
1602-33510A	More, Swati	Mice, Mice	Social Housing	In Aim D part 2 the mice will be recovering from a surgical procedure that will leave a temporary wound. To prevent aggravation of the wound, we request individual housing.
1602-33506A	Lee, Michael	Mice	EUTHANASIA METHOD	1. Decapitation of pregnant female mice is performed secondary to CO2-based euthanasia to ensure complete euthanasia. 2. Direct decapitation of mouse embryo is accepted procedure. 3. Direct decapitation of mouse pups (P0-1) is acceptable procedure. **Based on the AVMA guidelines, decapitation is an acceptable form of euthanasia, particularly when harvesting uncontaminated tissue.
1602-33506A	Lee, Michael	Mice	ANESTHESIA, SURGERY, AND POST-PROCEDURAL RECORDKEEPING	Once the animal is under deep anesthesia, they are euthanized within 10 minutes. (Intracardial Purfusion)
1602-33506A	Lee, Michael	Mice	SOCIAL HOUSING	While the running wheel is an outstanding environmental enrichment, the mice need to be housed singly to monitor activity of individual animals.
1602-33490A	Chen, Wei	Rat, Mice	NON-PHARMACAUTICAL GRADE COMPOUNDS	The pharmaceutical-grade Alpha-Chloralose does not available, thus, non-pharmaceutical compound will be used. (Varying Brain States Using Different Anesthetic Drugs) The pharmaceutical-grade Pancuronium Bromide does not available, thus, non-pharmaceutical compound will be used. (Varying Brain States Using Different Anesthetic Drugs)
1602-33459A	Pluhar, Liz	Dog, Dog	EUTHANASIA METHOD	It is not standard protocol to sedate pet dogs prior to euthanasia.
1601-33343A	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.
1601-33343A	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.

1601-33310A	Grande, Andrew	Rat, Mice	MULTIPLE SURGERY	Animals will be given a small incision in the femoral vein to administer cell treatment. This will be done to ensure complete delivery of all therapeutic cells. Because the incision will be small and mice will be administered analgesics, the additional pain and distress experienced should be minimal. (Controlled Cortical Impact (CCI) - Mice) Prior to this procedure, mice undergo controlled cortical impact, as described previously. The cutdown procedure is minimally invasive and since mice will be given analgesics, additional pain and discomfort should be minimal. (Femoral Vein Cutdown - Mice)
1511-33176A	Mand, Sandy	Fish (Zebra fish)	Non-Pharmaceutical Grade Compounds	The commercially available pesticide Roundup Transorb contains Diquat dibromide, Fluazifop-p-butyl, Dicamba, gamma-cyhalothrin and is not available as a pharmaceutical grade compound. Cinnamon oil and mustard oil are available as human food grade compounds. Justification for use of these particular compounds is covered in our Procedures section.

IACUC RESEARCH SUBMISSIONS

OCTOBER 1, 2018 - MARCH 31, 2019

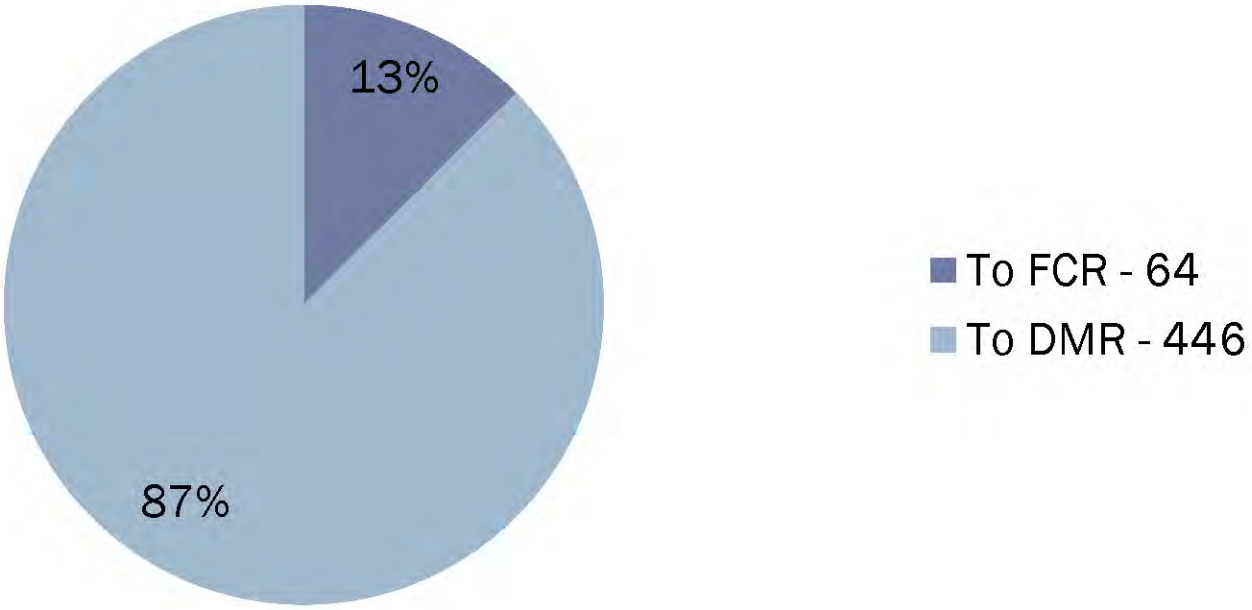
TOTAL SUBMISSIONS: 510



TOTAL SUBMISSIONS – 510

BY SUBMISSION TYPE

OCTOBER 1, 2018 - MARCH 31, 2019

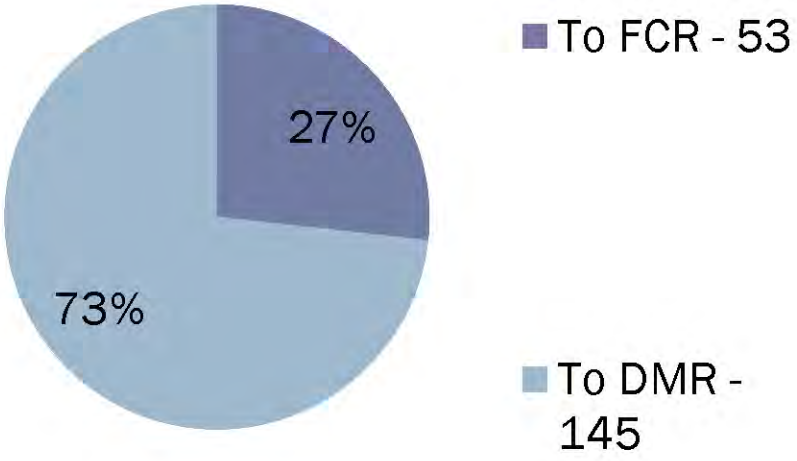


TOTAL SUBMISSIONS – 510

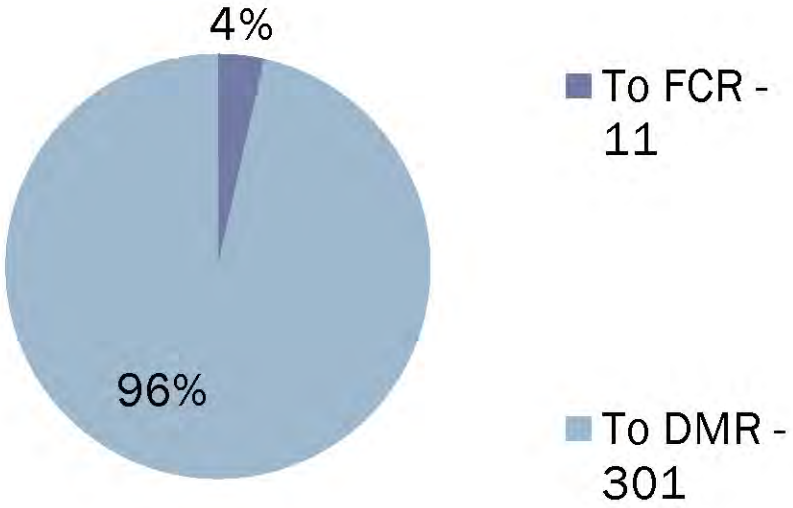
BY SUBMISSION TYPE

OCTOBER 1, 2018 - MARCH 31, 2019

NEW PROTOCOLS – 198



AMENDMENTS – 312

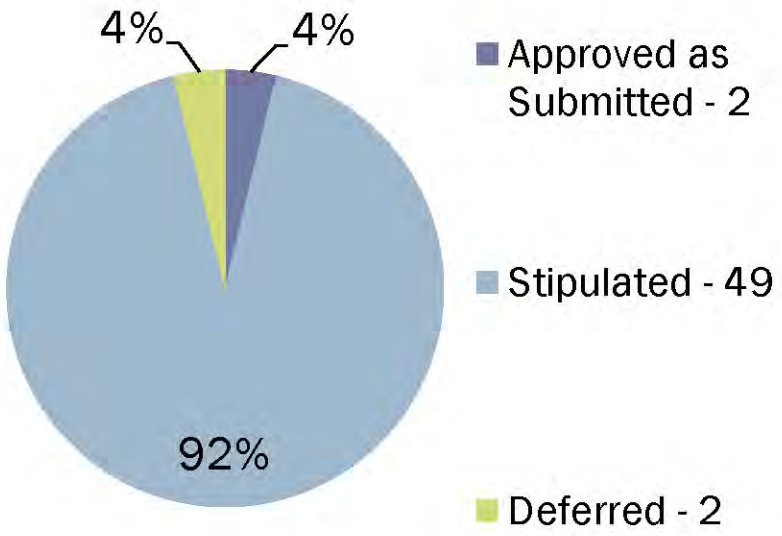


TOTAL SUBMISSIONS – 510

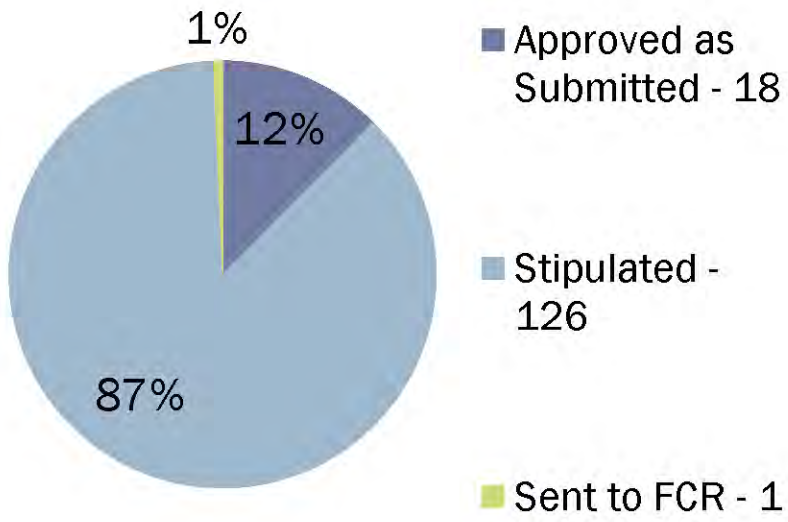
BY SUBMISSION TYPE

OCTOBER 1, 2018 - MARCH 31, 2019

FCR NEW – 53



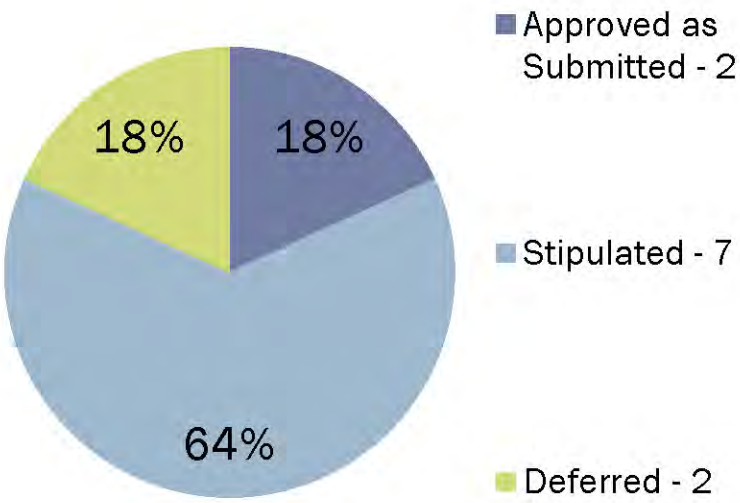
DMR NEW – 145



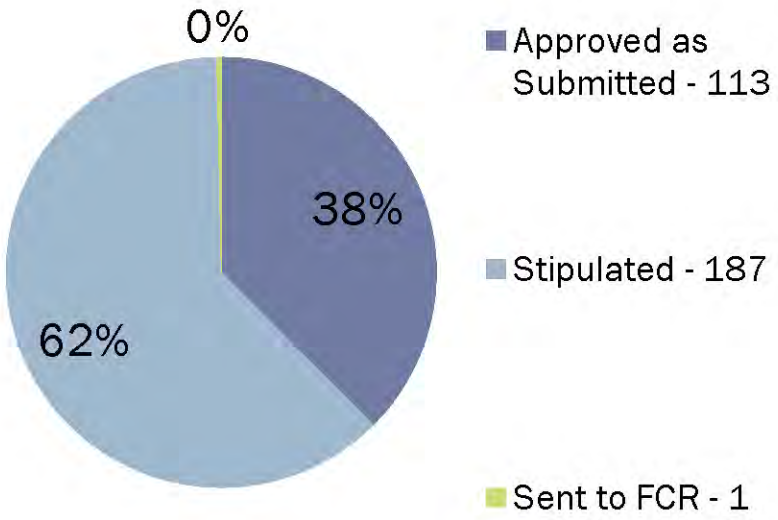
REVIEW OUTCOMES- NEW STUDIES

OCTOBER 1, 2018 - MARCH 31, 2019

FCR AMENDMENTS – 11

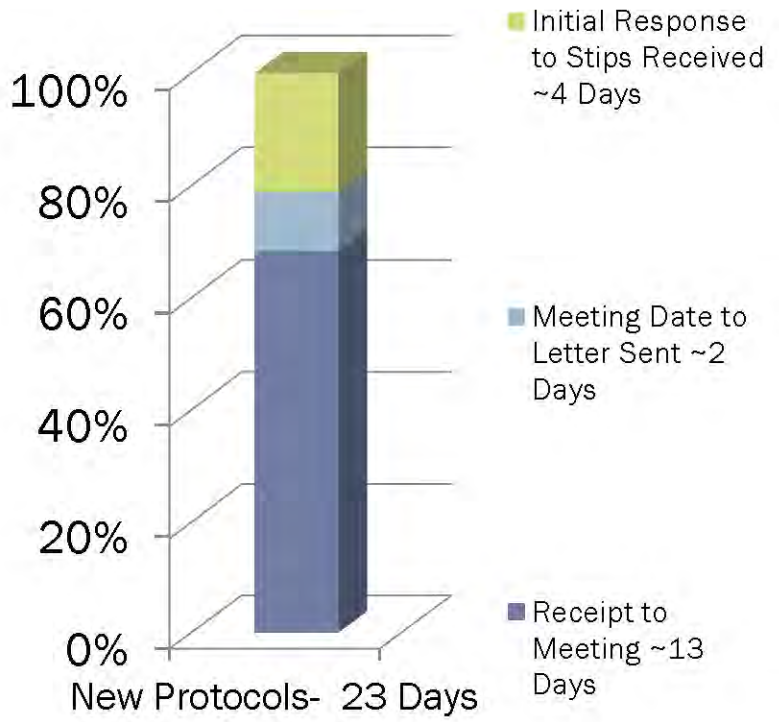


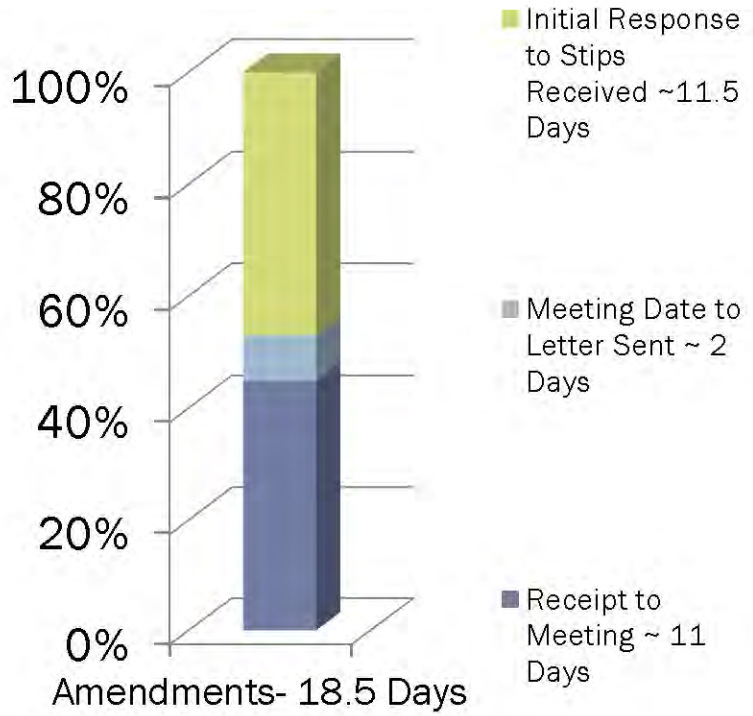
DMR AMENDMENTS -301



REVIEW OUTCOMES - AMENDMENTS

OCTOBER 1, 2018 - MARCH 31, 2019

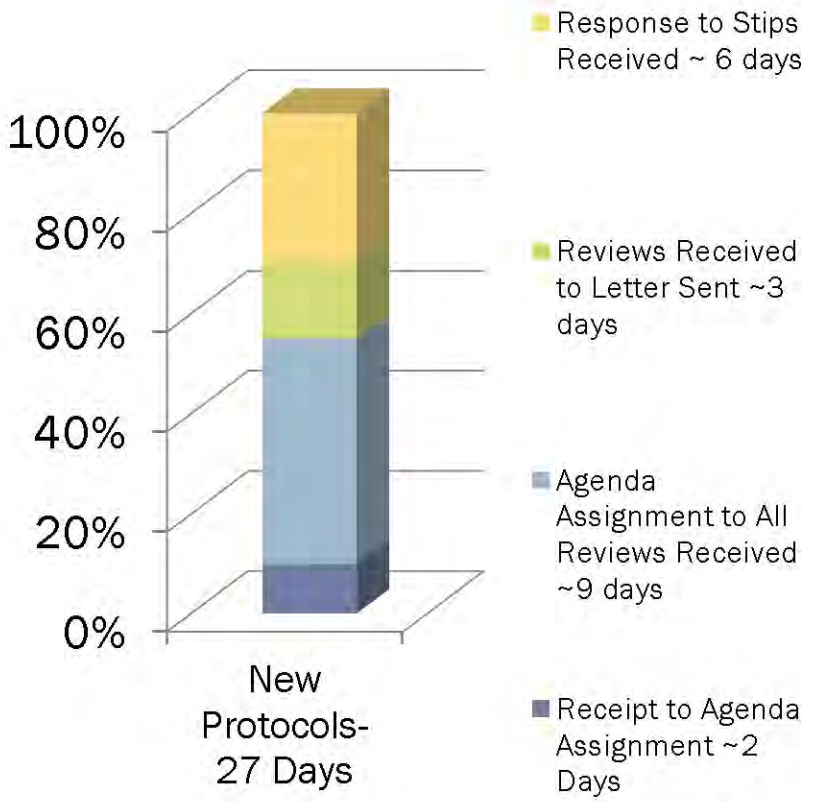


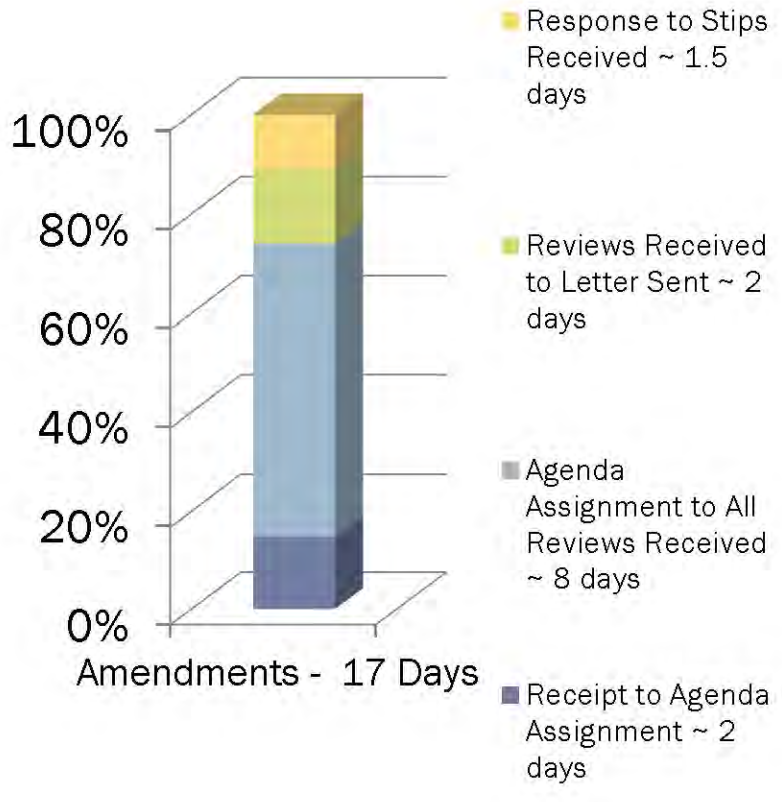


FCR SUBMISSIONS

MEDIAN APPROVAL TIMES

APRIL 1, 2018 – SEPTEMBER 30, 2018

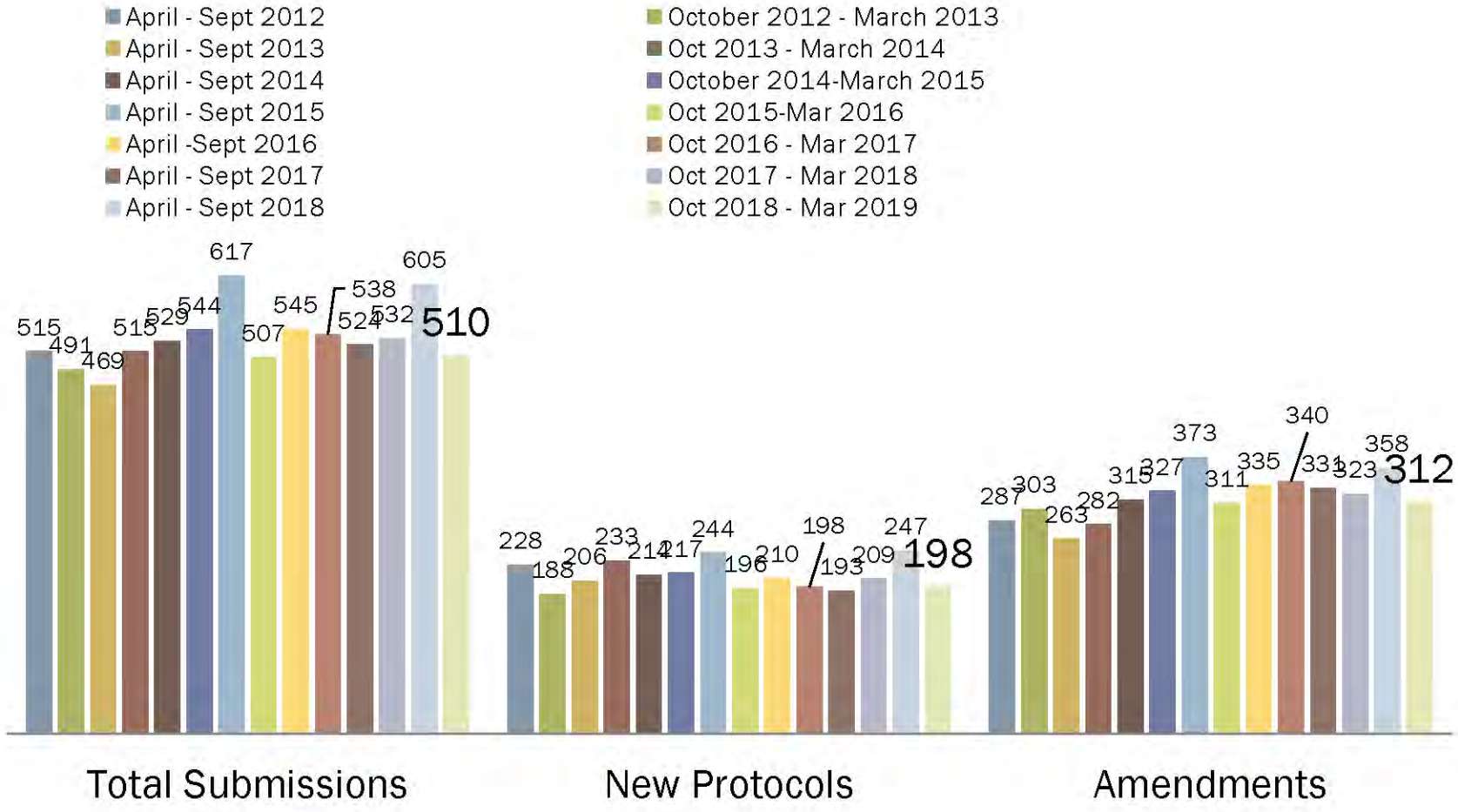




DMR SUBMISSIONS

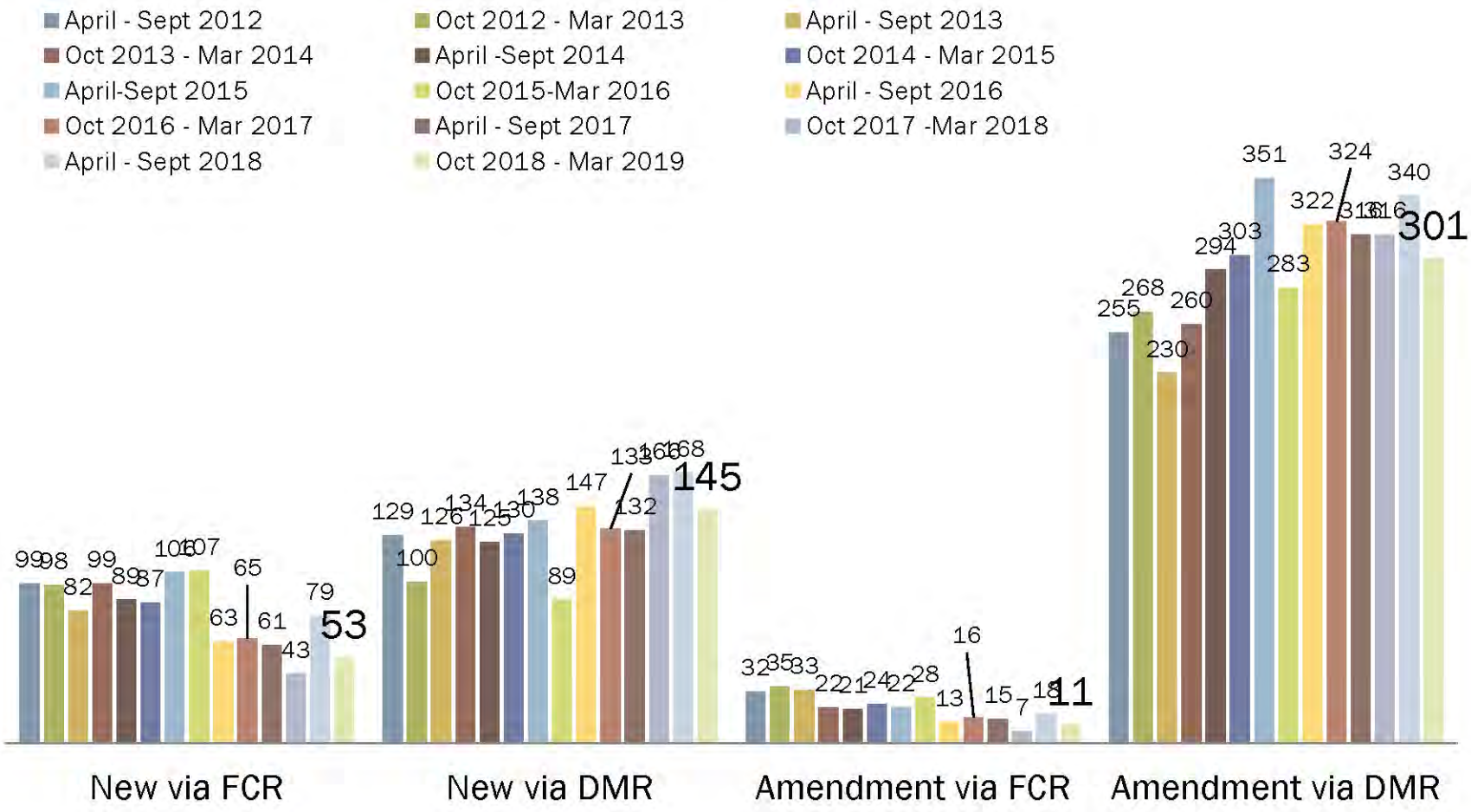
MEDIAN APPROVAL TIMES

APRIL 1, 2018 – SEPTEMBER 30, 2018



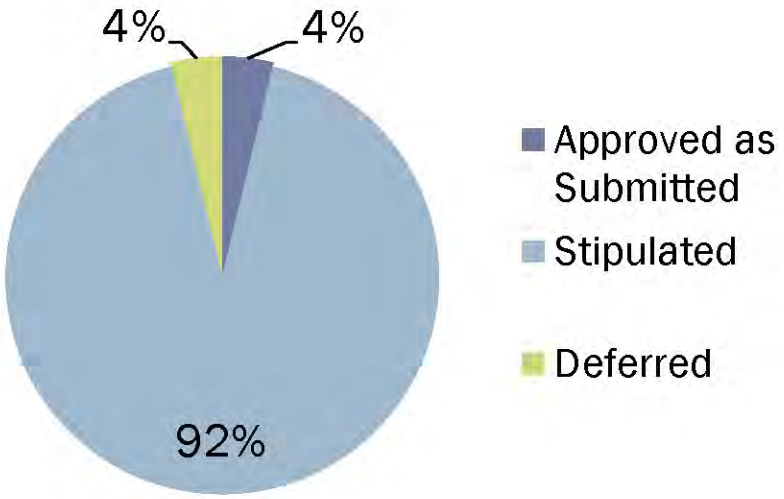
SUBMISSION COMPARISON – TOTALS BY TYPE

APRIL 2012 – MARCH 2019

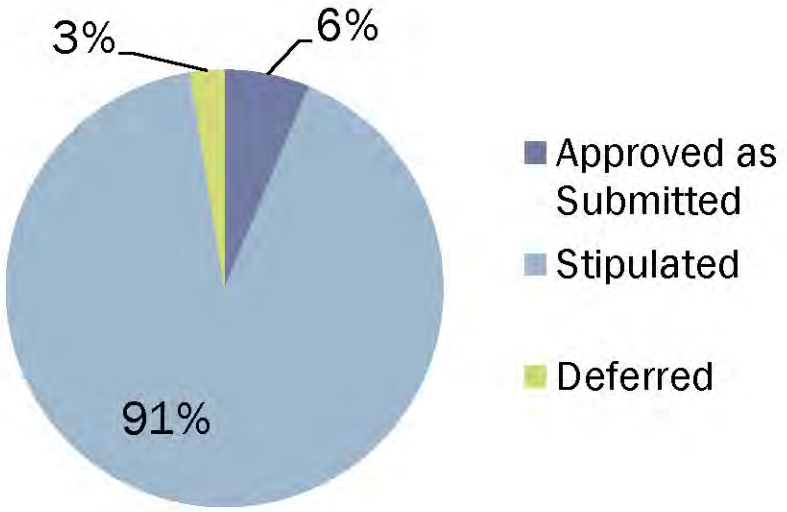


SUBMISSION COMPARISON –
TOTALS BY TYPE AND REVIEW PROCESS
APRIL 2012 – MARCH 2019

OCTOBER 2018 – MARCH 2019



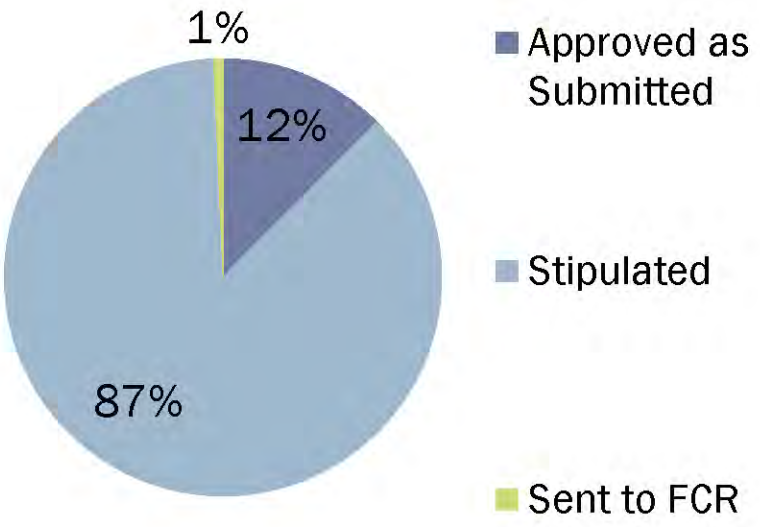
APRIL 2018– SEPTEMBER 2018



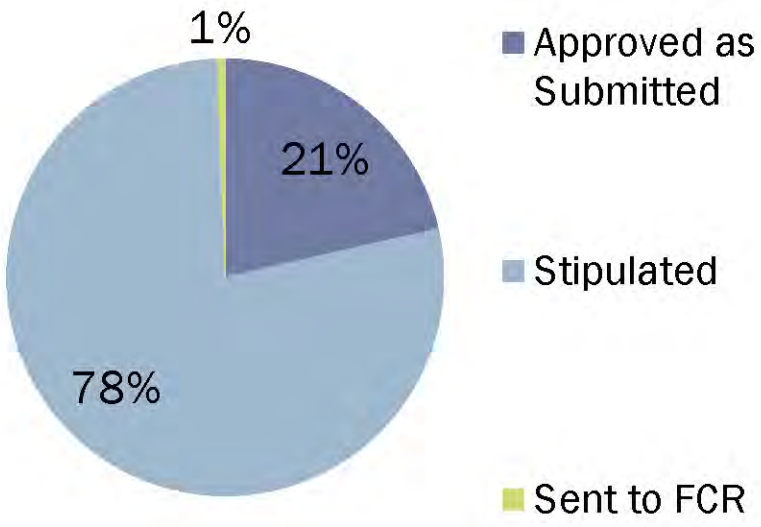
SUBMISSION COMPARISONS

REVIEW OUTCOMES – NEW PROTOCOLS VIA FCR

OCTOBER 2018 – MARCH 2019



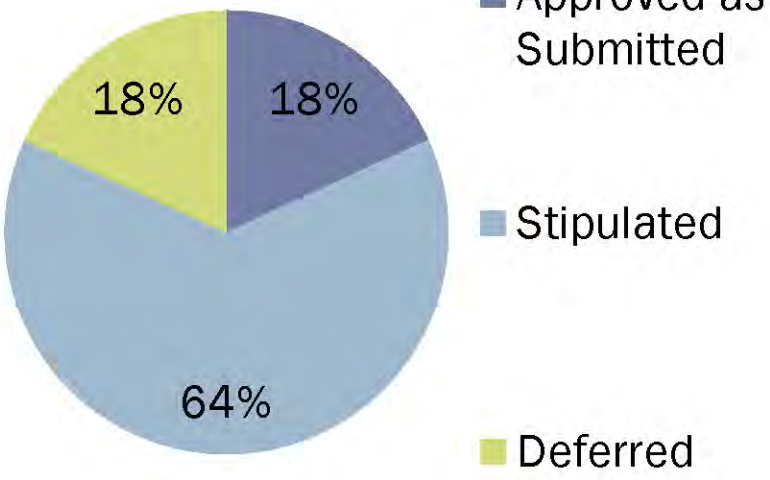
APRIL 2018– SEPTEMBER 2018



SUBMISSION COMPARISONS

REVIEW OUTCOMES – NEW PROTOCOLS VIA DMR

OCTOBER 2018 – MARCH 2019



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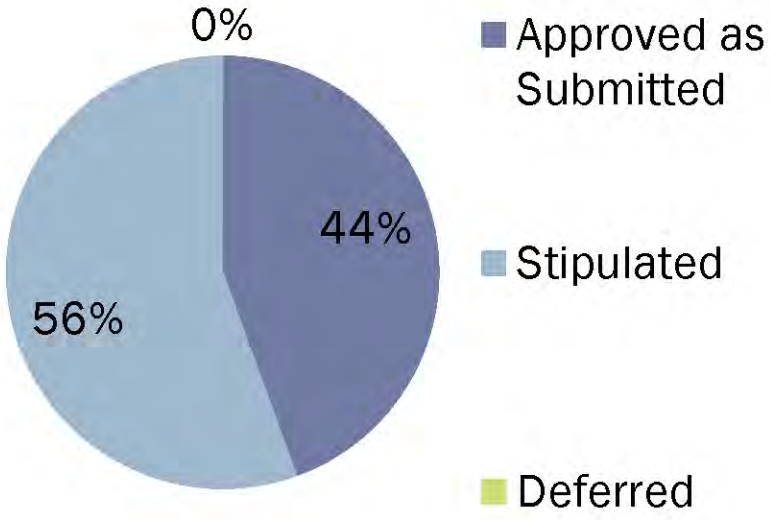
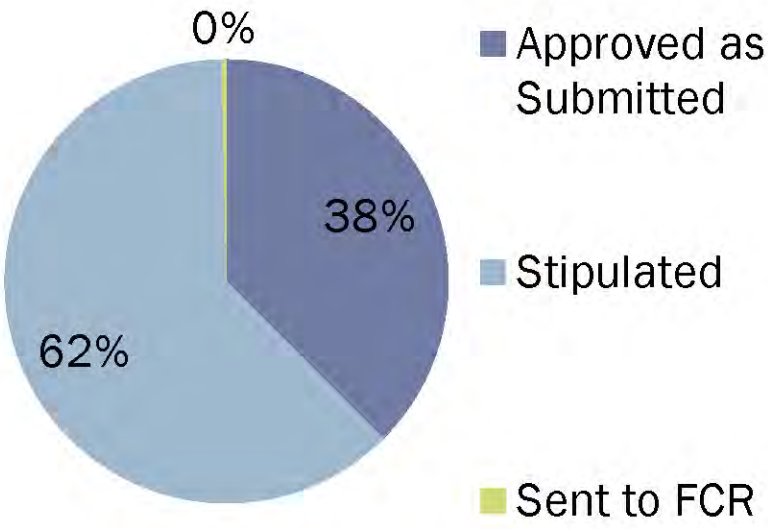


SUBMISSION COMPARISONS

REVIEW OUTCOMES – AMENDMENTS VIA FCR

OCTOBER 2018 – MARCH 2019



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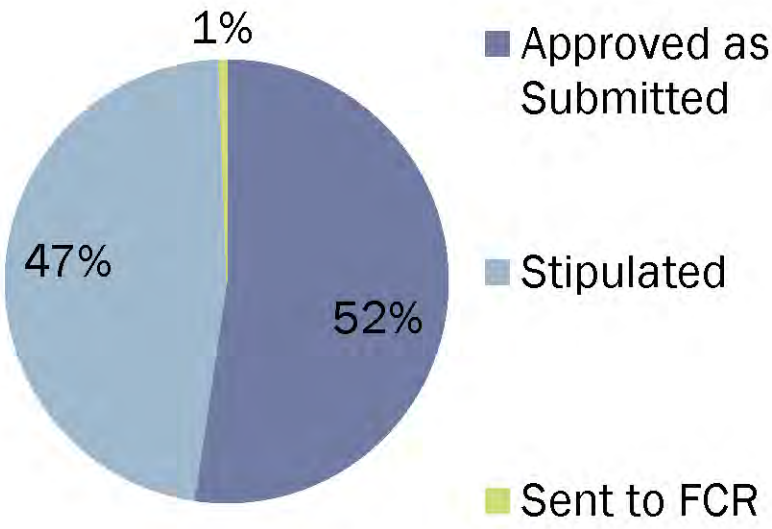
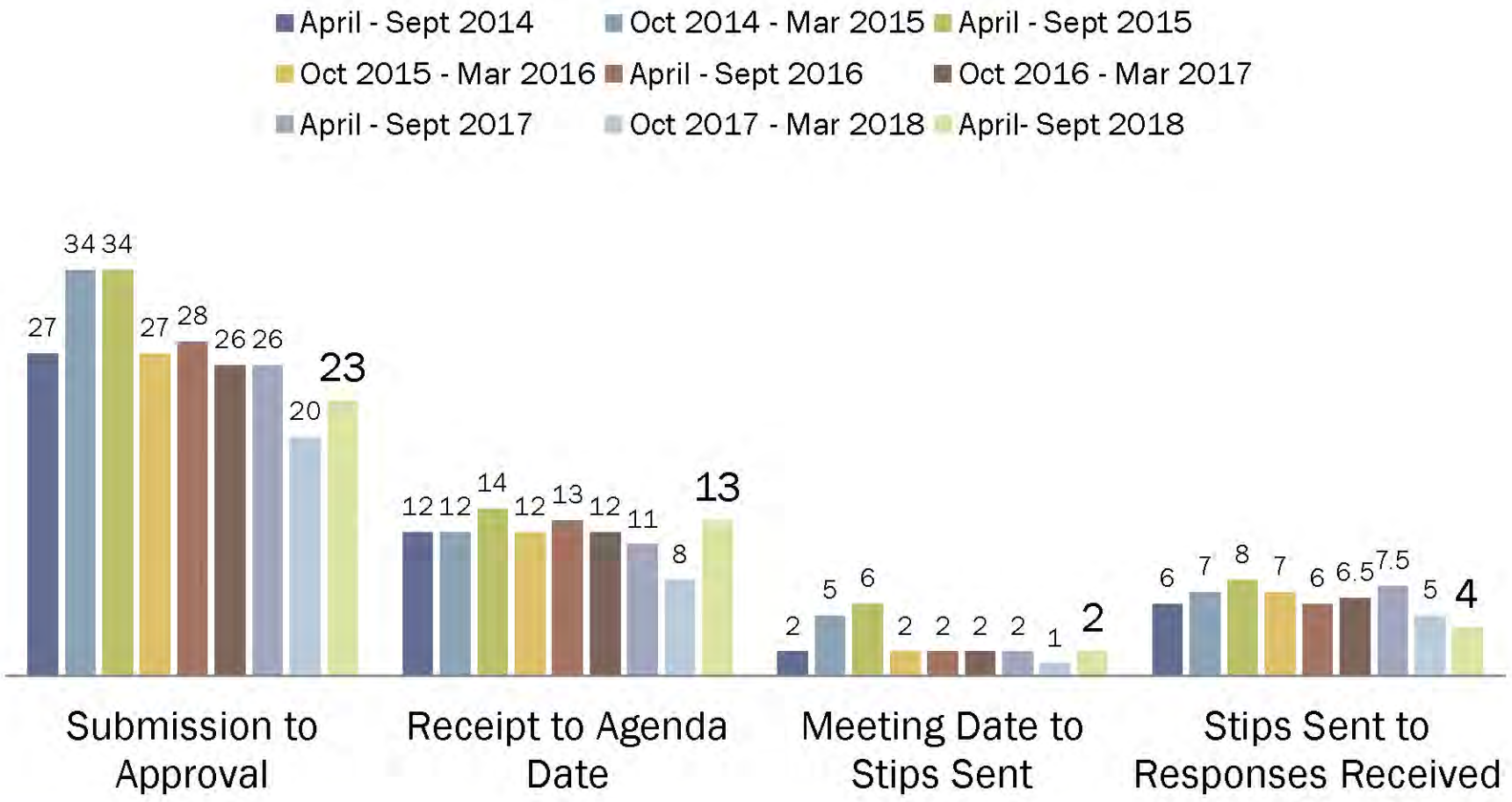


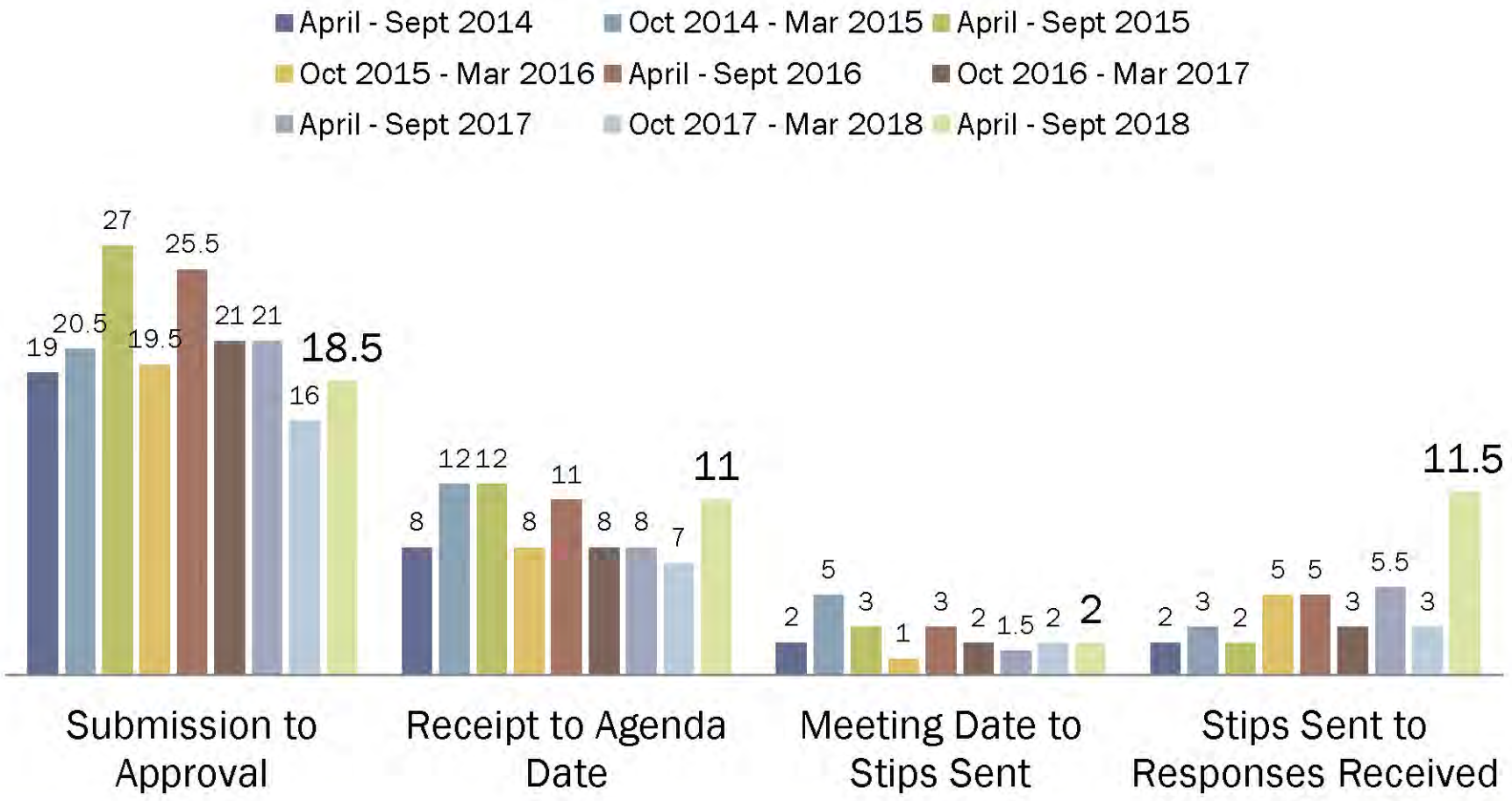
SUBMISSION COMPARISONS

REVIEW OUTCOMES – AMENDMENTS VIA DMR



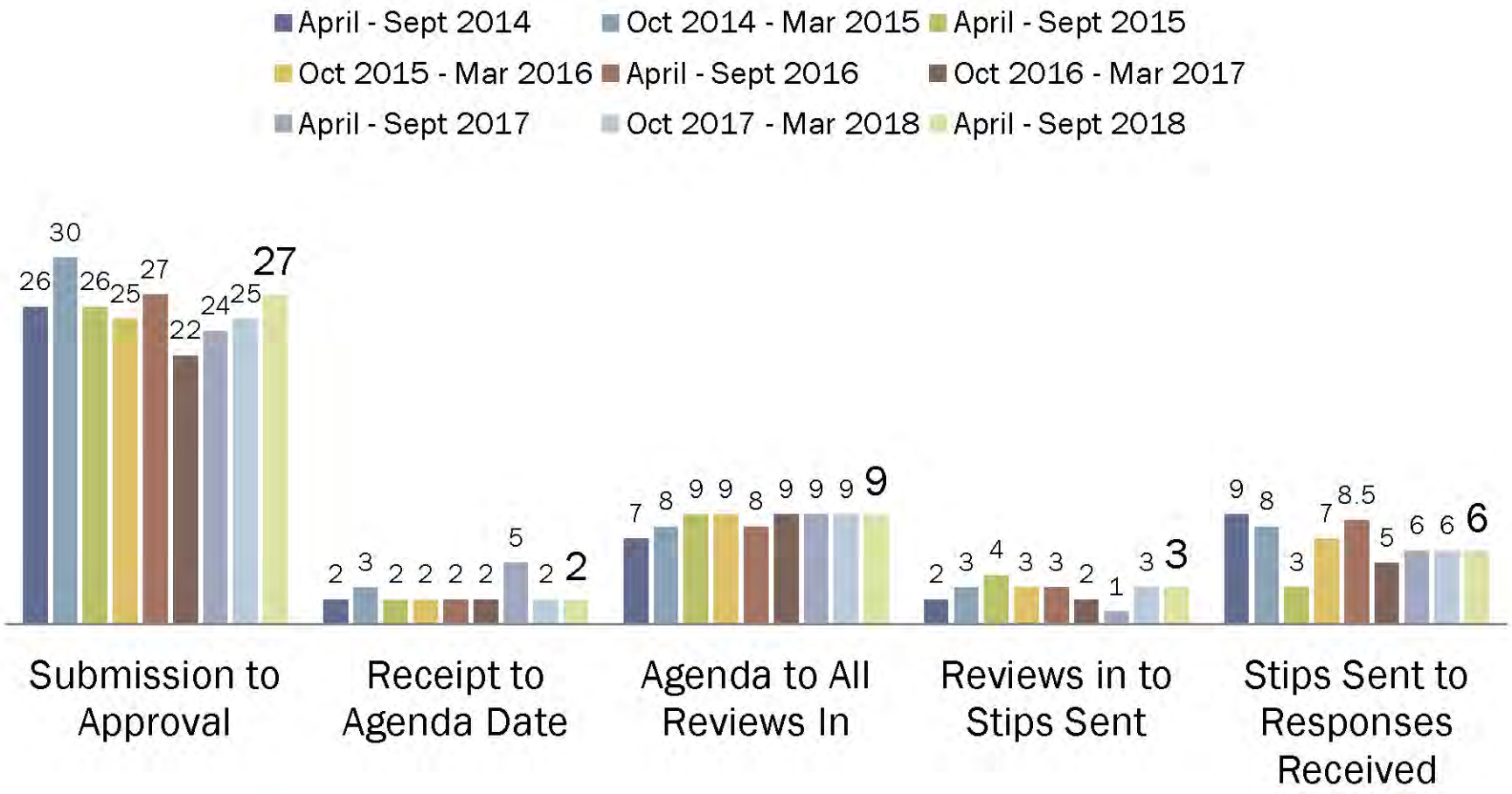
TIME COMPARISON – FCR NEW PROTOCOLS

APRIL 2014 – SEPTEMBER 2018



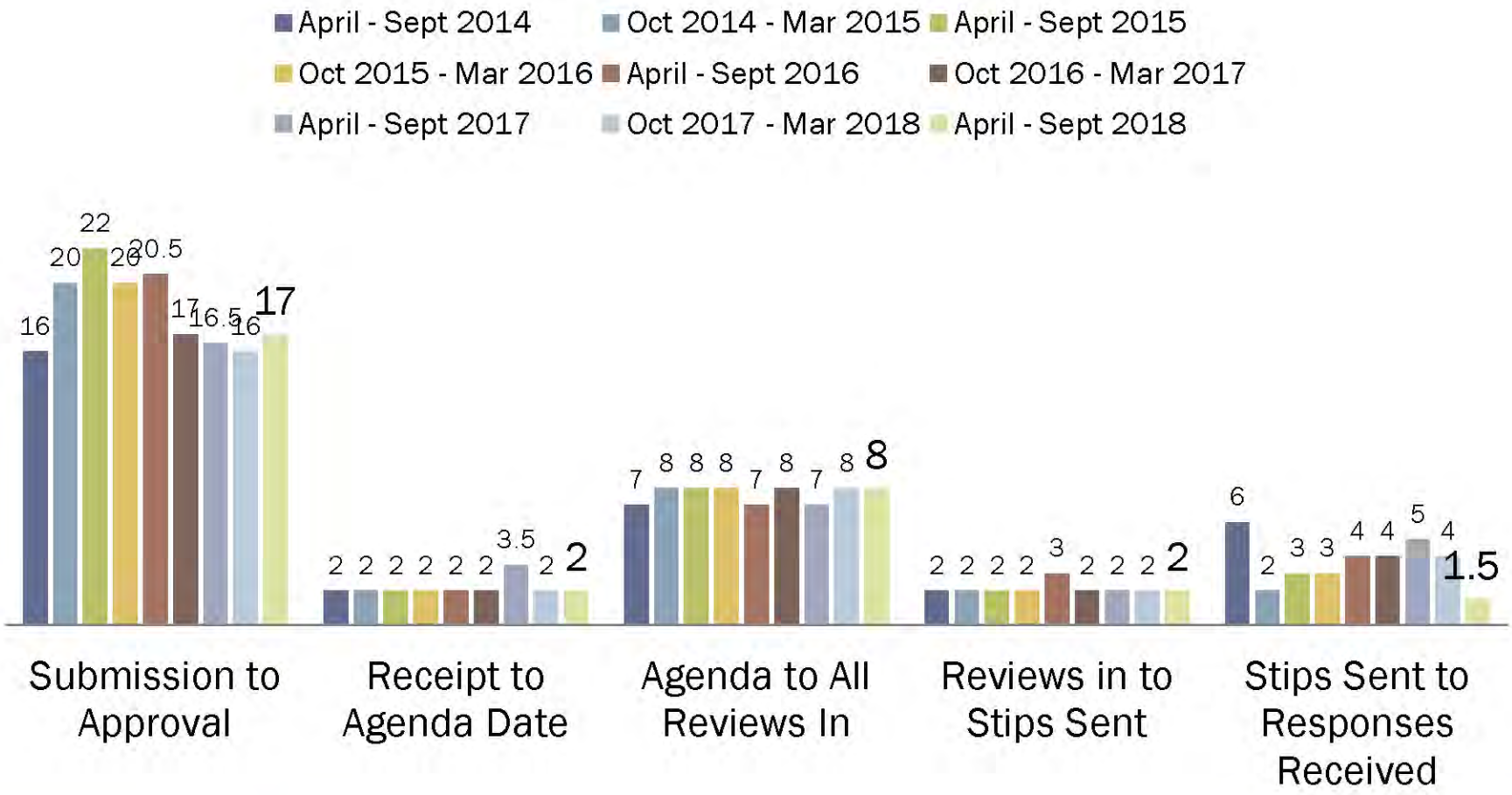
TIME COMPARISON – FCR AMENDMENTS

APRIL 2014 – SEPTEMBER 2018



TIME COMPARISON – DMR NEW PROTOCOLS

APRIL 2014 – SEPTEMBER 2018



TIME COMPARISON – DMR AMENDMENTS

APRIL 2014 – SEPTEMBER 2018

EXPIRED/SUSPENDED, EXTERNAL ANIMAL HOUSING, AND INCOMING ANIMAL TEMPORARY PROTOCOLS
10/1/2018 – 3/31/2019

Holding Protocol
Christine Sivula, 112600
1509A1509A and 1807-36197A
10-1-2018 - 3-31-2019

PI	Protocol ID	Species	Number of Animals	Expiration Date	New Protocol ID	Transfer Approval Date
*Fairbanks, Carolyn	1506-32716A	Mouse	42	7/26/2018	1806-36039A	10/19/2018
**Largaespada, David	1509-33035A	Mouse	990	11/9/2018	1711-35287A & 1808-36277A	11/19/2018
Costalonga, Massimo	1511-33178A	Mouse	251	11/30/2018	1810-36395A	12/31/2018

*Carolyn Fairbanks' protocol 1506-32716A was initially placed on Christine Sivula's protocol 1509-78046A, which expired on 10/12/2018. The Fairbanks mice were then moved to Christine Sivula's new protocol 1807-36197A on 9/7/2018 until Dr. Fairbanks protocol 1806-36039A was approved on 10/19/2018.

**David Largaespada moved his mice on protocol 1509-33035A, which expired on 11/9/2018, to several different PI's after moving them to protocols 1711-35287A and 1808A36277A.

External Animal Housing Protocol
Angela Craig – transferred to Mark Suckow – transferred to Christine Sivula
1808A36233
10-1-18 - 3-31-19

PI	Company Name	Protocol ID	Specie	Number of Animals
*Sivula, Christine	Boston Sci	1808A36233	None	None

* Formerly Mark Suckow.

Incoming Animal Temporary Protocol
Christine Sivula
1807-36151A
10-1-18 - 3-31-19

Incoming PI	Date of Arrival	Number of Animals Housed	Specie	New Protocol #
Bold, Tyler	11/14/18	4	mouse	1807-36184A

Andrew Grande:

12/18/18 and 12/20/18:

Significant Findings:

- It was noted during the inspection that Andrew Crane is performing surgeries under protocol 1601-33310A; however, he is not listed on this protocol. Please add Andrew to this protocol. Also, please make sure he is listed as a surgeon on this study and provide his training and relative experience for review and approval by the IACUC.

- It was noted during the inspection that a femoral vein cutdown procedure is performed 48 hours after the controlled cortical impact surgery to facilitate the IV injection of cells, as approved; however, no analgesic was administered with this surgical procedure. The protocol specifies that Buprenorphine-SR will be administered at least 3 hours prior to the surgery if used alone; or, it will be administered upon sedation of the animal just prior to surgery if used in conjunction with standard formulation buprenorphine. Please confirm that analgesics will be administered for this procedure as stated in the protocol. Additionally, you may want to discuss with your area veterinarian, Dr. Misha Dunbar, this analgesic regimen to ensure proper dosing. **(Please note that this is a repeat finding also noted on June 21, 2018 inspection report.)**

6/20/18:

Significant Finding:

- It was noted during the inspection that a femoral vein cutdown procedure is performed 48 hours after the controlled cortical impact surgery to facilitate the IV injection of cells, as approved; however, no analgesic was administered with this surgical procedure. The protocol specifies that Buprenorphine-SR will be administered at least 3 hours prior to the surgery if used alone; or, it will be administered upon sedation of the animal just prior to surgery if used in conjunction with standard formulation buprenorphine. Please confirm that analgesics will be administered for this procedure as stated in the protocol.

12/29/17:

Significant Findings:

- It was noted that two staff members working on your study are not listed as personnel on your protocol (Hui Xie and Wei Chen Lu). Please have them discontinue working on your study until such time they are added to the protocol and have completed their ROHP requirements, if applicable.
- In review of surgical records for this study, it was noted that on 10/16/17, rats (12) underwent traumatic brain injury ranging from mild to severe. The severe brain injury model is not outlined in your protocol. Please discontinue this model until you submit an amendment to your protocol. Additionally, staff indicated that this initial set of surgeries was to help set up TBI parameters as they are not well established for your study, hence no cell therapy was done on these animals only a range of injury models. Please also add a group of animals to be used for initial system set up if needed.

Phu Tran:

2/28/19:

Significant Finding:

· In the response to reviewer comments in the original submission of protocol 1807-36127A, it was stated that "we will proceed using SR Buprenorphine" for the unilateral carotid artery surgery and this analgesic was added to the procedure. However, analgesics have not been used for the surgeries done since your last inspection. Please confirm that you will give SR Buprenorphine for all future surgeries.

8/13/18:

Significant Findings:

· In review of your surgical records, Carprofen was not given for the most recent three surgeries, totaling 21 animals. Although in discussion with lab staff, it was felt that the Carprofen was not being well tolerated; analgesics must be given as stated in the protocol unless a veterinary recommendation has been obtained. Additionally, there were 20 animals for which the endpoint was extended past the approved 24 hours but no follow-up doses of Carprofen were given to cover the 24-72 hour post-operative period. Please confirm that analgesics will be given to all animals undergoing surgery, in accordance with the protocol and IACUC policy.
· Your stock of xylazine expired in May 2018 but had been used for surgeries in June. Expired anesthetics may not be used in animals. Please discard the expired xylazine.