

Washington State University

Office of the Campus Veterinarian

Program of Laboratory Animal Resources
(OCV-PLAR)

Spokane Vivarium Handbook

Welcome

This handbook has been prepared to provide information and guidelines for anyone currently using or planning to use animals in the Spokane Vivarium. This may not cover all of your questions, so please feel free to ask the people listed in the Contact Information section below.

The Institutional Animal Care & Use Committee (IACUC) and the Office of the Campus Veterinarian (OCV) have oversight over all animal care and use at Washington State University in accordance with the *Animal Welfare Act*, the *Guide for the Care and Use of Laboratory Animals* (the *Guide*), and the *Guide for the Care and Use of Agricultural Animals in Research and Teaching* (the *Ag Guide*). Animal housing and research areas must be inspected and approved by the IACUC prior to use and are subject to routine semi-annual and random inspections while in use.

Standard animal caging, feed, lighting, temperature, and humidity are provided by the vivarium. A research project may require that the principal investigator manage some of the animal care (for example: when an animal is housed in a recording chamber). These arrangements should be negotiated with OCV-PLAR management prior to receiving animals and starting the research project. Any husbandry exceptions to the *Guide* or *Ag Guide* must be included in the Animal Subjects Approval Form (ASAF) and approved.

The Spokane vivarium is staffed from 7 a.m. to 3:30 p.m. on weekdays, and on-site veterinary care is available from 8:00 a.m. to 4:30 p.m. on weekdays. On-call staff are available after-hours and on holidays and weekends for emergencies. OCV-PLAR staff are available to assist researchers, but please provide advance warning when possible so that the staff can plan to be available.

The Institutional Animal Care and Use Committee membership includes a veterinarian, scientific and non-scientific WSU Faculty and at least one community member not associated with WSU. The IACUC office is staffed by the IACUC coordinator and IACUC biosafety office from 8:00 AM to 5:00 p.m. on weekdays. The IACUC chairperson, other committee members, or the IACUC coordinator can be reached at 509-335-7951. Meeting times and other IACUC resources are available on the IACUC website (www.iacuc.wsu.edu).

This document describes vivarium policy and investigators' responsibilities when housing animals at WSU Spokane. More detailed information on animal care can be found in the *Guide for the Care and Use of Laboratory Animals* (the *Guide*) and the *Guide for the Care and Use of Agricultural Animals in Research and Teaching* (the *Ag Guide*). WSU-specific IACUC policies can be found at www.iacuc.wsu.edu.

Contact Information

OCV-PLAR Vivarium Contacts

General inquiries:

ocv.spokane.vet@wsu.edu

Attending Veterinarian/Director:

Nina Woodford, DVM, MPH, DACLAM

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PLAR Veterinarian/Assistant Director:

Johnathan DenHerder, DVM, RLATG

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PLAR Assistant Director

Galen Gorence, BS, RLATG

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509-335-8966

Animal Facility Manager:

Rob Archuleta, LAT

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509-358-7975

Fiscal Specialist:

Barry Worden

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509-358-6842

OCV-PLAR Veterinary Contacts

OCV-PLAR Veterinarian:

ocv.spokane.vet@wsu.edu

509-335-6246

OCV Main Office:

or.ocv.alert@wsu.edu

509-335-6246

OCV Spokane/Pullman Emergencies (call/text):

509-330-1871

IACUC & Safety Contacts

Animal Welfare Program (AWP) Office:

or.ora.iacuc@wsu.edu

509-335-5353

AWP Assistant Director:

Alan Ekstrand

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509-335-7951

Biosafety Officer:

Levi O'Loughlin

levi.oloughlin@wsu.edu

509-335-4199

Importing & Exporting Animals

Rodent import & export coordination:

Johnathan DenHerder, DVM, RLATG

johnathan.denherder@wsu.edu

509-335-0697

Material Transfer Agreements:

orso@wsu.edu

Laboratory Operations and Safety - Spokane

Director of Research Laboratories:

Will Clegern

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Environmental Health and Safety:

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509-358-7769

Facility Access

The animal housing and study areas are kept locked, and access is restricted to authorized personnel only. Only animal care staff or research personnel who are listed on the ASAF are granted access to the animal facility. Those personnel must have completed the WSU Principles of Animal Care (PAC) and Occupational Health Training - Animals (OHT-A) online seminars. All those who work with animals are strongly encouraged to participate in the Animal Contact Program which is the occupational health program for WSU.

Children, pets, and service animals are not permitted in animal facilities. Any visitors that are not listed on the ASAF and who have not registered in the Animal Contact Program should be accompanied by a research or staff member at all times.

Do not open facility doors to persons unknown to you or prop doors open to allow access. Report any suspicious persons to security and vivarium personnel. Report lost or stolen keys or key cards to vivarium management and facilities operations immediately.

Upon approval of the personnel amendment, notify vivarium management via ocv.spokane.vet@wsu.edu to request access to the vivarium. Facility orientation and animal handling training sessions will be scheduled. If the research protocol involves surgery, additional online and in-person training components are required (aseptic surgical techniques trainings).

Entering & Exiting the Vivarium

Specific Pathogen-Free Animals and Disease Status: The majority of animals housed at WSU are bred and raised under strict hygienic conditions and are free of pathogens that can impact research variables or that can be transferred to people. Rodents raised as such are called “specific pathogen-free” or “SPF” rodents. There are different standards of “SPF” at different animal facilities on the WSU campus. For example, a mouse infected with mouse norovirus would be considered to have an acceptable health status in one facility and unacceptable in another facility. To prevent disease outbreaks and significant research disruption, investigators must contact vivarium management for approval before moving animals between rooms and facilities. Animals that are brought into the facility without prior approval may be re-located or euthanized.

Excluded rodent pathogens are listed below. This list is subject to change.

Mouse Pathogens

Mouse parvovirus

Mouse hepatitis virus (mouse coronavirus)

Minute virus of mice

Reovirus-3

Pneumonia virus of mice

Epizootic diarrhea of infant mice
(EDIM/rotavirus)

Theiler's murine encephalitis virus

Lymphocytic choriomeningitis virus

Ectromelia (mousepox)

Sendai virus

Mycoplasma pulmonis

Pinworms

Fur mites

Helicobacter species

Mouse norovirus

Entamoeba muris (select facilities)

Spironucleus muris (select facilities)

Rat Pathogens

Sialodacryoadenitis virus (rat coronavirus)
Rat parvoviruses (RPV, KRV, H-1, RMV)
Reovirus-3
Rat theilovirus
Mycoplasma pulmonis
Sendai virus

Pneumonia virus of mice
Pinworms
Fur mites
Pneumocystis carinii
Helicobacter species
Entamoeba muris (select facilities)
Spironucleus muris (select facilities)

Order of Entry: The vivarium has a specific order of entry of rooms that must be followed to maintain biosecurity. The order of entry is posted. The cage change schedule is also provided and posted on room doors. Always check the posted order of entry as it can change frequently. In general, known-infected and quarantine rooms are last.

Entering the Vivarium/Office Area: To enter an animal facility, you must wear shoes with covered toes. If you are entering the facility, but will not enter an animal room, handle equipment, or pass beyond the office, no further PPE is required. If entering the hall, an animal room, or handling equipment, a lab coat is required. See sections below for further instructions.

Working with Immune-Compromised Animals: To handle immune-compromised animals, don shoe covers, a sterile gown, disposable gloves, face mask, and hair bonnet. The sterile gown should be replaced after each use. Only one researcher may work in the biosafety cabinet or change station at a time. Lightly spray the biosafety cabinet or change station with the disinfectant provided and wipe down with sterile paper towels. Only open cages in the biosafety cabinet or change station, and lightly spray your gloved hands between every cage. When work is complete, lightly spray the hood with disinfectant and wipe down with sterile paper towels. Remove gloves and wash your hands before exiting the room. Remove gown and head cover immediately prior to exiting the room.

Working in Conventional or SPF Rooms: To handle conventional or SPF rodents, don a dedicated lab coat or long-sleeved gown and gloves. Only one researcher may work in the biosafety cabinet or change station at a time. Lightly spray the biosafety cabinet with the disinfectant provided and wipe down with paper towels. Open all cages in the biosafety cabinet or change station; lightly spray your gloved hands between every cage. When work is complete, lightly spray the biosafety cabinet or change station surfaces with disinfectant and wipe down with paper towels. Remove gloves and wash your hands before exiting the room. If your lab coat or gown is unsoiled, it may be hung up and reused for up to one week.

Entering Animal Rooms with Biological Hazards, Chemical Hazards, or Radioactivity: Animal projects with additional hazards require approval through the WSU Institutional Biosafety Committee (IBC) and project-specific standard operating procedures (SOPs). Vivarium staff must be notified a week before the hazard project is set to begin. Complete a Hazardous Projects Form and submit it to vivarium management. Rooms with hazardous materials must be properly labeled and the project-specific SOP

must be posted on the door. Animals that have been exposed to hazardous agents or materials should be clearly identified by their cage card or additional cage signage. Anyone entering the room must follow the safety procedures within the SOP, including personal protective equipment, animal containment, and waste handling. Please contact Levi O'Loughlin at levi.oloughlin@wsu.edu or 509-335-1585 for more information.

Exiting the Vivarium: Remove your dedicated lab coat or gown and gloves; wash your hands. Depending on the room, long-sleeved gowns may be reused for up to one week. A lab coat must be worn when moving through the facility. When leaving the facility, hang your lab coat on the appropriate hanger in the entrance. Do not wear the lab coat outside of the facility; do not take it home to launder. See laundry instructions below. Do not wear gloves in public corridors. If gloves are needed to transport materials, wear one glove to handle the transported item. The free, ungloved hand is then used to touch doorknobs, elevator buttons, etc. If you are wearing gloves to “protect your sample from you” and are in the hall, no one else understands this and will be concerned about the items you have contaminated with those gloves. For further information, see the WSU Glove Policy.

Transporting Animals: Investigators must have approval from vivarium management before moving animals between rooms and buildings. In addition, the Office of the Campus Veterinarian must give approval for animal transportation between institutions. The transport procedure must be compliant with the WSU IACUC policy on animal transportation (https://iacuc.wsu.edu/documents/2016/06/policy_33-3.pdf/). Exceptions will require a project-specific transportation plan, with approval from the IACUC, OCV, vivarium management, and if necessary, the Institutional Biosafety Committee.

Transporting Animals Outside and Inside the Vivarium: Animals or complete carcasses are not to be taken to a lab or office space outside the vivarium. Animals may be manually transported from the housing facility to a vivarium procedure/surgery room in filtered, secured caging such as a microisolator cage or commercial filtered transport box. Do not stack cages more than two rodent cages high during transportation. Transportation to a procedure area outside the vivarium requires prior approval in the ASAF and coordination with the facility manager.

Escaped Rodents: Pathogen-free rodents that escape their cages and gain access to the floor should be captured and euthanized immediately to prevent colony contamination. If the escaped animal is determined to be irreplaceable, it should be caught, isolated in a separate, labeled cage and handled last. The cage should be housed static, and neither sentinel samples nor exposure to the Exhaust Air Dust (EAD) should occur. It is recommended that the cage be placed backward in the rack to avoid the chance of accidentally plugging that cage into the ventilation. Immediate arrangements should be made for quarantine and testing or re-derivation. Inform vivarium management or veterinary staff immediately about escaped animals.

Animal Environment (Guide pp. 41-104)

The *Guide* and *Ag Guide* provide detailed recommendations for lighting, temperature, humidity, cage sizes, cage density, feed, water, bedding materials, sanitation frequency, outdoor housing, and behavioral management for agricultural, terrestrial, and aquatic animals. Exceptions to the *Guide* recommendations must be described in the ASAF and approved by the WSU IACUC. Examples of exceptions include significant changes in circadian cycles, changing cage sanitation schedules, limiting the feed, and single housing of social animals.

Macro-environment (animal room):

Emergency contact information: Emergency contact information must be posted in order to instruct emergency and maintenance personnel who to contact if there is a concern with the animal housing facility. This should include office and after-hours phone numbers for the investigator and laboratory personnel, as well as OCV contacts and the Animal Concerns Reporting policy (<https://iacuc.wsu.edu/documents/2017/02/animal-care-concern-guidelines.pdf/>).

Procedures: When working with or around animals, work quietly to avoid disturbing or distressing them. Any stressful procedures, such as surgery or euthanasia, should be done outside of the animal housing rooms to avoid unnecessary stimulation of the other animals.

Illumination: Light cycles within the animal rooms are controlled by a computerized system. The standard light/dark cycles are 12:12 or 14:10 in rodent rooms. Significant variation requires project-specific IACUC approval. Red lights are available in all rooms.

Temperature & Humidity: The temperature and humidity in indoor animal housing rooms must be monitored and recorded daily. The thermostat is set at 70°F. Animal housing rooms should be able to maintain room temperature within $\pm 3^\circ\text{F}$ of the room's set temperature. The relative humidity levels for indoor animal rooms should be at $50\% \pm 20\%$. Levels frequently drop below 30% in the winter in Eastern Washington. Measures should be taken to increase the humidity levels if there are any clinical effects or if it is thought to impact the research. The recommended temperature range for rodents is 68-79°F or 20-26°C (*Guide* p. 44).

Ventilation: The broad guideline is 10-15 air changes per hour, but more or less may be needed depending on room density and characteristics of the air supply (*Guide* p.46). Assessment of air changes is routinely conducted every three years or more often if the performance standard is not being met. If urine/ammonia odors are excessive, report to vivarium management (*Guide* p. 46).

Sanitation: The animal rooms and support areas must be cleaned and disinfected regularly to minimize contamination and harborage of vermin (*Guide* p. 72). At minimum, floors and counter tops must be cleaned and disinfected weekly, usually after cage changing. More frequent

cleaning may be needed if dust and debris accumulate quickly. Cleaning activities are documented in a room log with date and initials of personnel performing the task. If laboratories are equipped with recording chambers or other specialized animal housing areas, laboratory staff are responsible for cleaning the chambers or equipment. The husbandry staff will clean the room. The cleaning schedule may be affected due to the testing/experiment schedule. Sanitation efficacy is assessed quarterly by the sanitation monitoring program.

Pest Control: The animal study and housing areas must be kept neat and clean to prevent the harborage of vermin. Any feed, nutritional enrichment, or treats must be stored in vermin-proof containers. Evidence of insect or wild rodent infestation should be reported to vivarium management as soon as possible.

Storage: The storage of unnecessary supplies, equipment, and materials should not occur in animal areas. Clutter makes the area difficult to sanitize and can attract vermin. Do not use cardboard boxes in animal areas because cardboard cannot be sanitized and can harbor insects.

Waste Disposal: Vivarium management and investigators are responsible for proper disposal of trash, animal waste, carcasses, and any hazardous waste within the animal areas. If you have any questions, contact vivarium management, the director of research laboratories or Spokane's Environmental Health and Safety group.

Micro-environment (animal cage):

Animal Identification: Animals should be clearly identified through the use of cage cards that include name of responsible investigator(s), source, species/strain/breed, number of animals in the cage/enclosure, approved IACUC protocol #, and information such as birth/age, arrival, and relevant dates of procedures (breeding, weaning, injections, surgery).

Housing Density: The *Guide* and *Ag Guide* provide detailed recommendations for cage or pen sizes and housing density for single-housed, group-housed, and breeding animals (*Guide*, p. 57). Exceptions to the *Guide* and *Ag Guide* recommendations required for a research project must be described in the ASAF and approved by the WSU IACUC. Examples of exceptions include single housing of social animals and having more than one mouse litter in a standard size mouse cage. Contact OCV or the IACUC for further guidance.

Standard mouse cage size: 77.66 sq. inches

Maximum mouse cage density: five adult mice or two adults (male and female) and one litter

Standard rat cage size: 140.12 sq. inches

Maximum rat cage density: two adults or one female + litter

Environmental Enrichment: WSU IACUC Policy #30 Environmental Enrichment at WSU details the basic behavioral management expectations for animals. Exemptions to environmental enrichment and social housing of social species requires justification and approval by the IACUC. The policy is available at https://iacuc.wsu.edu/documents/2016/06/policy_30.pdf/. The vivarium standard for enrichment of rodents is:

- Socially housed mice: paper nesting material
- Single-housed mice: paper nesting material plus shelter
- Socially housed rat: paper nesting material or shelter
- Single housed rat: paper nesting material and shelter

Sanitation: Ventilated animal cages are changed and sanitized every week (rats) or two weeks (mice). Water bottles are checked daily and are changed and sanitized at least weekly (*Guide* pp. 70-71). Cleaning activities are documented in a room log with the date and initials of the personnel performing the task. The washing effectiveness is evaluated through the quarterly sanitation monitoring program.

Bedding (*Guide*, p. 68)

A variety of bedding is used at the Spokane vivarium. Bedding is usually changed every two weeks. Currently available options include: 1/8" Cob, Aspen, Diamond Soft.

Feed (*Guide*, p. 65)

A variety of diets is used at the Spokane vivarium. Standard rodent diets include Inotiv (Envigo) Teklad 2020 and Inotiv (Envigo) Teklad 2016. Researchers may order specialized diets in coordination with vivarium management.

Water: (*Guide* p. 67)

Animals have access to potable, uncontaminated water. Water bottles are checked daily and are changed and sanitized weekly. Research protocols that limit access to water must have prior IACUC approval.

Animal Monitoring

Vivarium management will ensure that trained personnel monitor the animals every day, including weekends and holidays. Each housing room must have a daily care checklist on which animal care staff records temperatures, humidity, room pressure, animal health checks, and any animal care duties performed, such as a cage changing, watering, feeding, and room cleaning. Each entry must be dated and initialed by the personnel performing the tasks. If a research project requires that the investigator monitor the animals themselves, the PI must review the distribution of responsibilities with vivarium management.

Daily Animal Checks

Each animal room should have a daily care checklist on which personnel records the animal health checks. Each entry must be dated and initialed by the personnel performing the task. Each animal must be checked daily including weekends and holidays unless otherwise described in the ASAF and approved by the IACUC.

OCV Animal Health Notification

Animal health cases are examined by veterinary staff and reported to the Office of the Campus Veterinarian through the online OCV animal health database. If sick or abnormal animals are noted, contact veterinary staff.

Summary of Animal Room Documentation Requirements

The following items must be documented either daily or when the activity is completed. All entries must be dated and initialed by the personnel performing the task. These records must be kept for 3 years after the ASAF has expired. Usually, a clipboard with a month-long daily care sheet is kept at the entrance to the animal housing room. Older records may be filed but should be easily retrievable for review.

1. Daily (7 days/week including weekends and holidays)
 - a. Animal health check; including health and access to feed and water
 - b. Temperature in indoor rooms
 - c. Relative humidity in indoor rooms
 - d. Air pressure in indoor rooms, where applicable
 - e. Pest surveillance
 - f. Air handler readings, where applicable
2. On dates performed
 - a. Cage changes
 - b. Feeding
 - c. Watering
 - d. Room cleaning (floors, walls, counters, chambers, fixtures)
 - e. Shower/eye wash flushing (should be weekly unless using sealed disposable flush bottles)

Animal Use

Training

All persons handling animals must complete IACUC-mandated trainings. These include the Principles of Animal Care (PAC) and Occupational Health Training – Animals (OHT-A) courses, which are both offered online. Other training opportunities can be found at the IACUC website (<https://iacuc.wsu.edu/training/>). A WSU Spokane-specific vivarium orientation and basic rodent handling techniques course are required before individuals are granted access to the vivarium.

Veterinary staff can provide training on numerous topics and methodologies. Any investigator or researcher may request an animal training session if they feel it would benefit their work or if mandated by the IACUC. Please contact or.ocv.alert@wsu.edu or ocv.spokane.vet@wsu.edu to request hands-on training.

Animal numbers

All animals purchased, bred, transferred from another project, or otherwise acquired for use in research or teaching must be listed on an IACUC-approved ASAF before acquisition. There is an emergency holding protocol for unexpected acquisitions and new investigators. The holding protocol guidelines and request form are available at <http://iacuc.wsu.edu/forms.asp>. Each approved ASAF lists the total number of animals to be used and the number to be used within each USDA pain category. To track animal usage against the approved numbers, all animals must be documented in the WSU IACUC database. The vivarium staff enters the numbers of animals used when animals are delivered or transferred or are born into breeding colonies. Pups are counted at the first cage change. Animal use should never exceed the animal numbers approved in the ASAF. An amendment requesting an increase in animal numbers should be sent to the IACUC for approval if an investigator needs additional animals. If transferring animals from one protocol to a different protocol (even if under the same investigator), an animal transform form is required.

Animal Acquisition and Ordering

Animal order forms and information regarding animal acquisition from commercial vendors are available on the vivarium website: <https://spokane.wsu.edu/research/plar/animal-ordering-and-transport/>.

All animals must be acquired lawfully. To order animals from an approved vendor:

- Submit a completed animal order form to the appropriate purchasing department to obtain a purchase order number (PO#).
- The purchasing department will submit the animal order form and PO# to ocv.spokane.vet@wsu.edu. This information needs to be completed by the end of day on Wednesday.
- OCV-PLAR places orders on Thursday morning. This allows the vendor time to verify that the order can be filled or whether alternative ages or weights are available.
- Animals are received the following week on either Tuesday (Charles River, JAX) or Wednesday (Inotiv/Envigo). The boxes are delivered directly to the vivarium.
- OCV-PLAR husbandry staff will unbox the animals and verify their health status. The PI is then notified of the arrival of the animals and any problems. Vivarium management will address the problems with the vendor.

For acquisition or transfer of animals from sources other than approved commercial vendors (e.g., universities or other non-commercial entities), please contact ocv.spokane.vet@wsu.edu.

In accordance with IACUC policy, animals must be allowed to acclimate for a minimum of 3 days before experimental manipulations can begin (https://iacuc.wsu.edu/documents/2016/06/policy_12.pdf/).

NOTE: To prevent disease outbreaks and significant research disruption, investigators must contact vivarium management for approval before moving animals between rooms and facilities. Animals that are brought into the facility without prior approval may be relocated or euthanized.

Rodent Breeding

There are alternate methods for breeding rodents:

Pair/monogamous breeding consists of one male and one female in the cage. With this method, only one female is reproducing with the male, but due to the postpartum estrus, they can have a litter approximately every 21 days. If the litter is weaned promptly by 21 days, no overcrowding should occur. However, if a new litter is born before the previous litter has been weaned; then the older litter must be separated out immediately into new cages.

Harem/group breeding consists of one male with multiple females (two to four depending on cage dimensions). It is an exception to the *Guide* to house multiple litters in a standard size cage (mouse 68-82 in²); therefore, females must be separated before they give birth with harem breeding. With this method, more females are simultaneously reproducing with a single male, but they do not mate at the postpartum estrus and will not breed again until the litter is weaned and the female is placed back with the male. If the strain requires co-mothering with multiple females or use of a “nanny” female to improve pup survival, this must be described in the ASAF and approved by the IACUC.

OCV-PLAR staff may perform breeding tasks. The time spent will be charged as technical services.

See also [WSU IACUC Policy 39](#) for specific mouse colony maintenance.

Weaning

Litters of mice and rats 21 days and older are considered adults and should be weaned accordingly, unless specific exceptions to extend the age of weaning are in the ASAF. Mouse weanlings should be separated by sex into cages of five or less animals independent of their weight at weaning. Care must be taken to ensure that the weanlings can reach the food and water. For mouse pups, a hydrogel cup should be placed in the cage unless it interferes with the research. An alternative is to place a cup with moistened food in the cage. If training is needed on weaning procedures, contact vivarium management or veterinary staff. If animals need to be genotyped, tail snipping may occur prior to 21 days of age without the use of anesthesia. If tail snipping occurs at 21 days of age or later, anesthesia must be provided for the procedure.

Procedures

Any procedure such as blood draws, injections, behavioral testing, and surgeries performed on live animals must be described in the ASAF and approved by the IACUC. The only exception is diagnostic sampling and medical care under the direction of a veterinarian for medical issues. Any stressful procedure, such as drawing blood (lancet), surgery, or euthanasia, should be done outside of the animal

housing rooms to avoid unnecessary stimulation of the other animals in residence. Procedure/surgery rooms are located in the PBS and HERB vivarium spaces. Sign-up sheets are posted on the procedure room doors.

Animal Health and Veterinary Services

The Office of the Campus Veterinarian (OCV) is responsible for veterinary services for animals used in teaching or research at Washington State University. Veterinary staff are available onsite to provide care, oversight, and consultation, with a veterinarian visiting from Pullman weekly.

Rodent Health Monitoring

OCV is responsible for routine screening of SPF rodents for rodent pathogens. OCV typically will test rodent housing rooms three times per year by either environmental PCR sampling, direct colony animal testing, or by use of dirty bedding sentinel rodents. Please contact OCV veterinary staff for more information.

Reporting Ill, Injured, or Dead Animals

If an ill, injured, or dead animal is found during a daily health check, the animal must be reported to OCV and the principal investigator (or their representative). For rodents and other small animals, the cage is flagged with a green animal health observation card. The green animal health observation card is part of the animal's medical record and is maintained by OCV-PLAR. The condition, diagnostic tests, and any necessary treatment(s) is documented in the medical record.

SOPs #9, 11, and 12 provide guidance for the treatment of common minor medical conditions in rodents by research investigators, students, and animal care staff (<https://iacuc.wsu.edu/sops/>). Cases that do not resolve within the time frames listed in SOPs require further evaluation.

If the ill or injured animal requires immediate veterinary care, contact the veterinarian by phone at 509-330-1871 (24/7 animal emergency phone). Less urgent cases can be reported by email to ocv.spokane.vet@wsu.edu. OCV veterinary staff will examine the animal, determine the appropriate testing or veterinary care, and contact the investigator's lab with the recommended plan. If after hours or on weekends, efforts will be made to contact the investigator prior to initiating any care. If the investigator or designee cannot be reached, veterinary staff may proceed to treat or euthanize an animal. Current contact information must be available so veterinary staff can reach the responsible persons for consultation.

All cases, including unexpected deaths, should be added to the OCV animal health database (<https://campusvet.wsu.edu/animal-health-database/>). Any animal under observation or treatment for a medical issue must be identified and have a medical record documenting any diagnostic tests, surgery, medical treatments, and case resolution.

Investigators may develop their own standard operating procedures for the treatment of medical conditions associated with their research. These project-specific standard operating procedures should be included in the ASAF and approved by the IACUC.

Euthanasia

The method of euthanasia must be described in the ASAF and approved by the WSU IACUC. In the case of an emergency, an alternative suitable method may be used under the direction of an OCV or other veterinarian. Review IACUC Policy #28 for additional information and requirements:

https://iacuc.wsu.edu/documents/2016/06/policy_28.pdf/.

CO₂ Euthanasia of Rodents

Medical-grade compressed CO₂ gas in cylinders is the only allowable source of carbon dioxide. CO₂ generated by other methods (e.g., dry ice) is unacceptable. CO₂ delivery must be monitored by a flow meter or pre-set system to ensure CO₂ displaces air within the chamber at the appropriate rate. Please contact vivarium management or OCV veterinary staff for assistance.

AVMA Guidelines for the Euthanasia of Animals and the WSU IACUC require a secondary physical method of euthanasia for rodents after the animal is euthanized, prior to carcass disposal.

All persons conducting euthanasia must have received adequate training. This training must be documented, and documentation should be available for review by the IACUC. If instruction on proper euthanasia techniques is needed, contact vivarium management or veterinary staff.

Live animals or whole animal carcasses are not to be removed from the vivarium without prior approval in the ASAF and coordination with the facility manager.

Carcass and Tissue Removal

If the animal's death was unexpected and not part of an approved research protocol, it must be reported to OCV as an abnormal event. OCV may request a necropsy to determine the cause of death. In this case, the carcass should be refrigerated but should not be placed in the freezer as ice crystals can destroy the tissue histology. Dead animals and animal tissues must not be disposed of in the regular trash. They may be stored for two to three days in a refrigerator labeled for carcass storage or kept frozen in a freezer labeled for carcass storage. Medical and pathological waste including carcasses can be boxed for incineration. If you have any questions or need WSU onsite disposal boxes, please contact:

Will Clegern

will.clegern@wsu.edu

509-358-7541

Olga Shiva

olga.shiva@wsu.edu

509-358-7873

Laundry

Soiled protective clothing can be a source of contamination and allergens. Laboratory coats and other washable items used with animals must be laundered at WSU laundry facilities or by a commercial laundry service. Special procedures are required for radioactive contamination or BSL3 and higher research activities. Do not take soiled materials home to launder. Do not use soiled materials in other animal facilities.

PLAR provides laundry service for lab coats dedicated to the vivarium. Hampers are located throughout the facility. All lab coats hung in the entry are laundered each weekend.

Drugs & Chemicals

Waste gases: Any volatile chemicals or anesthetic gases **must** be scavenged by either a ducted biosafety cabinet, a fume hood, or a portable carbon filter (F/Air-type canisters if using an anesthetic vaporizer). Laminar-flow change stations and non-ducted biosafety cabinets are not appropriate for work with volatile chemicals or anesthetic gases. WSU IACUC policy #31 addresses anesthetic vaporizer maintenance and proper waste gas scavenging (available at https://iacuc.wsu.edu/documents/2016/06/policy_31.pdf/). The policy requires that all vaporizers receive annual validation, which must be documented.

Eye wash: Eye wash stations in animal facilities and labs must be flushed weekly. This activity must be documented with date and initials of personnel performing the task.

Chemical storage: Flammable or explosive materials must be appropriately stored in a flammable storage cabinet. Incompatible chemicals such as bleach and ammonia should not be stored in the same area. If chemicals are transferred to a secondary container and not immediately used by the person doing the transfer, the secondary containers must be labeled with the contents, expiration date/fill date, and the hazards associated with using it. For more information on chemical safety, see <https://spokane.wsu.edu/research/lab-safety/hazardous-chemicals-waste/> or contact Laboratory Services at spok.labservices@wsu.edu or 509-358-7621.

Controlled Substances: Any investigator using controlled substances (Schedule I-V drugs) in their research must obtain their own DEA and state drug licenses. It is a felony to provide a controlled substance to a person who is not registered with the DEA or who is not one of your authorized users. The storage and record-keeping of controlled substances must follow federal, state, and local policies. Please contact OCV if you have questions about the research use of controlled substances at WSU. The complete policy is available in the WSU Business Policies and Procedures Manual at <https://policies.wsu.edu/prf/index/manuals/business-policies-and-procedures-manual/bppm-45-75/>.

Expired Materials: The use of expired drugs, chemicals, disinfectants, and other substances on live animals is unacceptable. Expired materials must be labeled as expired and should be stored separately

from unexpired materials until proper disposal. Contact Jeff Battaglia for training in the identification, handling, and disposal of chemical waste. Disposal of expired drugs can be arranged by contacting Dale Silbernagel at 509-335-3563 or silbernagel@wsu.edu.

Non-pharmaceutical grade chemicals and other substance: When available, pharmaceutical-grade drugs and chemicals should be used for animal-related procedures. The use of non-pharmaceutical grade chemicals or substances must be described and justified in the ASAF and receive approval from the WSU IACUC before use. Review IACUC Policy #29 (https://iacuc.wsu.edu/documents/2016/06/policy_29.pdf) and Guideline #12 (<https://iacuc.wsu.edu/documents/2020/01/guideline-12-compounding-drugs-and-chemicals.pdf/>).