MANUAL FOR THE CARE AND USE OF VERTEBRATE ANIMALS AT UNH

Institutional Animal Care and Use Committee

&

Animal Resources Office

August 2018
Preface

This manual was originally approved on August 14, 2002 by the University of New Hampshire (UNH) Institutional Animal Care and Use Committee (IACUC), and last updated on August 22, 2018.

This manual is intended as a guide for UNH faculty, staff, and students who use vertebrate animals in research, testing, and instruction. This document is dynamic and is subject to change/updates as rules, regulations, and/or policies change. While recognizing the importance of using live animals for these purposes, UNH, for both ethical and scientific reasons, insists upon the highest standards for the care and use of such animals. It is the responsibility for each individual using and/or caring for animals to be familiar with, and to ensure compliance with, these standards.

Changes in the information in this manual will be reflected on the IACUC webpage at http://unh.edu/research/animal-care-use
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I. Introduction

The University of New Hampshire (UNH) recognizes its responsibility to produce and disseminate knowledge in accordance with its research, teaching, and public service mission. Some activities conducted at UNH necessitate the use of live vertebrate animals. Recognizing the importance of using live animals for these purposes, UNH, for both ethical and scientific reasons, insists upon the highest standards for the care and use of such animals.

UNH must comply with federal regulations in order to use animals in research, testing, and instruction. UNH has provided the U.S. Public Health Service (PHS) with an Animal Welfare Assurance (Assurance) that is administered by the U.S. Department of Health and Human Service’s (DHHS) Office of Laboratory Animal Welfare (OLAW). This Assurance represents a legally binding commitment to PHS and is critical in maintaining UNH’s eligibility to receive federal and private funds for research involving vertebrate animals. OLAW has recommended that the Assurance be made available to animal care staff, principal investigators/instructors, and other interested parties. The core contents of the Assurance are integrated into this manual. Contact Research Integrity Services (RIS) with any questions about the Assurance.

Accordingly, UNH has developed this manual to:

1. Provide the reader with an appreciation and basic understanding of the regulatory process and means by which compliance can be assured, and the responsibilities that one assumes when choosing to use animals,
2. Provide a concise, up-to-date accessible source of information about UNH’s program for animal care and use to personnel involved with the program,
3. Facilitate good communication between and among animal users, animal care staff, and administrators in the interest of good research and responsible animal care and use,
4. Document UNH’s commitment to ensuring the humane use and care of animals required in its various research and teaching programs, and
5. Document, in part, UNH’s responsibility for ensuring that all personnel involved with animal care and use are appropriately informed, trained, and qualified to perform their respective duties.

II. Definitions

Activities: Include, but are not limited to, research, research training, biological testing, instruction of students, and maintenance of animal collections, exhibits, flocks, or herds.

Animal: Includes all live vertebrate animals, and any dead dog, cat, nonhuman primate, guinea pig, hamster, rabbit or warm-blooded animal used, or intended for use for research, teaching, or testing (Animal Welfare Act, CFR, Title 9, Chapter 1, Subpart A, part 1.1).


Assurance: UNH Assurance of Compliance with U.S. Public Health Service Policy on Humane Care and Use of Laboratory Animals.
Care and Use: Petting, feeding, watering, cleaning, manipulating, loading, crating, shifting, transferring, immobilizing, restraining, treating, training, working and moving, or any similar activity with respect to any animal.


Institutional Animal Care and Use Committee (IACUC): The committee established by the UNH President to oversee UNH's animal program, facilities, and procedures.

Institutional Official (IO): The individual designated by the UNH President to ensure that activities involving the care and use of animals at UNH are humane and in compliance with all applicable regulations and internal policies. This individual is the Senior Vice Provost for Research.

Principal Investigator/Instructor: UNH faculty (including emeriti) and staff members with appropriate authority and access to facilities and resources who accept responsibility for a project involving vertebrate animals.

III. Applicability

The Assurance, the UNH Policy on the Care and Use of Animals (see Appendix A), and the information in this manual apply to all activities involving animals that are

1. Sponsored by UNH, or
2. Conducted by or under the direction of any employee, student, or agent of UNH in connection with his or her individual UNH responsibilities, or
3. Conducted by or under the direction of any employee, student, or agent of UNH involving the use of any UNH property or facility, or
4. Involving any collaborating, subgranting, or subcontracting individual or institution working with UNH.

Activities involving animals covered by the Assurance and the UNH Policy on the Care and Use of Animals must be conducted in facilities approved by the UNH Institutional Animal Care and Use Committee (IACUC).

IV. Program Overview

UNH’s Animal Care and Use Program (Program) fosters the humane care and use of animals in research, testing, and instruction, and adheres to all applicable laws, standards and policies affecting such use. The Program applies to all use of animals at UNH, regardless of whether the activity is funded. The responsibility for implementing the Program has been assigned to the Animal Resources Office (ARO) subject to periodic review and approval by the UNH IACUC, the IO, and the United States Department of Agriculture (USDA).
The standard for animal activities at all research institutions is the publication entitled, “U.S. Government Principles for the Utilization and Care of Vertebrate Animals Used in Testing, Research, and Training.” (See Appendix B.) In addition, UNH’s Program operates in accordance with the Guide, the Animal Welfare Act (AWA), and other applicable regulations. Copies of the Guide and all applicable regulations are available upon request from the ARO or on-line at http://unh.edu/research/iacuc-application-resources

UNH’s Policy on the Care and Use of Animals states, “At UNH, all activities proposed to involve the care and use of live vertebrate animals must be reviewed and receive written, unconditional approval from the IACUC before commencing.” (See Appendix A.)

UNH has established an IACUC with the authority to oversee animal care and use, and to enforce regulations.

V. Institutional Animal Care and Use Committee

The IACUC is a standing University committee comprised of members of the UNH community and the general public. (See Appendix C for membership roster.) To ensure that UNH maintains public accountability for its activities involving animals, the IACUC is responsible for

- Reviewing all research, testing, and instructional protocols involving animals,
- Conducting semiannual reviews of UNH’s Program and facilities,
- Reviewing and addressing concerns involving animals in research, testing, and instruction, and
- Advising the IO.

Information about the IACUC is available at https://www.unh.edu/research/institutional-animal-care-and-use-committee-iacuc. All correspondence with the IACUC should be sent to Research Integrity Services (RIS), Service Building, 51 College Road, Durham, NH 03824.

VI. Animal Resources Office

The ARO is responsible for assisting UNH principal investigators/instructors with all phases of animal activities. In this effort, the ARO maintains and promotes a cooperative and open relationship among principal investigators/instructors, institutional officials, and government inspectors and officials. The ARO

- Provides technical support, consultation, and training to UNH faculty, staff and students using or caring for animals,
- Provides veterinary services and oversight for animals used or cared for by UNH faculty, staff and students,
- Assists principal investigators/instructors with developing protocols for animal use,
- Oversees UNH animal facilities to ensure compliance with federal, state, and UNH standards, and
- Accompanies federal inspectors and others on site visits.

UNH’s Attending Veterinarian (AV) works in the ARO. The ARO is located in Room B56, Rudman Hall, and can be contacted at (603)862-4629.
VII. Research Integrity Services Office

The RIS office provides administrative support to the IACUC and assists principal investigators/instructors with the IACUC application and review process. The RIS office can be contacted at (603)862-2003 or (603)862-3536.

VIII. Principal Investigator’s/Instructor’s Responsibilities

Only UNH faculty (including emeriti) and staff members with appropriate authority and access to facilities and resources may accept responsibility for a project involving vertebrate animals and serve as a principal investigator/instructor. In doing so, the faculty/staff member accepts responsibility for all aspects of the activities, even if a student conducts the work.

Prior to planning or conducting an activity using animals, involved faculty, staff, and students are expected to be familiar with the regulations and guidelines discussed in this manual. Further, principal investigator/instructors are encouraged to consult with the ARO at an early stage in the preparation of protocols for activities involving animals.

Principal investigators/instructors of activities involving animals are responsible for, but not limited to, the following. They must:

1. Acknowledge and accept responsibility for the humane care and use of animals in their activity,  
2. Comply with applicable institutional policies and governmental regulations,  
3. Delay involvement, including acquisition, of animals pending written approval without contingencies from the IACUC,  
4. Possess adequate skills and adhere to high ethical standards,  
5. Assure that all project personnel receive adequate training to perform their duties and act in an ethical manner,  
6. Ensure that all personnel involved in the activity who are handling animals complete the UNH Medical History & Risk Assessment Questionnaire for Persons Handling Vertebrate Animals and/or Unfixed Vertebrate Animal Tissues (see Appendix M) prior to animal handling,  
7. Forward to the IACUC any proposed modification(s) to a protocol prior to initiation, and delay initiating any changes prior to receipt of written approval without contingencies from the IACUC, and  
8. Report progress of an approved activity to the IACUC as often as, and in the manner, prescribed by the approving IACUC, but not less than once a year.

IX. Application and Review Process

A. Planning the Activity and Application

Animal users are strongly encouraged to seek assistance from the ARO during the planning stages for animal activities and prior to completing an Application for Vertebrate Animal Use in Research or Application for Vertebrate Animal Use in Instruction (Application). (See Appendix D.) Principal
investigators/instructors need to ensure that each Application addresses federal policies requiring documentation of adherence to reduction, replacement, and refinement (the three Rs) principles.

Prior to any acquisition or use of animals, each individual proposing to conduct an animal activity must submit to the RIS office a completed Application. (See Appendix D.) For more information contact the ARO at (603)862-4629 or visit https://www.unh.edu/research/animal-care-use.

B. Initial Review

Upon receipt of a completed Application, RIS staff assign a protocol number. The Application is reviewed by one of the ARO veterinarians. Incomplete Applications or those requiring clarification or revisions are returned to the applicant.

C. IACUC Review

Following favorable initial review, the Application is then placed on the agenda for the next IACUC meeting. For consideration, the Application must be received in completed form a minimum of two weeks prior to the next scheduled IACUC meeting. (Visit http://www.unh.edu/research/iacuc-meeting-schedule for a schedule of upcoming meetings.)

D. Potential Actions

The IACUC may take any of the following actions on an Application at a convened meeting:

- approval,
- require modification to secure approval,
- withhold approval.

Principal investigators/instructors are notified in writing of the IACUC’s action. If the activity is not approved, the applicant should work with the ARO to revise the Application for resubmission to the IACUC.

E. Approval

Approval is granted for a maximum of three years, subject to annual review. The principal investigator/instructor may proceed to acquire animals only upon receipt of the approval letter, without contingencies, from the IACUC.

F. Appeals Process

Any principal investigator/instructor wishing to appeal an IACUC decision can do so in writing to the IACUC Chair. The IACUC Chair will bring the appeal to the next scheduled IACUC meeting where the IACUC will review the appeal. The IACUC Chair will inform the principal investigator/instructor in writing of the outcome of the IACUC’s review of the appeal within five working days of the IACUC meeting at which the appeal was reviewed. The IACUC’s decision regarding the appeal is final.

G. Modifications Subsequent to Approval
Principal investigators/instructors must receive written unconditional approval from the IACUC for any changes to their activity prior to implementing them. Modification requests are categorized as minor or major (see https://unh.box.com/s/47ve8jrophgnidykczczzjz88009g1ym for details). Modifications qualifying as minor may be approved by the IACUC Chair; modifications qualifying as major must be reviewed at a convened meeting of the IACUC. All changes approved by the Chair are reported to the IACUC at the next convened meeting.

H. Proposals for External Funding

Principal investigators/instructors seeking external funding for activities involving animals should coordinate the timing of the submission of their Application to the IACUC with the prospective sponsor’s application deadline and Sponsored Programs Administration (SPA). Some federal and private sponsors require IACUC approval at the time of proposal submission, whereas others require IACUC approval prior to issuing a Notice of Award.

X. Animal Management

UNH Policy and federal guidelines require that the living conditions of animals are appropriate for their species and contribute to their health and comfort. Accurate records must be kept regarding all aspects of animal management. Animal care and related Standard Operating Procedures (SOPs) are posted/available in all IACUC-approved facilities and/or from the ARO. Housing, feeding, and care of all animals are directed by a veterinarian or other professional trained in animal care and medicine.

A. Acquisition of Animals

1. Acquisition of all animals will be by legal means and all necessary permits and licenses will be obtained by the user.
2. The principal investigator/instructor must record, and have available for IACUC review, the following:
   a. number of each kind of animal,
   b. species,
   c. source and manner of acquisition, and
   d. final disposition of each animal.
   e. where applicable, a list of non-target species/by-catch
3. The source of animals is subject to approval by the ARO and/or IACUC. Animals purchased must be of known health status and from a reputable vendor.
4. Upon arrival at a UNH facility or satellite facility, animals must be inspected by the ARO or designee. If the animals are found to be unsatisfactory or diseased, the vendor and the ARO must be notified immediately.
5. Certain animal species require special licenses or documentation, and are strictly regulated: These include endangered species, marine mammals, and wildlife. Principal investigators/instructors anticipating involvement of any of these species should contact the ARO for assistance when planning the activity.

B. Facilities/Housing
All animals will be maintained in housing systems that meet the applicable regulations, laws, and/or policies of USDA, PHS, or State of New Hampshire. Space recommendations for animals will be in accordance with The Guide, PHS policy and the AWA. Minimum space recommendations (from the Guide) are given in Appendix E. Other space recommendations are available on request from the ARO.

1. All animals must be maintained in an animal facility approved by the IACUC.
2. The physical housing and maintenance of animal facilities must be in accordance with the most recent edition of the Guide, the AWA, or other appropriate guidelines provided by the ARO.
3. IACUC approval of facilities requires that physical parameters of the environment be maintained at a level appropriate for the species housed. These parameters include, but are not limited to, temperature, humidity, ventilation, lighting, and noise. (See Appendix F, Environmental Standards.)
4. All facilities are inspected and approved by the IACUC at least twice a year. In addition, an ARO staff member makes regular rounds of all animal facilities. Contact the ARO or RIS for a copy of the IACUC’s facility inspection checklists.

C. Biosecurity

Facilities should consider instituting rigorous biosecurity measures. Such measures will vary depending on the status/type of the animals housed, but might include the following:
- Security fences, locks, or entry alarm systems,
- Appropriate signs posted indicating restricted entry,
- Minimizing/controlling visitors unless absolutely necessary,
- A shower-in and shower-out facility, with work clothing furnished by the institution,
- Rodent and bird abatement programs for farms,
- Stray and wild animal trapping and relocation as appropriate,
- A requirement that personnel coming into contact with the animals or facilities do not own or come into contact with animals that may harbor contagious disease agents that may be transferred to the research animals, and
- A requirement that personnel who have delivered animals to markets or slaughterhouses must not enter the research facility for at least 24 hours.

D. Veterinary Care

Direct or delegated authority is given to the AV to oversee all aspects of animal care and use including, but not limited to, treatment of illness, relief of pain, and euthanasia, if warranted.

1. General Animal Health Screening
   a. Regular rounds of all animal rooms and holding areas are made by the ARO, with an emphasis on preventive measures. Any disease problem observed in animal colonies will be reported to the principal investigator/instructor and AV for recommended treatment and corrective measures.
   b. All obviously ill animals with suspected contagious disease will be isolated and the principal investigator/instructor and AV notified.
   c. Caretakers or principal investigators/instructors are required to inspect animals daily, and to report to the ARO all concerns regarding animal care, facilities, or health status of animals in projects assigned to them.
d. Appropriate records of veterinary care are required.
e. Any animal injury, illness, or disease noted on daily observations must be noted and reported in a timely manner to either the AV, an animal care worker, or manager of the facility.

2. Diagnostic Services
   a. Services of the New Hampshire Veterinary Diagnostic Laboratory are available on a fee-for-service basis.
   b. Arrangements for health surveillance or specialized or unique laboratory tests may require use of commercial laboratories and associated fees. Fees generally will be the responsibility of the principal investigator/instructor.
   c. Where there are instances of suspected contagious diseases, the ARO will initiate and expedite disease diagnosis. Subsequent treatment and control measures will be determined by consultation between the ARO veterinarians, the department chairperson and the principal investigator/instructor. Costs for such treatment and control generally are the responsibility of the principal investigator/instructor.

3. Emergency Care
   a. Provisions for emergency care will be made by the AV.
   b. In the event of animal medical emergencies when the principal investigator/instructor cannot be reached, treatment consistent with good veterinary practice will be administered.

E. Quarantining and Conditioning

1. Quarantine and/or isolation of certain newly acquired animals may be required by the IACUC or ARO. This will be done to ensure the health and safety of conditioned animals and to protect ongoing animal projects. (See Appendix G, Veterinary Care, Quarantining, and Conditioning Standards.)
2. Stabilization and conditioning of animals to their surroundings are of the utmost importance. This adaptation period allows the animal to become physiologically and behaviorally stable.
3. Conditioning is strongly recommended for IACUC-approved manipulative procedures, e.g., restraint devices, treadmills, injections, and handling.
4. Animals purchased from a reliable vendor and of known health status can generally be placed in an animal room provided that:
   a. the health status of the existing colony has been established, OR
   b. all animals are from an approved source, e.g. Charles River Laboratory, Jackson Labs, or Taconic Farms.
5. Separation is generally required for animals from different sources until the health status and compatibility of each group is determined.
6. The ARO has established a program of animal health surveillance and may require the principal investigator/instructor to submit animals or tissues for health monitoring or diagnostic purposes. (See Appendix G, Veterinary Care, Quarantining, and Conditioning Standards.)

F. Feeding, Watering, and Animal Identification

1. Nutritional requirements are species-specific. Animal feed must be fresh, palatable, and nutritionally adequate. Attention must be given to those animals with special dietary needs.
Pretreatment of feed (e.g., autoclaving) may alter nutrients and require supplementation. All feeds should be stored in a cool, dry place free of potential contamination. The ARO maintains a listing of conventional feeds.

2. Water is to be clean, potable, and uncontaminated. Unless otherwise approved by the IACUC, animals will have ad lib access to water.

3. If animals will be fasted or have water withheld, the IACUC requires close monitoring of such activities. Individual caging or housing of such animals must be clearly identified at the cage level with a red “do not feed/water” card or at the room level with a daily log. The principal investigator/instructor is responsible for ensuring that daily written records are maintained for fluid/food restricted animals.

4. Federal law requires that all animals or groups of animals be identified at all times. (See Appendix H, Identification Methods.) The IACUC protocol number should be clearly shown on all cage cards, pen cards, or other identification records.

G. Sanitation

Sanitary practices are important to maintain good user and animal health, both for the ethical care of the animal and for assuring appropriate scientific standards.

1. Sanitary conditions must be maintained for all animals at all times.

2. A regular schedule of animal care must be maintained for all animal colonies.

3. Animal rooms, storage areas, laboratories, and other support areas must be cleaned as often as necessary with appropriate detergents and disinfectants.

4. Litter or bedding in animal cages must be changed as often as necessary to keep animals dry and clean, and to minimize offensive odors. The ARO maintains a listing of approved bedding materials and sources.

5. Animal cages, feed, water devices, racks, and auxiliary equipment must be regularly cleaned and sanitized.

6. Intake and exhaust ducts, including filters, should be cleaned and kept free of dust.

7. Trash and other waste from animal facilities must be removed and disposed of by animal care personnel in a safe and sanitary manner.

H. Surgery, Anesthesia/Analgesia, and Pain and Distress

1. Surgery may be performed only in facilities intended for that purpose and must include an area for the proper postsurgical management of the animal.
   a. Principal investigators/instructors must provide evidence of experience, training, or other qualifications of personnel who are to perform the surgeries.
   b. Written surgical records must be kept and made available to the IACUC on request.
   c. Aseptic surgical technique is required for major survival surgery in all animals. This technique includes the wearing of sterile gowns, caps, gloves, and face masks, use of sterile instruments, and aseptic preparation of the surgical field.
   d. Survival surgery on rodents does not require a special facility, but should be performed in a clean, dedicated area using PPE, sterile instruments, sterile surgical gloves, and general aseptic techniques to prevent postsurgical clinical infections from occurring. Surgical preparation (hair removal and preliminary skin preparation) should be performed on a separate surface from the surgery.

2. Procedures that involve pain and/or discomfort must be designed to eliminate any unnecessary distress to the animal. (See Appendix I, Assessing Pain and Distress.) Animals must be returned to a normal state as soon as possible, or euthanized immediately.
a. Federal law requires that animals be rendered insensitive to distress or pain by the use of appropriate tranquilizing, analgesic, or anesthetizing drugs. Guidelines for the use of these agents in animals are given in Appendix J, Anesthetic and Tranquilizing Agents.

b. The use of muscle relaxants or paralytic drugs alone (e.g., succinylcholine or other curariform drugs) as anesthetics is forbidden by the IACUC.

c. The principal investigator/instructor has the responsibility for the proper use of anesthetics, analgesics, and tranquilizing drugs and for the education of personnel in the drugs’ use, as directed by the AV or ARO. Several anesthetics and tranquilizing agents have been identified as potential human health hazards or subject to abuse. The ARO and UNH Office of Environmental Health and Safety (OEH&S) stringently regulate and oversee the use of these agents.

d. The ARO is available to provide advice and information on pain and distress management.

I. Disposition of Animals at End of Project

1. At the termination of a project, the animals will be disposed of in the most appropriate manner, such as, but not limited to, the following:
   a. returned to source, if permitted,
   b. retained for future use, if appropriate,
   c. transferred, if permitted,
   d. euthanized if the above disposal methods are not possible, and the remains incinerated (Arrangements for incineration can be made with the ARO or with private vendors approved by the ARO.), or
   e. disposed of in another appropriate manner approved by the IACUC.

2. Animal euthanasia may be a necessary part of many animal activities.
   a. The quick and humane euthanizing of all animal species will be performed using methods approved by the American Veterinary Medical Association Panel on Euthanasia. (See Appendix K, AVMA Guidelines on Euthanasia, or on-line at https://www.avma.org/KB/Policies/Documents/euthanasia.pdf.) NOTE: Not all methods listed are approved by the UNH IACUC as a primary means of euthanasia. Euthanasia methods must be approved by the UNH IACUC. Any change in the means of euthanasia must be approved by the IACUC.
   b. All persons involved with euthanasia must be trained in said means by either the AV or delegated person. Persons will be instructed in proper procedures and ensuring that death is confirmed.
   c. Use of tissues from euthanized animals in a subsequent activity may be approved on a case by case basis. Principal investigators/instructors must contact the ARO or IACUC regarding approval prior to the use of said tissues.

J. Special Considerations

1. Farm Animals and Wildlife
   Farm and feral animals used in biomedical research can be housed in conventional animal facilities, biohazard containment units, or on farms, according to generally accepted farm practices. When housing these animals in conventional laboratory or containment facilities, the criteria found in the Guide should be used for the animals’ care and use. When housing animals on a farm, the health, comfort, and well-being of the animal should be of primary importance. If the animals are to be housed in a farm setting, the Guide for the Care and Use of Agricultural Animals in Research and Teaching should be followed and the following items
should be considered.

a. Animals should be provided protection against wind, snow, rain, sun, and other environmental extremes. Dry, clean shelter (at a minimum, roofed and three-sided), adequate to house all animals in the enclosed area, must be provided.

b. Pens, runs, loafing, or grazing areas, and adequate space should be appropriate for the species.

c. Adequate drainage, especially in the higher traffic areas (along fences, feed lots, etc.) must exist.

d. Housing facilities should be structurally sound and maintained in good repair to protect animals from injury and to keep out predators and vermin.

e. Feeding stations should be cleaned as often as necessary to avoid contamination and to prevent molding of feed (minimum of once a week).

f. Watering devices (bowls, buckets, tubs, etc.) should be sanitized twice each week and fresh water provided daily or ad lib.

g. Routine sanitation of the farm facility is required, including the cleaning of stalls, pens, cages, and auxiliary areas.

2. Marine Animals

The program and principles of animal care and use apply to marine animals as well as other species. Where there are differences or unique situations, professional judgment of biologists and ARO staff will be used to resolve these issues.

a. Provision must be made for the proper aeration, filtration, circulation, pH, and temperature of holding tank water. Chillers and heaters should be used when necessary to maintain optimum water temperature.

b. Discharged waste water quality is strictly regulated, and principal investigators/instructors should adhere to the most recent Environmental Protection Agency (EPA), state, and local regulations.

c. Sanitation of holding areas will be done as often as necessary to contribute to the health of the animals and employees.

d. The use of galvanized materials should be avoided.

e. Adequate veterinary care must be provided and the proper use of anesthesia, analgesia, and euthanasia will be enforced.

3. The IACUC also recognizes, when appropriate, guidelines developed by the following professional organizations:

a. Guidelines for the Use of Wild Mammals in Research, American Society of Mammalogists


c. Guidelines for Use of Live Amphibians and Reptiles in Field and Laboratory Research

https://www.aaalac.org/about/Ag_Guide_3rd_ed.pdf

XI. Reporting Animal Care and/or Use Concerns
Individuals who have concerns about an animal activity at UNH are encouraged to report them to the IACUC, ARO and/or RIS. Information on reporting procedures is disseminated via the IACUC website, training sessions, and postings in all animal facilities. All reports of concerns involving the care and use of animals at UNH are handled anonymously unless the individual consents to the disclosure of his/her identity.

When a concern about an animal activity at UNH is reported, the ARO reviews the concern with the principal investigator/instructor. If a deviation from the conditions of the UNH Program exists, a meeting of the IACUC is convened to determine appropriate action. If the IACUC determines the deviation significant, the principal investigator/instructor, department chairperson, college or school dean, ARO, RIS, and IO will be notified of the IACUC’s recommendations or action. If individuals reporting a concern are dissatisfied with the IACUC’s resolution, concerns may then be presented to the IO.

Individuals who make good faith reports are protected by UNH Policies and State and Federal Laws from retaliation, discrimination, and other forms of reprisal. Any suspected violations may be reported to ARO, RIS, IACUC, the UNH Office of Affirmative Action and Equity (603)862-2930, or the USNH Ethics and Compliance Hotline at 844-592-8455 (https://secure.ethicspoint.com/domain/media/en/gui/48734/index.html).

XII. Use of Hazardous Materials in Animals

A. Most hazardous materials can be grouped into one of four broad categories:
   1. biohazardous agents and recombinant DNA
   2. radioisotopes
   3. carcinogens, or
   4. DEA controlled substances
B. No biohazard will be used in animals without prior approval of the IACUC and the UNH Institutional Biosafety Committee (IBC). The most current applicable federal policies and guidelines for hazardous materials use are the standard for protocol development.
C. Use of some hazardous materials requires appropriate state or federal licenses. OEHS maintains current information and applications relative to these requirements.
D. Employees involved with, or who may be potentially exposed to, a hazardous material must be educated by the principal investigator/instructor or OEHS as to proper laboratory practices and health concerns.
E. If indicated, OEHS may require preventative vaccinations and/or health screens before, during, and/or after employee involvement in activities.
F. No radioisotopes will be used in animals without prior approval of the IACUC and UNH Radiation Safety Committee (RSC). Contact the Radiation Safety Officer for more information.
G. No carcinogens or DEA controlled substances will be used in animals without prior approval of the IACUC. The UNH Chemical Safety Committee (CSC) provides guidance on the safe handling, use, and disposal of regulated carcinogens and DEA controlled substances.
H. Protocols that produce hazardous waste must be reviewed by OEHS prior to the commencement of the project.
I. Guidelines and source information for the use of hazardous materials in animals are provided in Appendix L.
XIII. Occupational Health Program for Animal Care Personnel

The occupational health program for personnel who work in laboratory animal facilities or who have frequent contact with animals is coordinated by OEHS and RIS. Medical treatment for employees with illness and injury may be provided by UNH Health & Wellness or the employee’s primary care provider.

The occupational health program covers all UNH faculty, staff, and students who care for or handle vertebrate animals, and any non-UNH individuals who care for or handling vertebrate animals in UNH facilities on UNH IACUC approved projects when they have not participated in an equivalent program. Principal investigators/instructors and managers of UNH animal facilities are responsible for enrolling applicable individuals in the occupational health program and ensuring they have received approval from UNH Health & Wellness to handle vertebrate animals before they do so. Enrolling in the program involves an individual completing the Medical History & Risk Assessment Questionnaire for Persons Handling or Working with Live Vertebrate Animals (Appendix M) and submitting it to UNH Health & Wellness.

The occupational health program includes the following:

1. Medical/work history:
   a. Completion of medical and work history documentation;
   b. Pre-work assignment medical work history review;
2. Physical examinations and immunizations (at the discretion of the attending physician):
   a. Pre-work physical examination;
   b. Subsequent periodic physical examinations as required for individuals in some job categories;
   c. Pre-work assignment immunizations and booster injections against tetanus and other diseases to which animal care personnel might be exposed;
3. Reporting of illnesses or injuries:
   a. All work-related illnesses or injuries must be reported immediately to the employee’s supervisor. The employee and supervisor must complete a UNH Accident/Injury/Illness Report and submit it to Human Resources within 24 hours of the incident. Examples of work-related illnesses or injuries include, but are not limited to:
      1) Animal bites;
      2) Unprotected exposures, including needle punctures, to infectious agents;
      3) Unprotected exposures to carcinogens and similar high-toxicity materials, radionuclides, or any other hazardous material.
   b. Human Resources will forward submitted reports of incidents to OEHS for review and subsequent follow-up, if necessary.
   c. Illnesses suspected of being related to work with animals will be reported to appropriate public health officials by OEHS as required by state or federal regulations.
4. Maintenance of individual health records:
   a. The OEHS maintains records that individuals have participated in the Occupational Health Surveillance Program.
   b. All permanent medical records for all registered animal care personnel are maintained at UNH Health & Wellness or the person’s medical provider.
5. Surveillance program for zoonotic diseases:
   a. Two copies of IACUC-approved protocols proposing work with zoonotic diseases must be submitted by the principal investigator/instructor to OEHS. One copy is forwarded to the UNH
Institutional Biosafety Committee for approval consideration; a second copy is retained by OEHS.

b. Personnel are specifically instructed to notify supervisors, Human Resources, and OEHS of illnesses or suspected work-related health problems.

c. Consideration is given to obtaining and storing pre- and post-employment serum samples for future diagnostic purposes from certain registered animal care personnel.

6. Exposure monitoring for hazardous substances:
   a. OEHS will coordinate exposure monitoring and assessment in cases where hazardous materials use requires it.
   b. Personnel are specifically instructed to notify supervisors, Human Resources, and OEHS of illness and suspected work-related health problems. (Refer to Section 3, Reporting of Illnesses and Injuries.)

7. Employee Occupational Health Education Program:
   a. The OEHS and ARO provide pre-work training to personnel about:
      1) Personal hygiene as related to work with animals;
      2) Zoonoses and other biohazards;
      3) Chemical and physical hazards;
      4) Other occupational hazards, including bites, allergies, considerations for pregnant women.
      5) Accident/Incident investigation and reporting.

8. Personal Health Regulations:
   a. All employees are expected to maintain acceptable health care and hygiene standards.
   b. Animal care personnel are required to wear lab coats, scrubsuits, uniforms or other suitable attire in animal areas. In specific instances other protective clothing may be required.
   c. Under no circumstances are eating, smoking, drinking, or application of cosmetics allowed in animal areas.

XIV. Training Programs

A. Training or instruction for scientists, animal technicians, and other personnel involved in animal care, treatment, or use is delivered semiannually by the IACUC, ARO, RISD and OEHS at the beginning of the Fall and Spring semesters (September/October, and February/March). This training includes, but is not limited to, the following:
   a. The humane practice of animal care and use;
   b. Research or testing methods that minimize or eliminate animal use or limit animal pain and distress;
   c. Information sources for alternatives to animal research models;
   d. Procedures for reporting deficiencies in animal care and use; and
   e. Occupational health and safety.
   Information presented at training sessions will comply with the AWA, the Assurance, and other recognized training guides, e.g., American Association of Laboratory Animal Science training manuals, and the Institute of Laboratory Animal Resources Guide for Developing Education and Training Programs.

B. Training is offered to personnel on a regular basis via the following:
a. Making available to all individuals involved in animal care and use activities a copy of the “Manual for the Care and Use of Laboratory Animals at UNH” upon initial employment and after manual revisions;
b. Communicating with UNH departments involved in animal activities to update regulations, provide information, and discuss concerns;
c. Circulating written material as necessary to inform animal care personnel about new regulations or methods pertinent to animal activities;
d. Offering individual instruction to investigators, technicians and students for specific techniques, including animal handling, surgery, anesthesia, and experimental manipulations;
e. Inviting UNH or external scientists to lecture on ethical and technical aspects of animal research.

C. As part of the IACUC application review process, training of all individuals utilizing animals is documented including years of experience with the animal model, and identification of the trainer, if applicable.

D. Records:
   a. RIS/ARO maintains records documenting participation of new employees in orientation sessions for animal care personnel.
   b. Records of personnel training specific to a given protocol are signed by the participant(s) and instructor, and kept on file by the principal investigator/instructor.

E. IACUC Members:
   IACUC members must be qualified to assess the institution’s animal program, facilities, and procedures. The institution is responsible for ensuring their qualification, and this responsibility is filled in part through the provision of training and instruction. Training will be provided by the ARO, RIS or other qualified individuals through methods including, but not limited to, presentations, provision of literature, and site visits.

XV. Emergency Preparedness

Each UNH facility that houses vertebrate animals has a written emergency/disaster plan. It is the responsibility of the facility manager and/or principal investigator/instructor to ensure that all individuals working in a facility housing vertebrate animals are familiar with the plan and their responsibilities in the event of a disaster/emergency.

XVI. Biological and Personal Safety

There are two forms of safety with which individuals working with vertebrate animals at UNH must be familiar; Biosafety and Personal Safety. These precautions are to ensure the health and welfare of the vertebrate animals and the individuals working with the animals.

A. Biosafety
   Biosafety is the prevention of biohazards ~ anything that will have a negative impact on a biological system (e.g., animals, humans, ecosystems). There are many different types of biohazards, including, but not limited to: chemicals, infectious agents, radiological agents and pharmaceutical drugs. Biohazards vary in importance and impact, depending on what is being
used and where it is being used. In laboratory work, individuals should make sure they speak with the laboratory manager or faculty member in charge about the use of personal protective equipment (PPE) and the potential hazards that they may encounter. Individuals working at any barn or larger animal facility should do the same, ensuring that proper attire is worn at all times and designated procedures followed.

Individuals need to pay particular attention to infectious organisms. Biosecurity is a two-way process: individuals need to be concerned not only with to what they may be exposed, but also to what they are exposing animals. Individuals need to:

- Be aware of any infectious agents to which humans may be exposed. Infectious organisms can be spread from animals to humans (zoonotic diseases) and may be of concern depending on where and with what species individuals are working.
- Not wear PPE or barn clothes from one facility into another. This is a very easy way to cross contaminate facilities. For example, individuals working at two different dairy farms must never wear the same clothing/boots between facilities without proper cleaning/disinfection. Similarly, individuals who have a pet rat at home and also work with disease-free rats in a laboratory must inform the facility/laboratory manager about this and create a plan to reduce the risk of bringing possible diseases from home into the laboratory.
- Attend to personal hygiene. Washing hands is the primary method of biosafety; a large number of zoonotic diseases are spread from contaminated hands straight to mouths. This is also an easy way to spread contamination to other areas, via door handles, handrails, etc. Individuals should remember proper hygiene for their own health as well as the health of others.

Anyone with specific questions or concerns about biosafety should contact either the Office of Environmental Health & Safety at (603)862-4041 or the Animal Resources Office at (603)862-4629.

B. Personal and Facility Security

Individuals should be aware of their surroundings when working with vertebrate animals. No-one should ever let an unauthorized person into an animal facility. Everyone should be aware of strangers entering a laboratory, or unknown people wandering through a barn late at night. Any time individuals think there may be a danger to themselves or to animals, they should remove themselves from the danger and call for help: For an emergency, dial 911; for UNH Police, call (603)862-1427. Personal safety always comes first.

XVII. Approval of Facilities Housing Animals

At UNH, the IACUC is required to inspect and approve all facilities temporarily or permanently housing vertebrate animals. Accordingly, individuals should be cognizant of applicable regulations/guidelines when:

- planning the renovation of existing UNH facilities that will/may house vertebrate animals,
- designing new UNH facilities that will/may house vertebrate animals, or
- considering conducting work involving vertebrate animals in facilities not currently approved by the IACUC for the species in question.

Regulations concern both the construction and maintenance of environments where vertebrate animals will be housed, and the transport of animals between facilities. The primary source for such
regulations is the Guide, which contains several chapters addressing environment and housing. Issues to be considered include, but are not limited to, space requirements, temperature and humidity, illumination, enclosures, back-up power resources, security, and public access (if applicable). The Guide is available on-line at http://www.nap.edu/catalog.php?record_id=12910. Individuals should contact the ARO for a copy of the checklist that the IACUC uses when conducting its semiannual inspection of facilities housing vertebrates for additional information about the types of issues that need to be addressed.

In order to both provide for animal welfare, and to facilitate IACUC approval of animal housing and projects, the IACUC recommends the following:

- When building new facilities or renovating existing ones, UNH personnel responsible for facility design and planning should not only consult the regulations, but also consider asking a staff member from the ARO or an IACUC member to join the planning (steering) committee that will guide the renovation/construction of the facility. Further, the IACUC recommends consulting with faculty and staff members who have experience using the species that will be housed in the facility.
- When considering housing animals (temporarily or permanently) in areas not currently approved by the IACUC for the species to be used, it is highly advisable to consult the ARO staff or an IACUC member before seeking formal approval from the IACUC. The IACUC also recommends consulting with faculty and staff members who have experience in working with the species that will be housed in the area.

XVIII. Communication Guidelines

UNH established a communication procedure in the event of an inquiry relating to use of vertebrate animals for research or teaching. This procedure was developed in the spirit of protecting UNH’s credibility and the integrity of UNH’s research and teaching. Principal investigators/instructors and/or facility managers are responsible for ensuring that all individuals working with vertebrate animals under their supervision are aware of the procedure.

Regardless of where such inquiries originate - a reporter, a member of the public, a representative of an organization – each individual receiving an inquiry must follow the steps outlined below. In the event of an incident where individuals feel that they, the facilities they are in, or their animals are threatened or are in immediate danger, they should contact the UNH Police immediately as well as the individuals listed below.

Procedure
1. Upon receipt of an inquiry about an individual’s use of animals, the individual must not provide any information; rather, the individual should record pertinent contact information and inform the inquirer that someone will be in contact shortly.
2. The individual should contact the AV and the Director of UNH Media Relations. If the AV is unavailable, contact Director of Research Integrity Services; if the Director of UNH Media Relations is unavailable, contact UNH Media Relations.
3. UNH Media Relations staff will follow up with the inquirer to gain additional information in order to provide the appropriate UNH response.
In most cases, UNH Media Relations will respond to any media inquiry. Individuals working with vertebrate animals will always be included in discussions as communications are prepared so that the information distributed is accurate.

**XIX. Media Guidelines for Activities Involving Animals**

The UNH IACUC developed the following guidelines to help ensure the integrity of UNH research and instruction that involves vertebrate animals, and to safeguard the health and welfare of the vertebrate animals used in such activities and of the individuals who work with them.

1. When projects involve the public release (e.g., via website, newsletter, or television) of any media that include images of vertebrate animals used in research or instruction at UNH, or the media or an organization requests to photograph/record/film vertebrate animals and/or animal facilities at UNH, researchers, instructors, and animal facility managers should consider the following:
   a. Does the activity involving animals comply with UNH IACUC requirements (i.e., follow the IACUC-approved protocol or facility standard operating procedure)?
   b. Are the images appropriate for public disclosure?
   c. Are the images appropriate for the intended use?
   d. Should a clear explanation of the animal use accompany the image so that the consumers understand the context of the activity?

   Before photography/recording starts, the IACUC encourages researchers, instructors, and animal facility managers consult the Director of the Animal Resources Office (ARO) and/or the Director of Media Relations (see contact information below) about the activity.

2. The IACUC strongly encourages researchers and instructors who use vertebrate animals, as well as animal facility managers, to talk with students and personnel under their supervision about recording images of animals and the responsible use of any resulting images. This includes recording using cell phones.
   a. Recording images of animals may be allowed in some animal facilities (e.g., the Fairchild Research and Teaching Dairy Center), but not in others. Whether images may be recorded is at the discretion of the researcher/instructor or facility manager.
   b. Recording images of animals should be only for professional purposes, and is at the discretion of the researcher/instructor or facility manager.

Researchers, instructors, and animal facility managers may consult the ARO Director or the Director of Media Relations any time they have a question about media involving images of vertebrate animals used in research or instruction at UNH.
Appendix A

UNH Policy on the Care and Use of Animals

See https://www.usnh.edu/policy/unh/viii-research-policies/g-care-and-use-animals
Appendix B

U.S. Government Principles for the Utilization and Care of Vertebrate Animals Used in Testing, Research, and Training

See https://olaw.nih.gov/policies-laws/gov-principles.htm
Appendix C

Institutional Animal Care and Use Committee Membership Roster

See http://unh.edu/research/iacuc-membership
Appendix D

Applications for Vertebrate Animal Use in Research and for Vertebrate Animal Use in Instruction

See
https://www.unh.edu/research/resources/all?combine&resource_type=All&field_resource_category_tid=All&field_resource_topic_tid=77
Appendix E

Space Recommendations
**SPACE RECOMMENDATIONS FOR ANIMALS**

There are few critical and objective data on space requirements for animals (Davis, 1978). Even if all the complex factors affecting caged animals were known and could be evaluated, it is unlikely that a single ideal or perfect system could be developed. Therefore, caging systems based on successful experience and professional judgment must be utilized. Minimum space requirements for animals are given in the following table. They are based on the best available information concerning reasonable space recommendations for housing animals used in research, testing, and instruction.

Special housing provisions are sometimes necessary for unusual species such as those with unique metabolic or genetic characteristics or special behavioral or reproductive requirements. Exercise areas, runs, or pens should be considered for animals that will be held for long periods of time.

**Minimum Space Recommendations for Animals Used in Research, Testing, and Instruction**

<table>
<thead>
<tr>
<th>Animals</th>
<th>Weight</th>
<th>Type of housing</th>
<th>Floor Area/Animal</th>
<th>Height(^a)</th>
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<tbody>
<tr>
<td></td>
<td>g</td>
<td>in(^2) cm(^2)</td>
<td>cm</td>
<td>in</td>
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<tr>
<td>Mice</td>
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### Minimum Space Recommendations for Animals Used in Research, Testing, and Instruction  
- cont.

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(continued on next page)
### Minimum Space Recommendations for Animals Used in Research, Testing, and Instruction – cont.

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<tr>
<th>Animals</th>
<th>Weight</th>
<th>Type of housing</th>
<th>Floor Area/Animal</th>
<th>Height&lt;sup&gt;a&lt;/sup&gt;</th>
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<td>Cattle</td>
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<tr>
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<td>Pen</td>
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<td>Pen</td>
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<td>11.15</td>
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<td></td>
<td>Pen</td>
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<td></td>
<td>Pen</td>
<td>36.0</td>
<td>3.34</td>
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</tr>
<tr>
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<td>Pen</td>
<td>54.0</td>
<td>5.02</td>
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<td>6.69</td>
<td>---</td>
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<tr>
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<td>8.64</td>
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<tr>
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<td></td>
<td>Pen</td>
<td>108.0</td>
<td>10.03</td>
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</table>

Horses

|         |        | Tie Stall       | 44.0              | 4.09            | ---| ---|
|         |        | Pen             | 144.0             | 13.38           | ---| ---|

Ponies

|         |        | Pen             | 72.0              | 6.69            | ---| ---|
| >4/Pen  | <200   | Pen             | 60.0              | 5.57            | ---| ---|
| >200    |        | Pen             | 72.0              | 6.67            | ---| ---|

<sup>a</sup> From the resting floor to the cage top.

<sup>b</sup> Space recommendations are comparable to the current regulations of the Animal Welfare Act. Mothers with litters require more space (CFR, 1984a).

<sup>e</sup> Sufficient headroom must be provided for birds to stand erect.

<sup>f</sup> Space recommendation is not applicable to sows housed in gestation or farrowing stalls.

Appendix F

Environmental Standards
ENVIRONMENTAL STANDARDS*

The purposes of ventilation are to supply adequate oxygen; remove thermal loads caused by animal respiration, lights, and equipment; dilute gaseous and particulate contaminants; adjust the moisture content of room air; and, where appropriate, create static-pressure differentials between adjoining spaces. Establishing a room ventilation rate, however, does not ensure the adequacy of the ventilation of an animal's primary enclosure and hence does not guarantee the quality of the microenvironment.

The degree to which air movement (drafts) causes discomfort or biologic consequences has not been established for most species. The volume and physical characteristics of the air supplied to a room and its diffusion pattern influence the ventilation of an animal's primary enclosure and so are important determinants of its microenvironment. The relationship of the type and location of supply-air diffusers and exhaust vents to the number, arrangement, location, and type of primary enclosures in a room or other secondary enclosure affects how well the primary enclosures are ventilated and should therefore be considered. The use of computer modeling for assessing those factors in relation to heat loading and air diffusion patterns can be helpful in optimizing ventilation of primary and secondary enclosures (for example, Hughes and Reynolds, 1995; Reynolds and Hughes 1994).

The guideline of 10-15 fresh-air changes per hour has been used for secondary enclosures for many years and is considered an acceptable general standard. Although it is effective in many animal-housing settings, the guideline does not take into account the range of possible heat loads; the species, size, and number of animals involved; the type of bedding or frequency of cage-changing; the room dimensions; or the efficiency of air distribution from the secondary to the primary enclosure. In some situations, the use of such a broad guideline might pose a problem by overventilating a secondary enclosure that contains few animals and thereby wasting energy or by underventilating a secondary enclosure that contains many animals and thereby allowing heat and odor accumulation. To determine more accurately the ventilation required, see the Guide.

Recommended Dry-Bulb Temperature for Animal Species Commonly Used in Research, Testing, and Instruction

<table>
<thead>
<tr>
<th>Animals</th>
<th>Dry-Bulb Temperature</th>
</tr>
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<tbody>
<tr>
<td>Mouse</td>
<td>18-26</td>
</tr>
<tr>
<td>Rat</td>
<td>18-26</td>
</tr>
<tr>
<td>Hamster</td>
<td>18-26</td>
</tr>
<tr>
<td>Guinea Pig</td>
<td>18-26</td>
</tr>
<tr>
<td>Rabbit</td>
<td>16-22</td>
</tr>
<tr>
<td>Chicken</td>
<td>16-27</td>
</tr>
<tr>
<td>Farm animals</td>
<td>16-27</td>
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</table>

<table>
<thead>
<tr>
<th></th>
<th>°C</th>
<th>°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mouse</td>
<td></td>
<td>64-79</td>
</tr>
<tr>
<td>Rat</td>
<td></td>
<td>64-79</td>
</tr>
<tr>
<td>Hamster</td>
<td></td>
<td>64-79</td>
</tr>
<tr>
<td>Guinea Pig</td>
<td></td>
<td>64-79</td>
</tr>
<tr>
<td>Rabbit</td>
<td></td>
<td>61-72</td>
</tr>
<tr>
<td>Chicken</td>
<td></td>
<td>61-81</td>
</tr>
<tr>
<td>Farm animals</td>
<td></td>
<td>61-81</td>
</tr>
</tbody>
</table>

* Modified from the Guide, 2011
Appendix G

Veterinary Care, Quarantining, and Conditioning Standards
QUARANTINE, CONDITIONING and HEALTH SURVEILLANCE - 
RODENTS, RABBITS, and OTHER SPECIES

I. Rodents (mice, rats, hamsters, guinea pigs, gerbils)

A. Animals of known health status

1. A list of approved vendors, supplying animals of known health status, will be assembled. Microbiological, parasitological and, in some cases, histologic data are available upon request for animals from each of these vendors.

2. Animals from approved vendors may be admitted to ARO with no quarantine period.

3. Rodents from the approved vendor list and sentinel animals may be health-surveyed twice a year; monitoring will consist of the items listed under B.3.c & d.

4. Surveillance animal procedures (if colony is kept):
   
   a. Principal investigator/instructor orders extra animals which are introduced at same time to colony.
   
   b. Soiled bedding from other cages is introduced periodically into sentinel cages.
   
   c. Sentinel cages are rotated to various locations in each room.
   
   d. Sentinel animals will be tested after a minimum of one month and at twice yearly intervals.
   
   e. Screening for sentinel animals will include murine serology and fecal PCR.
   
   f. Full necropsies, all organs.
   
   g. Examination for endoparasites and ectoparasites.
   
   h. Microbiologic examination which will include screening for known rodent pathogens.

B. Animals of unknown health status (non-traditional vendors)

1. Includes rodents from: i) vendors of animals of unknown health status, and ii) all other non-commercial sources, e.g., other schools, hospital laboratories, or institutions.

2. All animals in this category must undergo the quarantine procedures as determined by the Attending Veterinarian; none may be admitted directly to the established rodent holding rooms.

3. Procedures:
   
   a. Quarantine minimum of 3 weeks.
b. Animals are separated by species and vendor in isolation units. Units are decontaminated between quarantine groups.

C. Microbiologic tolerance in rodents

1. Murine viruses may enter the animal facility in live animals, in tumor material and in cell cultures.

2. All cell lines or tumors received from extramural sources and intended for injection into animals will be monitored as determined by the Attending Veterinarian.

3. The acquisition of known Mycoplasma-positive rodents is discouraged. Such animals may be admitted, but housing and use will be restricted to specific animal rooms.

II. Rabbits

A. Procedures (if vendor is current sole source):

1. Physical exam upon entry.

2. Examine/treat for ear mites, if necessary.

3. Identify by ear tattoo or tag.

4. Admit to chronic colonies.

B. Quarantine (animals procured from vendors of animals of unknown health status):

1. One week quarantine.

2. Physical exam upon entry.

3. Examine/treat for ear mites, if necessary.

4. Identify by ear tattoo or tag.

5. Laboratory determinations, if indicated.

C. Rabbits, purchased as certified Pasturella-free animals, will be housed in quarters physically isolated from other rabbit colonies. Strict management practices will be in effect, to prevent cross-contamination of the Pasturella-free rabbits.

III. Agricultural animals, wildlife, and poultry

A program for adequate veterinary care for agricultural animals, wildlife, horses and poultry is required. This includes a program for disease prevention, surveillance, diagnosis, treatment and endpoint resolution, and is the responsibility of the attending veterinarian(s). In addition, a system of frequent, direct and regular communication between animal care personnel, the principal investigator/instructor, the veterinarian and the ARO is an important component of this program. Other important points include:
1. Positive identification of individual or groups of animals

2. Animal records including daily observations, preventive medicine processes, diagnosis, treatments, prognosis, procedures and other relevant information as may be required. All records should be readily available to the ARO, USDA, IACUC or other appropriate persons or entities.

3. Proper acquisition, records, labeling, and disposal of all drugs, solutions etc. are required. All expired or outdated material must be clearly labeled DO NOT USE and may be disposed of by calling the OEHS office at 862-4041.

4. A program for the acquisition, quarantine and stabilization of newly acquired animals; including separation by species, source, age and health status as directed by the veterinary staff or the ARO.

5. Record of euthanasia, including the method and agent.

IV. Fish, Amphibians, and Reptiles
Veterinary care is required for these species, including the following:

1. Animals should be observed daily for signs of illness, injury or changes in behavior. Records of these observations must be kept.

2. Health surveillance, diagnosis, treatment, and control of disease is essential and is coordinated through the ARO and NHVDL.

3. Sick, dead, or injured animals should be reported to the ARO. Animals or tissues may be submitted to the NHVDL for further evaluation.

4. A system of quarantine, stabilization and separation for newly arrived animals.

5. A sound program of management must be in place, including husbandry practices, behavioral management and water quality assessment.

V. Other Animal Species

A. Pigeons: Routine health surveillance for endoparasites and ectoparasites, chlamydia, coccidia, and pharyngeal and choanal swabs for salmonella. All unexplained deaths must be referred to the NHDVL.

B. Shipments of other species may require quarantine periods. Quarantine location, duration and housing system may vary with species requirements, size of shipment and research protocol. Arrangements will be made by the ARO on an individual basis.
Appendix H

Identification Methods
**ANIMAL IDENTIFICATION**

1. All identification records must include the IACUC protocol approval number.

2. ID cards may be used on animal cages or pens. Cards should contain the principal investigator's/instructor's name and phone number, species/strain of animal housed, date of arrival at UNH, source, and any other descriptive information (age, weight, sex, etc.) and IACUC approval number. Cage cards should be securely attached to the cage; tape is generally not acceptable.

3. Sheep, goats, swine, cattle, etc. should be identified by tattoo, ear tag, collar, or pen cards.

4. Poultry, pigeons, and other fowl can be identified by cage/pen cards and/or leg bands.

5. Chronic animals should be identified by the most permanent method possible, i.e., tattoo, ear punch, collars, ear tags, leg bands, etc.
Appendix I

Assessing Pain and Distress
ASSESSING PAIN AND DISTRESS*

Federal law requires that animal procedures which are clearly painful or which induce distress be alleviated through the use of aesthetic, analgesic, or tranquilizing drugs. UNH must provide assurance to the USDA on an annual basis that animals subjected to painful or distressful procedures have received appropriate pain-relieving drugs.

The key to adequate assessment lies in the hands of the animal care personnel: technicians, laboratory specialists, and researchers. It is here that clinical observations and abnormal behavior should be recognized as possible identifying factors of pain in laboratory animals. It is therefore essential that all personnel involved in the care of animals be well versed in normal animal behavior patterns and that they recognize any deviation from the normal or usual pattern. The conscientious laboratory animal personnel performing daily routine functions should identify changes in personality, eating habits, physiological functions, etc. Such observations should be reported quickly to the clinical veterinarian or appropriate animal health care official.

<table>
<thead>
<tr>
<th>SIGNS OF ACUTE PAIN</th>
<th>SIGNS OF CHRONIC PAIN OR ILLNESS</th>
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</thead>
<tbody>
<tr>
<td>Guarding (of affected area)</td>
<td>Limping or carrying limb</td>
</tr>
<tr>
<td>Crying or vocalizing</td>
<td>Licking area of body</td>
</tr>
<tr>
<td>Mutilation</td>
<td>Reluctance to move</td>
</tr>
<tr>
<td>Restlessness</td>
<td>Change in personality</td>
</tr>
<tr>
<td>Sweating</td>
<td>Dysuria (painful urination)</td>
</tr>
<tr>
<td>Recumbency (especially notable in large animals)</td>
<td>Bowel lassitude</td>
</tr>
<tr>
<td>Heavy breathing</td>
<td></td>
</tr>
<tr>
<td>Loss of appetite</td>
<td>Hunched posture</td>
</tr>
<tr>
<td>Facial “grimace” rodents and rabbits – eyes squinty, ears back, whisker bulge</td>
<td></td>
</tr>
</tbody>
</table>

**Species-Specific Behavioral Signs of Pain***

<table>
<thead>
<tr>
<th>Species</th>
<th>Vocalizing</th>
<th>Posture</th>
<th>Locomotion</th>
<th>Temperament</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mice, rats, hamsters</td>
<td>Squeaks, squeals, often no vocalization</td>
<td>Dormouse posture; rounded back; head titled; back rigid; ears back, eyes squinty (orbital tightening), nose and cheek bulge, whiskers back</td>
<td>Ataxia; running in circles; hunched, reluctance to move</td>
<td>Docile or aggressive depending on the severity of pains; eats neonates</td>
</tr>
<tr>
<td>Rabbits</td>
<td>Piercing squeal on acute pain</td>
<td>Hunched; faces back of cage</td>
<td>Inactive; drags hind legs</td>
<td>Apprehensive, dull, sometimes aggressive depending on severity of pain; eats neonates</td>
</tr>
<tr>
<td>Guinea Pigs</td>
<td>Urgent repetitive squeals</td>
<td>Hunched</td>
<td>Drags hind legs</td>
<td>Docile, quiet, terrified, agitated</td>
</tr>
<tr>
<td>Chickens</td>
<td>Gaspingle</td>
<td>Stand on one foot; hunched, huddled</td>
<td>None</td>
<td>Lethargic; allows handling</td>
</tr>
<tr>
<td>Birds</td>
<td>Chirping</td>
<td>Huddled, hunched</td>
<td>From excessive</td>
<td>Inactive; drooping,</td>
</tr>
<tr>
<td>Species</td>
<td>Behavioral Signs</td>
<td>Posture/Position</td>
<td>Behavioral Signs</td>
<td>Appearance</td>
</tr>
<tr>
<td>---------------------</td>
<td>----------------------------------------------------</td>
<td>------------------------------------------------------</td>
<td>-------------------------------------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>Pigs</td>
<td>From excessive squealing to no sound at all</td>
<td>All four feet close together under body</td>
<td>Unwilling to move; unable to stand</td>
<td>Miserable appearance</td>
</tr>
<tr>
<td>Sheep</td>
<td>Grunting; teeth grinding</td>
<td>Rigid; head down</td>
<td>Limp; reluctant to move the painful area</td>
<td>Disinterested in surroundings; dull, depressed</td>
</tr>
<tr>
<td>Cows, calves, goats</td>
<td>Grunting; grinding teeth</td>
<td>Rigid; head lowered; back humped</td>
<td>Limp; reluctant to move the painful area</td>
<td>Dull, depressed; act violent when handled</td>
</tr>
<tr>
<td>Horses</td>
<td>Grunting, nickers</td>
<td>Rigid; head lowered</td>
<td>Reluctant to move; walk in circles “up &amp; down” movement</td>
<td>Restless, depressed</td>
</tr>
</tbody>
</table>

NC3Rs website for the facial grimace scales for mouse, rat and rabbit:
[https://www.nc3rs.org.uk/grimacescales](https://www.nc3rs.org.uk/grimacescales)
Appendix J

American Veterinary Medical Association Guidelines for the Euthanasia of Animals (2013)

See https://unh.app.box.com/file/261894363184
Appendix K

Guidelines for Use of Hazardous Materials
USE OF RADIOISOTOPES IN ANIMALS

1. Principal investigators/instructors and their designees are expected to understand and comply fully with regulations of the Nuclear Regulatory Commission (NRC), New Hampshire Rules for the Control of Radiation, and UNH Radiation Safety Committee (RSC) regarding safe handling of radioisotopes.

2. All experimentation in animals is to be done within designated animal holding rooms.

3. Animal technicians will be given explicit instructions by the Office of Environmental Health and Safety (OEHS) personnel and provided with necessary protective monitoring devices to assure their safety.

4. All animals containing radioactive materials are to be housed in approved holding rooms. Room ventilation, surface preparation, drainage, and other room design requirements will be considered. Animals given radioactive materials normally will be housed in rooms separate from conventional animal rooms. Doors will be labeled with appropriate radiation signs.

5. All cages housing radioactive animals shall be clearly labeled as follows:
   a. Radioactivity warning tape must be affixed to cages
   b. Name of principal investigator/instructor
   c. Name of radioisotope
   d. Amount of radioisotope administered per animal
   e. Date, time and mode of administration

6. Standard animal cages are available for use, when the isotope(s) being used can readily be removed by mechanical cage washing. If, however, difficult decontamination is expected, arrangements must be made for use of disposable plastic cages.

7. Plastic cages holding radioactive animals must contain absorbent bedding. Excreta pans under suspended, wire bottom cages will be lined with disposable, plastic-backed paper.

8. All animal litter, tray paper, feces, gloves, etc., are to be placed in special radioactive waste containers located in a facility. OEHS provides these containers, and is responsible for surveillance and disposal.

9. Before animal cages or racks are taken to the cage wash area, and the roots cleaned, OEHS must be notified for clearance.

10. All handling of radioactive animals and bedding shall be done while wearing disposable rubber gloves. Animal injections will be done over stainless steel receptacles or benches covered with absorbent plastic-backed paper.

11. In event of death of radioactive animals, the principal investigator/instructor shall be called as soon as possible. The principal investigator/instructor is responsible for notifying OEHS, who will handle surveillance and placement of carcasses in designated radioactivity freezers. Carcasses or parts thereof of radioactive animals shall be wrapped in absorbent material and placed in water-tight plastic bags. If the principal investigator/instructor cannot be reached, OEHS will handle disposition.

12. The RSC will not authorize the use of radioactive materials in animal studies until approval by the Institutional Animal Care and Use Committee (IACUC) has been obtained.

13. Violation of any of the regulations pertaining to the use of radioisotopes in animal studies shall result in the immediate suspension of those use privileges pending review by OEHS, RSC, and IACUC.
REFERENCES TO LOCAL, STATE, AND FEDERAL LAWS, REGULATIONS AND STANDARDS

Definitions in this section represent a compilation of many definitions derived from local, state and federal laws, regulations, and standards, as noted below. The intent of these definitions is to be inclusive and comprehensive; that is, all materials defined as hazardous in any applicable source are included.

**Hazardous Chemical Substances**

NFPA Flammable and Combustible Liquids Code  
National Building Codes  
US 29 CFR 1910.1000 air contaminants  
US 29 CFR 1910.1200 hazard communication standard  
US 29 CFR 1910.1450 laboratory standard  
US 29 CFR 1910.106 flammable and combustible liquids  
US 29 CFR 1910.120 hazardous waste operations and emergency response  
US 29 CFR 1910.1001 specific chemical standards  
NH RSA 277A Right to Know Law  
NH RSA 125c Clean Air Act and Amendments  
US 40 CFR Resource Conservation and Recovery Act  
US 40 CFR Toxic Substances Control Act  
US 49 CFR Hazardous Materials Transportation Regulations  
Laboratory Use of Chemical Carcinogens, NIH, US DHHS: PHS

**Radioactive Materials**

US 10 CFR Parts 19 and 20  
NH He-P 2000 Rules for the Control of Radiation

**Hazardous Biological Agents**

NH Part Env-Sw 904 Infectious Waste  
US 49 CFR 173.134 Class 6, Division 6.2 – Definitions and exceptions  
US 49 CFR 173.196 Category A infectious substances  
US 49 CFR 173.199 Category B infectious substances  
US 29 CFR 1910.120 (a) HAZWOPER  
US 29 CFR 1910.1030 BLOODBORNE PATHOGENS  
NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules (NIH Guidelines), current edition, U.S. Department of Health and Human Services, National Institutes of Health  
Biosafety in the Laboratory (Prudent Practices for the Handling and Disposal of Infectious Materials)  
Appendix L

Medical History & Risk Assessment Questionnaire for Persons Handling or Working with Live Vertebrate Animals

See http://unh.edu/research/animal-care-use