

Children's Memorial Research Center Research Support Facility

POLICIES AND PROCEDURES MANUAL



Research Support Facility

<http://www.childrensmrc.org/researchadministration/ORIC/IACUC2/>

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LINKS TO APPENDICES:

APPENDIX A

Research Support Facility Disaster Plan

<http://www.childrensmrc.org/researchadministration/ORIC/IACUC2/>

APPENDIX B

Institutional Animal Care and Use Committee Policies & Procedures Manual

<http://www.childrensmrc.org/researchadministration/ORIC/IACUC2/>

APPENDIX C

Occupational Health and Safety Program

<http://www.childrensmrc.org/researchadministration/ORIC/IACUC2/>

APPENDIX D

Research Integrity and Compliance Program Manual

http://www.childrensmrc.org/researchadministration/oric/?ekmense1=296b01ef_75_125_btnlink

1.0 Introduction

1.1 Background

Children's Memorial Research Center (CMRC) is accredited by the Association for Assessment and Accreditation of Laboratory Animal Care (AAALAC), registered as a research facility by the United States Department of Agriculture (USDA #33-R-0006) under the Animal Welfare Act (AWA) and maintains an assurance (#A3995-01) with the U.S. Public Health Service Policy (PHS) for the Care and Use of Animals with the Office of Laboratory Animal Welfare (OLAW). The care and use of animals used for research at CMRC is based on national guidelines and federal regulations including:

- U.S. Public Health Service Policy (PHS) Assurance for the Care and Use of Animals negotiated with the Office of Laboratory Animal Welfare (OLAW).
- The USDA regulations (9CFR) of the Animal Welfare Act.
- The *Guide for the Care and Use of Laboratory Animals (The Guide)*
- Association for Assessment and Accreditation of Laboratory Animal Care (AAALAC)

CMRC is committed to providing its research community with a safe, clean, humane, and efficient Research Support Facility (RSF). The RSF Policies and Procedures Manual is intended to provide guidance to personnel, principal investigators (PIs) and research personnel at CMRC regarding the following:

- Animal health and care
- Veterinary medical care
- Maintenance
- Occupational health and safety of personnel

This Policies & Procedures Manual is designed to promote and sustain a safe and high-quality environment that supports CMRC's research mission and ensures the humane care and use of laboratory animals in accordance with federal requirements, the standards of the CMRC Institutional Animal Care and Use Committee (IACUC), and of AAALAC. The standard operating procedures (SOPs) focus primarily on the care of animals housed in the RSF; they also serve as a resource in addition to *The Guide*. All PIs, approved to conduct animal research at CMRC have been provided the electronic link or a hard copy of *The Guide*.

2.0 EDUCATION PROGRAM

Training and Certification for Animal Caretakers and Research Personnel

All personnel that work with animals or have access to the RSF are required to complete the RSF education and training program. The education and training covers the following areas:

1. RSF Core Training Program

- Utilization of humane methods of animal maintenance and experimentation, including the basic needs of each species of animal, proper handling and care for each species used in the facility, and proper pre-procedural and post-procedural care of animals.
- Understanding the special requirements associated with the use of animals in research and teaching.
- Clarify the responsibilities of those involved in animal research and teaching, and of the IACUC.
- Provide education on the protection of animals as mandated by federal regulations including the Animal Welfare regulations and PHS Policy.
- Provide education on IACUC policies and procedures, RSF SOPs, the CMRC Disaster Plan and the Occupational Health and Safety Program (OHSP).
- Ensure research and testing methods that minimize the number of animals required to obtain valid results with the least animal distress.
- Appropriate use of anesthetics, analgesics and tranquilizers for any species used in the facility. Each PI is responsible for ensuring that research staff are properly trained in the appropriate anesthesia methods in the IACUC approved protocol.
- Appropriate methods of euthanasia.
- Provide training on how to report deficiencies in animal care and treatment which also includes procedure on how to report a concern anonymously.
- Barrier housed areas and barrier technique.
- Use of hazardous agents and radioactive materials.
- Surgical training: all individuals involved in surgery are trained on aseptic technique and the RSF surgery SOPs. Each PI is responsible for ensuring the research staff is properly trained and follows the surgical methods as approved in the IACUC protocol.

Training Tools:

- Training tools include videotapes/DVDs, and access to veterinary and laboratory medicine textbooks and one-on-one instruction. The videotapes/DVDs includes information on the federal regulations, IACUC policies and procedures and animal handling and care which also includes aseptic and surgical techniques, anesthesia and analgesia, and evaluation of pain and distress. Training and review of the RSF SOPs is also discussed with new research personnel when relevant. The Director, RSF and the Attending Veterinarian (AV), provide training in animal handling techniques as the need arises.
- Videotapes, produced by the University of California at Davis, Laboratory Animal Training Association (LATA), Penn State University and outside vendors concerning humane handling and laboratory techniques for mice, rats, and rabbits are viewed by investigators and their staff. Quizzes must be completed and these provide documentation that the tapes were viewed.

- Additional resources are available to staff and PIs in the Pritzker Library at CMRC.
2. **Species-Specific Training** – Animal caretakers and animal care personnel must be trained in handling the specific species housed in the RSF. The Director, RSF has extensive experience in handling most conventional laboratory animal species, such as mice, hamsters, rats, guinea pigs, rabbits, dogs, cats, as well as livestock species, such as swine, calves and sheep. The Director, RSF trains new technicians to ensure they are able to handle the species housed in the RSF. Species-specific educational videos are available from the RSF to train technicians as needed. If a species is brought to the RSF that the Director, RSF or AV is not trained to work with, the Director, RSF will obtain training materials such as videos and/or arrange for technicians to receive training from someone experienced in handling the species.
 3. **OHSP**- All animal caretakers and any personnel who routinely access the RSF as part of their job requirements are enrolled in the CMRC OHSP, which educates personnel of the risks and specific concerns related to working with animals.
 4. **Orientation** – Orientation is designed for new PIs and research personnel. Training will include:
 - Review of the applicable regulations – OLAW, PHS, AWA, AWR, *The Guide*, AAALAC
 - Reporting concerns related to the treatment of animals.
 - Security
 - Elevator usage
 - Gowning requirements
 - Barrier room procedures
 - Cubicle usage
 - Recordkeeping requirements
 - Animal ordering
 - Animal transfers, weaning and sacrificing procedures
 - Red card problem notification
 - Supply ordering
 - Controlled substance records and requirements
 - Clean/dirty caging procedures
 - Euthanasia and carcass disposal
 - **Purina Mills, Inc. Exam** – All new animal caretakers and animal care personnel are strongly encouraged to complete the self-study PMI Laboratory Animal Care course.
 - **American Association for Laboratory Animal Science (AALAS) Certifications** – Animal caretakers and animal care personnel are encouraged to further their knowledge by seeking certification through AALAS. The three levels of certification are: Assistant Laboratory Animal Technician (ALAT), Laboratory Animal

Technician (LAT) and Laboratory Animal Technologist (LATg). CMRC subscribes to the AALAS Learning Library. This resource provides training which emphasizes the appropriate handling, care, and use of animals and is designed to assist in studying for AALAS certification.

Education Programs for Investigators and Research Personnel – CMRC requires that all PIs using animals in research or teaching complete:

- RSF Core Training program
- Species specific training
- OHSP enrollment
- Orientation
- Safety Orientation

Media-based Training for Animal Caretakers and Research Personnel –

The RSF has a comprehensive library of training media, in videotape format, available for check-out to all personnel who desire or require additional regulatory, bio-methodology or technique training.

Hazards - The Director, RSF is responsible for ensuring that all RSF personnel are fully aware of the application and training procedures set forth in this Policies & Procedures Manual and of any potential hazards involved in their work, including how to recognize, prevent, and treat occupational hazards. The Director, RSF may seek input from the AV and the Safety Officer in meeting this responsibility. The Director, RSF shall maintain written records of such training for each RSF Personnel member.

Supplementary Training Resources – Supplemental resources are also available from the CMRC Pritzker library and the RSF Office. Additional resources related to regulatory requirements are available in the IACUC office and through the Office of Research Integrity and Compliance (ORIC).

3.0 Animal Health and Care

The Guide states, “Proper management of animal facilities are essential to animal well-being, to the quality of research data and teaching or testing programs in which animals are used, and to the health and safety of personnel. A good management program provides the environment, housing, and care that permit animals to grow, mature, reproduce and maintain good health; provides for their well-being; and minimizes variations that can affect research results.” pg. 21. Animals shall only be housed in facilities or locations approved by the IACUC. All locations where animals may be brought must be approved by the IACUC.

3.1 CAGING AND HOUSING OF ANIMALS

3.1.1 Structure – All Animals

Rodents are housed in either standard static microisolator caging or in individually ventilated caging systems. It is recommended that rodent animal procedures such as cage changes and experimental manipulation be performed under HEPA filtered laminar flow hoods or biosafety cabinets.

The RSF provides cages for animal housing. PIs should notify the Director, RSF of any unusual or special need for caging; otherwise animals will be housed per the information below, in accordance with *The Guide*. All mice or small animal cages must be placed on a securely anchored nonporous surface. No mice or small animal cages are to be placed on the floor or stacked on top of each other when housing animals. Housing requirements are as follows:

Species	Dimensions of Enclosures (in inches unless otherwise indicated)	Maximum Number Animals/Enclosure	Enclosure Composition and Description
Mice	10¾ x 19¼ x 9	5 adult mice per cage (see CMRC Policy for managing overcrowded mouse cages)	Static and ventilated polycarbonate micro-isolator cages with wire bar lids. Conventional polycarbonate cages with wire bar lids.
Rat	Hepa Rack 11.25 x 11.5 x 7.6 Static 10 x 14 x 6.75	3	Static and ventilated polycarbonate micro-isolator cages with wire bar lids. Conventional polycarbonate cages with wire bar lids.
Rabbit/Ferret	24x24x16, 26x24x16, 36x36x32	6, 6, 8	Stainless steel
Newt	24x12x16 (20 Gal)	25-30/tank	Glass
Zebrafish	1.4, 2.8, & 9.0 liter tanks	7, 15, 50-60	Polycarbonate
Pig	67/43	2 / 3	Cinder Block
Dogs	67/43	2 / 3	Cinder Block

3.1.2 Social Environment:

Rodents: Every effort is made to house rodents in compatible groups unless it is in conflict with the scientific goals of the approved IACUC protocol. This allows for mutual grooming and other social interactions among cage mates.

Rabbits: Rabbits are housed in cages which allow them auditory and olfactory contact with other rabbits within the room. They may be placed opposite each other to allow for visual contact.

Dogs: There are no active protocols involving the use of dogs in the RSF at this time.

Pigs: There are no active protocols involving the use of pigs in the RSF at this time. Pigs are group housed if possible. Enrichment devices are provided for them to express their rooting behavior.

Fish: Species that show strong social or group behaviors are housed in groups when possible. Other species may be housed individually or in groups.

Isolated or individually housed animals

If possible, all animals are either group housed or placed in visual contact of adjacent cages. Individually housed rodents are provided with nesting squares and/or shelters for enrichments. Rats may also be provided with a Nylabone. In the event that a dog or pig must be isolated, RSF staff provide additional positive contact.

3.1.3 Animal Safety & Security

Inspection – RSF personnel and/or the AV routinely inspect all cages or enclosures to ensure the security of animal confinement as well as the animal safety.

Security in the RSF and Animal Holding Rooms – Access to the RSF floor is by elevator or stairs via proximity badge access. Animal rooms remain locked at all times. PIs are given badge access for each room in which their animals are housed. The Director, RSF, the AV, RSF staff, Facilities Management personnel and the Vice President and Chief Operating Officer, CMRC have master keys to all animal rooms in the RSF. Emergency contact information, including telephone numbers and/or beeper numbers of the Principal Investigator and other designated project personnel, is located inside each animal room. In the event of an emergency, the PI or the designated protocol emergency contact personnel and the Director, RSF are contacted. See the Research Support Facility Disaster Plan, Appendix A.

3.1.4 Environment of Animals Housed in the RSF

Environmental parameters in the RSF are maintained as follows, unless otherwise allowed

under an IACUC-approved protocol:

Temperature and Humidity

The Edstrom Watchdog System monitors temperature, humidity, air changes, differential air pressure and controls the animal watering system with automatic flushing. The Edstrom system will automatically call the central engineering department, the RSF Director or the CMRC engineers, if an alarm is triggered.

Illumination

Lighting is automatically controlled in all areas from overhead waterproof-vapor sealed, impact-proof fluorescent fixtures. Light levels are about 325 lux (30 ft-candles) about 1.0 m above the floor. All rooms have a light cycle of 12 hours light and 12 hours dark. There are windows in the four barrier rooms (C205 B, C, D, E) and laboratories only. All other rooms do not have windows (excludes office, clean cage wash, Air shower, and entry).

Noise

Walls in the RSF are made of either concrete or drywall. Species are housed according to susceptibility to noise. Breeding colonies are maintained away from the cage washer and areas where dogs could potentially be located. To prevent excessive noise the RSF uses acoustical ceiling tiles and autoclavable rubber wheels on all equipment. If dogs and pigs are used at CMRC they are housed in separate areas from rodents, ferrets and rabbits. Plastic bulk feed and waste containers are used in preference to noise producing metal containers.

Pest Control – See Section 5.1.3 under RSF Maintenance.

Failures in Environmental Control Systems - Personnel shall take reasonable and necessary steps to address any failures in environmental control systems to ensure that the animals are maintained at an acceptable temperature and receive an appropriate lighting schedule. The PI will be promptly notified of any environmental control system failures affecting his/her animals. The course of action should there be a failure in these systems is outlined in Appendix A (CMRC RSF Disaster Plan).

3.2 RECORDS AND IDENTIFICATION

3.2.1 Records

The Director, RSF is responsible for maintaining a record of all animals in the RSF. These records include individual medical/health/surgery records for all USDA covered species (dogs, pigs, rabbits and ferrets). These records are kept near the door of each animal room. RSF staff are instructed to record all procedures performed on the animals. Investigators must record what procedures and drugs they use on the animals and the method of euthanasia. The records are filed and stored in the RSF office area after the animal has been euthanized. The Director, RSF, or designee, is responsible for monitoring these records for compliance.

3.2.2 Identification of Animal Rooms and Animals in the RSF

All doors to individual animal rooms have signs describing any special precautions that must be taken or considered prior to entry, including protective clothing that may be needed and the type, if any, of hazardous materials that may be in use.

Cage Cards –Upon receipt of new animal deliveries, the RSF personnel place pre-printed standard cage cards on each small animal cage. The PI is responsible for maintenance, requesting additional cage cards and notifying RSF personnel if information contained on the cage card changes. The cage cards contain the following information:

- Name of the PI
- IACUC Protocol Number
- Fund Number
- Housing location
- Date animals were received
- Animal species
- Vendor, gender, weight and age of animals upon arrival
- Person responsible for animals and phone number

The RSF maintains the following animal identification system: dogs are identified by neck chain, tattoos in the inner ear and cage cards; pigs are identified by cage cards, ear tags and chalk markings on their backs; rabbits and ferrets are identified by cage card and sometimes ear tags (supplied by vendors); mice, hamsters and rats are identified by cage cards, permanent markers on back or tail and sometimes ear tags.

The PI may identify individual animals within a cage as long as the marking is approved by the IACUC and is consistent with methods approved in *The Guide*. Approved methods of animal identification include ear notches, tags, and tattoos. Toe-clipping is not allowed at CMRC.

3.3 RESEARCH SUPPORT FACILITY PERSONNEL

Copies of the USDA regulations, the PHS Policy, and *The Guide* are available to all RSF personnel and they are expected to be familiar with and have a general understanding of these guidelines.

3.3.1 Research Support Facility Director

The Director, RSF is responsible for the overall administrative operation of the RSF, including, but not limited to, the following:

- Overseeing the day-to-day activities (including holidays and weekends) to ensure that a safe, clean, and efficient environment is provided and maintained for housed animals and users of the RSF.

- Supervising personnel, as appropriate. Personnel are routinely and randomly observed to ensure animals are handled properly, SOPs are followed, and time is spent efficiently. The Director, RSF may appoint a designee to assist in this process.
- Interacting and consulting with the AV and IACUC.
- Ensuring that daily rounds are made seven days a week including holidays. Animal care coverage is prescheduled to ensure that all tasks are being performed properly.
- The Director's observations include bedding changes, evidence of proper feeding and watering, and evidence that personnel, technicians and PIs are using personnel protective equipment as appropriate.
- Delegating the responsibility for care of animals and maintenance of rooms to specific technicians during each weekday, weekends and holidays.
- Ensuring that PIs are notified of any sick, injured or dead animals.
- Coordinating care of any sick animals by informing technicians of the proper procedures and checking to ensure that the prescribed care is carried out.
- Assigning animal housing space in the RSF.
- Providing orientation to new RSF users.
- Reporting any known lapses in animal care to the PI that may compromise the health of the PI's animal(s) or the research. These issues include, but are not limited to, loss of or confusion regarding cage cards, lapses in feeding or watering of animals, and failure of or abnormal environmental controls (for example, temperature fluctuations).
- Ensuring that appropriate animal care procedures are followed, including any special instructions for animal care required by a PI.
- Ensuring that adequate supplies of clean cages, water bottles, food, and bedding are available for the care of the animals.
- Communicating with the PIs to ensure that the needs of the research protocols are being met.
- Coordinating the training of technicians, including the optional administration of the Purina Mills Exams, and providing study materials for AALAS technician certification examinations.

- Working with the PI to resolve any issues of noncompliance.
- Leading the RSF toward higher standards of operation in support of CMRC's animal research goals.

3.3.2 Animal Caretaker Responsibilities

Animal caretakers responsibilities include, but are not limited to, the following:

- Observing all animals daily on weekdays, and as scheduled on weekends/ holidays. Concerns are reported to the Director, RSF who will contact the PI, AV, Facilities Management, and/or the IACUC Chair as warranted.
- Changing and cleaning animal cages, cleaning rooms, and performing other reasonable tasks related to the care of animals as assigned by the Director, RSF and/or PI.
- Reporting sick, injured or dead animals to the Director, RSF, lab technician and PIs.
- Following RSF SOPs for the care of animals and husbandry.
- Emptying food and bedding from dirty cages.
- Autoclaving dirty cages as appropriate.
- Cage washing.
- Reporting possible concerns related to animal treatment or noncompliance to the Director, RSF and/or AV. Personnel may report issues of noncompliance anonymously to the Children's Memorial Medical Center (CMMC) Research Compliance Hotline at 800-273-8452 or the Office of Research Integrity and Compliance (ORIC) at 773-755-6306. Additional information regarding this is available on the CMH Point, and in the ORIC Compliance Program Manual and the Children's Memorial Hospital (CMH) Code of Conduct posted on the ORIC website.

3.4 DAILY ANIMAL CARE PROCEDURES

The following animal care procedures apply to the RSF during regular weekdays. This schedule may vary for holidays and weekends, as noted in section 3.4.5. The PI is responsible for instructing RSF personnel in the proper precautions that must be employed to care for their housed animals and RSF personnel are responsible for ensuring that these instructions are implemented. All animal care procedures are performed by RSF staff, except in those cases where the PI and Director, RSF have agreed upon other arrangements.

3.4.1 Daily Care of Farm Animals

Food and Water – Large animals are fed daily and provided with an appropriate water receptacle.

Socialization – Animals are placed in social groups as appropriate to the species to allow for physical and social contact.

Environmental Enrichment – Specie specific enrichment devices such as bowling balls and Kong[®] toys are provided as a means for animals, such as swine, to practice normal rooting behavior.

Cage Cleaning – Cage floors are sprayed with hot water, washed with disinfectant, and rinsed with clean water daily.

3.4.2 Daily Care of Dogs

In the event that dogs are used at CMRC the following apply:

Food and Water – Water is provided ad lib via manual watering. Fresh food and water are provided during cleaning of the dog cages.

Socialization – AWA requirements for dogs are met by group housing or having twice the required pen size. The caretaker staff positively interacts with them by petting and grooming at least once daily. Dogs are allowed to run in the room corridor during cubicle cleaning. When possible several dogs of the same sex will be released at the same time to facilitate social interaction.

Environment Enrichment and Exercise – Unless otherwise prohibited as outlined in an IACUC-approved protocol, environmental enrichment devices including, but not limited to Nylabones[®], Kong[®] toys, and rawhide chews, are provided to all animals. CMRC, as required by the Department of Agriculture, APHIS, and Animal Welfare Standards maintains a dog exercise program.

Cage Cleaning – Dog pens are cleaned daily. Pen floors are sprayed with hot water, washed with disinfectant, and rinsed with clean water. The exercise area is disinfected monthly from ceiling to floor with a high-pressure tank using hot water and disinfectant.

3.4.3 Daily Care of Rabbits

Rabbits are housed individually (see section 3.1.1).

Food and Water – Fresh water and food are given daily.

Socialization – Rabbits are housed in cage banks which allow them auditory and olfactory

contact with other rabbits. When more than one bank of cages are in a room and or cubicle they are placed, if possible, opposite each other in order to also provide visual contact with other rabbits.

Environmental Enrichment – Rabbits are provided with alfalfa blocks for gnawing and species appropriate enrichment devices such as bells and balls.

Cage Cleaning – Non-contact bedding excreta pans and pan liners are changed three times each week.

3.4.4 Daily Care of Rats and Mice (Including Nude Mice)

All RSF personnel are trained to recognize overcrowded cages of small animals. The RSF staff uses the CMRC SOP & Policy for Managing Overcrowded Rodent Cages and *The Guide* as a resource. The maximum number of animals per cage is determined by species (see section 3.1.1).

Animal Room Sequence – To protect the health and well-being of rats and mice, RSF personnel enter rooms in the following order: 1. barrier rooms, 2. conventional rooms, and 3. quarantined rat/mice rooms. All procedures and experimental manipulations on mice within the RSF housing areas, including cage changes, are performed under HEPA filtered laminar flow hoods or biosafety cabinets. It is highly recommended that the biosafety cabinet be disinfected both prior to and after use to decrease the likelihood of cross-contamination between cages.

Food and Water – Food and water are provided *ad lib* to all rodents unless the IACUC approved protocol states otherwise. Fresh food and water are provided twice weekly for rats, and once weekly for mice, and/or as otherwise needed. Food and water levels are observed daily and replenished as needed. Food is replenished and clean water bottles are provided as needed. Nude mice are given irradiated feed and water.

Socialization – Mice and rats are normally housed in solid bottom caging on contact bedding unless in conflict with the scientific goals of an IACUC-approved study. Every effort is made to house rats and mice in compatible groups unless it is in conflict with the scientific goals of the approved IACUC protocol. This allows for mutual grooming and other social interactions among cage mates.

Environmental Enrichment for Mice – The use of contact bedding in mouse caging allows them to express normal behavior such as digging and burrowing. Mice are also provided with nesting pads to use in constructing nests.

Environmental Enrichment for Rats – The use of contact bedding in rat caging allows them to express normal behavior such as digging and burrowing. Enrichment items are provided to individually housed rats, if not in conflict with the IACUC approved protocol.

Cage Cleaning – Bedding and caging are changed 1-2 times weekly for both rats and mice depending on the type of cage. Autoclaved caging/bedding is used in non-conventional rooms and may be requested by the PI. See Section 5.1.1

Handling – Gloved hands or forceps are used to handle rodents. Gloved hands are sprayed with SporKlenz between handling different rodent cages. Forceps, are sprayed with isopropyl alcohol. There are forceps in each room where rodents are housed. The alcohol is replaced by the RSF personnel as needed.

Rodents in Behavioral Studies – Because of the rigid handling protocols required by behavioral studies, the PI /research personnel may be responsible for daily care of animals involved in these studies, including changing cages and cleaning the animal room. Appropriate noise reduction measures may also be needed, as per the protocol.

3.4.5 Weekend and Holiday Care

Designated RSF staff members report each Saturday, Sunday and weekday holiday, as prescheduled so that all animals are observed to ensure they are healthy and clean.

Large Animals (rabbits, pigs, ferrets and dogs) – Large-animal rooms are cleaned and animals are fed and watered.

Small Animals – Animals are given adequate water and food. Bedding is checked, and cages are replaced if bedding has been excessively wet.

Notification of Health Issues - The Director, RSF and the PI are notified of any health issues noted on weekend and holiday, including but not limited to pups born and deaths.

4.0 Veterinary Medical Care

Veterinary medical care is an essential part of an animal care and use program and consists of effective programs for:

- Preventive medicine
- Surveillance, diagnosis, treatment, and control of disease, including zoonoses control
- Management of protocol-associated disease, disability, or other sequelae
- Anesthesia and analgesia
- Surgery and post-surgical care
- Assessment of animal well-being
- Euthanasia

The AV is primarily responsible for CMRC's veterinary care program. Most aspects of the program may be conducted by RSF personnel under the RSF, Director's supervision and the

AV's approval. To ensure appropriate handling, immobilization, sedation, analgesia, anesthesia, and euthanasia the AV provides guidance to the RSF Director, PIs and all other personnel involved in the care and use of animals at CMRC. Any problems identified in the veterinary care program shall be directed to the AV.

4.1 ANIMAL PROCUREMENT AND TRANSPORTATION

All animal use must be approved by the IACUC prior to ordering, and all animal orders are processed through the RSF office, unless otherwise allowed under the IACUC approved protocol. PIs are responsible for submitting animal orders from either USDA-licensed commercial or noncommercial vendors, using the procedures set forth below. Only animals ordered and purchased through the RSF may be used in the RSF. All animals must be used in the protocol for which their use was approved unless they are transferred to another approved protocol or investigator. All animal transfers must be coordinated through the Director, RSF and reviewed and approved by the IACUC prior to transfer.

4.1.1 Ordering Animals from Commercial Vendors

After the order request has been placed, the Director, RSF will enter the appropriate information into the RSF database. The request will be verified against the RSF database by checking the assigned protocol number, species, and the animal numbers available. Once the order is approved, the Director, RSF or other appointed personnel in the RSF will submit the order to the vendor. If the number of animals requested is not available under the protocol or if the requested delivery date is not available, the Director, RSF will promptly notify the PI so that other arrangements can be made.

Upon arrival, animals are placed in the appropriate specie specific room. Unless the PI requests specific caging prior to arrival of the animals, the RSF staff rely upon *The Guide* and house the animals according to direction from the RSF, Director or the AV.

Rodents – Only vendors or institutions that can provide records of an ongoing health surveillance program are utilized. Commercial animal vendors normally used by CMRC are Harlan, Taconic, Jackson Labs, and Charles River Laboratories. The AV or RSF Director monitor all health surveillance reports from the commercial vendors listed above.

Dogs – Should dogs be used at CMRC, they will be obtained from USDA-licensed Class A dealers only.

Rabbits – Only specific pathogen free (SPF) rabbits are procured for use in CMRC.

Livestock/farm animals – When livestock/farm animals are used at CMRC, they will be obtained from USDA-licensed facilities.

Fish – Only specific pathogen free (SPF) fish are procured for use in CMRC.

4.1.2 Ordering Animals from Noncommercial Vendors

The RSF generally discourages ordering or housing any animals from noncommercial vendors because of the risks involved (for example, possible spread of disease or parasites, potential adverse effects on research protocols). When animals are ordered from noncommercial sources, the AV or the Director of RSF contacts the vendor prior to shipment to establish the disease status. If the information is not available, testing is undertaken. Only specific-pathogen free rodents (serologically negative), helicobacters negative (*H. hepaticus* and *H. bilis*) and endo- and ectoparasite negative are accepted.

If the use of non-commercial animals was not originally approved in the IACUC protocol the PI must submit an addendum (Form 200) for IACUC review and approval (in writing) prior to obtaining animals from non-commercial vendors.

Responsibilities of AV and Director, RSF – The AV and Director, RSF are responsible for reviewing all required health reports and making the decision to allow the shipment of animals from commercial and non-commercial sources.

4.1.3 Transportation of Animals

The RSF is dedicated to providing a specific pathogen free (SPF) facility for the health of the animals and to support the integrity of research projects involving animals housed at the RSF. Controlling the movement of animals to and from the RSF provides critical support in attaining this goal. In general, animals removed from the facility are not allowed to re-enter. One exception is the internal transport of animals to procedure rooms, however IACUC approval and consultation with the Director RSF is required. (See section on Internal Transportation.)

After animals have been received and housed in the RSF, PIs may request approval by the RSF Director or designee to transport their animals to another location, either internally or externally to the RSF. (See the IACUC Policies and Procedures Manual and the Policy on Animal Transfers). Internal transportation involves moving animals within the building in which they are housed (for example, transporting animals from the RSF to a laboratory within CMRC. External transportation involves moving animals to a location outside the building in which they are housed (for example, transporting animals from the RSF to another facility or institution).

Internal Transportation of Animals – To control exposure to potential pathogens, the Director, RSF and AV have developed procedures regarding internal transportation of animals. PIs transporting animals from the RSF to another internal location for euthanasia may do so using appropriate transportation boxes or cages. PIs transporting animals from the RSF to another internal location and planning to return the animals to the RSF should discuss appropriate return procedures with the Director, RSF and/or the AV and obtain IACUC approval. In some cases, the AV may require that animals returning to the RSF undergo a quarantine period. Due to occupational health and safety considerations, PIs/research staff

who move animals out of the facility are required to use the freight elevator in order to reduce allergen exposure to the general population and address security concerns.

External Transportation of Animals and Use of the CCM NU Van – Unless otherwise allowed under an IACUC-approved protocol or by the Director, RSF and/or AV, the Center for Comparative Medicine Northwestern University van or commercial shipping company must be used to transport animals externally. The transport of all animals must be arranged through the RSF Director

4.2 PREVENTIVE MEASURES TO PROTECT ANIMALS

4.2.1 Quarantine Areas

The RSF has established quarantine procedures to protect the health of incoming animals and animals housed at the RSF; failure to follow these procedures can facilitate the spread of pathogens that may have potential adverse effects on the animals and the research protocols.

Commercial source animals are not normally quarantined upon arrival. These animals are included in the monthly sentinel testing program. If a question or problem arises regarding the health of a particular shipment, an ordering block is initiated until the issue is resolved. All noncommercial mice are isolated, quarantined and placed in the sentinel testing program for a minimum of six to eight weeks.

Animals Received from Noncommercial Vendors - Rodents entering the RSF which are obtained from any source other than an approved commercial vendor are quarantined for a minimum of six to eight weeks. Sentinel mice are utilized and testing is performed during this period. Prior to the end of the quarantine period, a sentinel pathogen test is performed on quarantined animals prior to transfer to an animal housing room.

Dogs and Cats – In the event that dogs and cats are used at CMRC they will be procured from Class A commercial vendors.

All New Arrivals – RSF personnel evaluate the health and, if appropriate, the pathogen status of newly received animals and consult with the Director, RSF and AV on whether or not to quarantine any animals that exhibit unusual behavior or show signs of pathogens. The Director, RSF will notify the PI of any unusual behavior or signs of pathogens and of the possible need for quarantine.

4.2.2 Stabilization and Separation

RSF personnel shall provide an appropriate period for physiological, psychological, and nutritional stabilization of animals entering the RSF before they are used in a protocol. Animals are separated by species. All animal orders are inspected for abnormalities and may be returned to the vendor or humanely sacrificed at the discretion of the Director, RSF and/or AV.

Dogs – In the event that dogs will be used at CMRC, only Class A dogs are permitted in the RSF. Upon arrival, RSF personnel assess the general health of all dogs. Dogs are weighed and any health deficiencies are noted in the animal's medical record. Dogs are weighed and any health deficiencies are noted in the animal's medical record and reported to the Director, RSF and/or the AV. Dogs require a seven-day acclimation period following receipt into the facility before any USDA Category D or E procedures can be performed on the animal.

Rodents – Upon arrival, RSF personnel examine the rodents' health status and place them into cages. Any abnormalities are reported to the Director, RSF or designee. Mice from noncommercial vendors are placed in quarantine for a minimum of six to eight weeks with sentinel mice.

Rabbits/Ferrets – Upon arrival RSF personnel examine rabbits and ferrets and place them into cages. Any health abnormalities are reported to the Director, RSF and/or the AV.

Swine – When swine are used at CMRC, upon arrival, RSF personnel assess the general health of the animals, and report any problems to the Director, RSF and/or the AV. All vaccines are to be documented on the medical records. Swine require an acclimation period following receipt into the facility before any USDA Category D or E procedures can be performed on the animal.

Zebrafish – Upon arrival, RSF personnel assess the general health of all fish. Any health abnormalities are reported to the Director, RSF and/or the AV and then the PI is notified.

4.2.3 Availability of Attending Veterinarian

The AV is a consultant for CMRC and is available to research personnel and RSF personnel to address animal care and/or use issues. The AV visits the RSF at least twice each month (except during holidays/vacation) or more often as necessary for appropriate animal care. Animal caretakers and research personnel may contact the Director, RSF or the AV directly if an animal is in need of veterinary attention. The PI is notified of any veterinary care that is required. Veterinary care is performed by the Director, RSF and/or the AV or under the direction of the Director, RSF and/or AV and the treatment plan is recorded in the animal's medical record.

4.2.4 Use of Cell Lines *In Vivo*

Prior to injecting animals with cultured cells, the RSF requires that the cell lines be tested for animal (for animal cell lines) or human (for human cell lines) pathogens (see the IACUC Policy for the Use of Rodent Biologicals In Rodents and the Policy for Pathogen testing of Human materials). Information regarding commercially available human cell lines can be obtained from the vendor (see the CMRC/ORIC Policy on Research Involving Human Cell Lines). Animal cell lines can be submitted for testing to commercial diagnostic laboratories by the RSF staff. PIs are encouraged to consult the RSF to determine the requirements for

their specific circumstance.

4.3 SURVEILLANCE, DIAGNOSIS, TREATMENT AND CONTROL OF DISEASES

4.3.1 Surveillance

Each animal is observed at least once per day (including weekends and holidays) by RSF personnel who are trained to recognize signs of illness, injury, or abnormal behavior in animals. If an animal is found in an unhealthy condition, RSF personnel completes an RSF Animal Health Report, CMRC RSF Problem Notification Card (red card) and will contact the Director, RSF and/or the AV. RSF staff also contact the PI/research personnel on the project involving the affected animal(s). If the PI or other personnel assigned to the protocol involving the affected animal cannot be reached or fail to respond, and the animal is in distress beyond the criteria stated in the IACUC-approved protocol, the Director, RSF and/or the AV will make an immediate decision as to the treatment of the animal and once the welfare of the animal has been appropriately addressed, the Director, RSF and/or AV will notify the PI of the actions taken.

4.3.2 Vaccine and Disease/Parasite-Control Program - All Animals

Swine – All swine are rigorously pre-screened for possible zoonotic diseases prior to arrival in the RSF. All farm swine are purchased from USDA-licensed herds with a tuberculosis, brucellosis, hog cholera, and pseudorabies-free area status. The herd must be USDA Validated Brucellosis-free and Qualified Pseudorabies negative. Swine are vaccinated for leptospirosis and erysipelas, and tested for tuberculosis, brucellosis, pseudorabies and toxoplasmosis; they are also examined for endo-parasites prior to shipment. No swine are used at CMRC at this time.

Dogs – Dogs are purchased from commercial, Class A USDA-licensed vendors. CMRC requires the dogs to be tested for heartworm. Dogs must be vaccinated for rabies, distemper, parvovirus, hepatitis, leptospirosis and parainfluenza prior to shipment. The animals are isolated in their housing room for several days to ensure they have acclimated to their new surroundings before moving to another holding room if necessary. No dogs are used at CMRC at this time.

Rabbits – Rabbits are purchased from SPF production colonies and are isolated to acclimate to their surroundings and to ensure they are eating and drinking. The animals are assessed for overall good health upon receipt.

Rodents – Rodents are assessed for overall health at the time of arrival. Standard profiles for serology, pathology, and parasitology are required from vendors. Rodent shipments from non-commercial vendors must be processed by and approved by the AV. Before approval for shipment is given, these animals must be shown to be free of pathogenic agents by

standard surveillance serology profiles, pathology and parasitology exams. Upon arrival, rodents from noncommercial vendors are placed in quarantine areas until additional testing is completed.

Sentinel animals are used to monitor the health status of rodents used in research projects. This program is essential in assuring that experimental rodent colonies, and the results generated by PIs, are not adversely affected by pathogens. This allows the Director, RSF and/or AV to identify rodent pathogens and provide appropriate treatment as needed.

4.4 OTHER AREAS OF VETERINARY CARE

4.4.1 Management of Protocol-Associated Disease, Disability or Other Sequelae

The PI is responsible for the management of protocol-associated diseases, disability, or other sequelae. The AV is available as a resource to the PI /research personnel for any questions related to protocol-associated diseases, disability or other sequelae.

4.4.2 Anesthesia and Analgesia, Surgery and Postsurgical Care

Anesthesia and analgesia, surgery, and post-surgical care are conducted in accordance with the IACUC approved protocol, and by individuals qualified, experienced, and approved by the IACUC to perform such procedures. The Director, RSF and/or AV oversee the surgical programs and post surgical care. The PI/research personnel are responsible for post surgical care in accordance with their protocol. The Director, RSF will contact the AV if problems arise.

Due to the wide variety of protocols and species used in the RSF, anesthetics and pain management is quite variable. CMRC's IACUC requires anesthetic options, pain management options, dosages, and frequency clearly documented in the protocol. The

Director, RSF and AV are available for consultation. Below are listed the standard agents used by species. Contact the Director, RSF and AV for more information if required.

Anesthetics:

- **Swine** – Injectable: Ketamine, Pentobarbital – Inhalation: Isoflurane
- **Dogs** – Injectable: Pentobarbital (induction) – Inhalation: Isoflurane
- **Rabbits** – Injectable: Ketamine, Pentobarbital, Acepromazine (induction)
– Inhalation: Isoflurane
- **Ferrets** – Injectable: Ketamine, Xylazine, Acepromazine (induction)
- Inhalation: Isoflurane
- **Rodents** – Injectable: Ketamine, Pentobarbital, Tribromoethanol – Inhalation: Isoflurane

Analgesia:

- **Swine** – Buprenorphine
- **Dog** – Buprenorphine, Butorphanol
- **Rabbit** – Buprenorphine, Butorphanol, Meloxicam
- **Ferrets** - Buprenorphine, Butorphanol, Meloxicam
- **Rodents** – Buprenorphine, Butorphanol, Ketoprofen, Meloxicam

Non-pharmacologic means to manage pain or distress may include decreasing the numbers of animals in each cage, providing additional bedding materials, enrichment items and providing the animal with food and/or water sources on the cage floor so that it is easily accessed.

Non-rodent Category D and E Procedures (Includes survival and non-survival surgery)

– The PI and research personnel associated with non-rodent mammal category D and E procedures are responsible for animal protection and monitoring during and after procedures.

Pre-Surgery – Upon arrival of a non-rodent mammal, it is the PI's responsibility to ensure that the animal is observed by an individual listed on the protocol within 48 hours of arrival. During this time period, the PI (or their designee) performs a complete physical examination of the animal. These observations are recorded in the medical records. The PI or Director RSF and or AV must perform a physical exam on the animal within two hours prior to the start of the procedure that includes, as at minimum, the assessment of temperature, pulse and respiratory rate of the non-rodent mammal. The results of the physical exam must be documented in the medical record.

Surgery – Individuals performing survival procedures must be knowledgeable about aseptic surgical techniques and have adequate training and skill to conduct the procedure without causing undue intra- and post-operative distress to the animal. All survival procedures on large animals must be conducted in IACUC-approved surgical facilities. All individuals involved in the procedure (including the monitoring of vital signs) must be trained, competent, and be approved to perform their tasks by the IACUC, the Director, RSF and/or AV. Anesthesia, surgery, and anesthesia recovery must be documented on the medical records. Any unexpected adverse effects are to be documented in the medical record and reported to the Director, RSF and the AV, and the IACUC as appropriate.

Post-Surgery – Following survival procedures, all non-rodent mammals must be closely observed for a minimum of 24 to 48 hours. Depending on the nature of the procedure performed, this window of time may be extended to ensure the well-being of the animal. Animals which do not exhibit normal behavior (for example, eating, drinking, activity) within 48 hours may be experiencing procedure-related infections/complications and require further evaluation. The PI is responsible for notifying the Director, RSF and/or AV of these potential complications. All incision sites must be observed daily for 10 days following surgery or until healed, whichever comes first. Adequate levels of antibiotics should be present at the time of invasive procedures to help prevent infections. The choice of post-procedure antibiotics must be listed in the IACUC-approved protocol. Animal health,

complications, and treatment must be documented for the 10 days following invasive procedures. All observations must be documented in accordance with federal regulatory agencies and the relevant IACUC-approved protocol.

All animals undergoing survival surgery or any major invasive procedures must be given analgesic agents for at least the initial 48 hours post-procedure. Continuance or withdrawal of analgesics after this time should be based on pain assessment of the animal and/or consultation with the veterinarian. The choice of analgesic depends on the species and severity of the manipulation. The dose, route of administration, and the frequency of administration of the analgesic must be listed in the IACUC-approved protocol. If analgesics are withheld because they would interfere with the experimental design, this must be justified in the protocol application and approved by the IACUC.

It is the PI's responsibility to make sure that all animal care personnel are aware of the health condition of all Category D and E animals under their care and whom they are to notify in case of an emergency.

Notification and Recordkeeping – Should an animal develop an unexpected or atypical complication (including but not limited to death under anesthesia) that was not anticipated or identified in the approved protocol, the RSF Director and the AV must be notified immediately. Postmortem examinations are performed at the discretion of the Director, RSF and the AV. The IACUC will be informed of any unusual cases or if increased morbidities and mortalities are occurring.

The PI is responsible for maintaining accurate records on all procedures and peri-operative care. All records must be kept in the animal's housing area so that they are readily available to the personnel involved in post-surgical monitoring, the RSF personnel, AV, the IACUC and federal regulatory officials.

RSF Monitoring and Oversight

Pre-surgery – Upon arrival in the facility, RSF staff is responsible for noting the general condition of the animal and notifying the PI and the Director, RSF immediately of any potential problems. This does not substitute for the complete physical examination that the PI is required to perform within 48 hours of receipt. RSF staff may be responsible for preparing the animal for the procedure per the IACUC-approved protocol and the PI is responsible for providing relevant information to the Director, RSF regarding pre-op care of the animal such as the time to remove food and water from the animal.

Post-Surgery – Once an animal has been returned to the animal housing room, RSF personnel perform daily rounds on the animals. RSF staff is responsible for notifying the PI and/or AV of any health concerns. In the event of an emergency, RSF staff will contact the PI or research staff and AV. The PI remains ultimately responsible for the care of the animal.

Attending Veterinarian Monitoring and Oversight

In reviewing the CMRC ASP Form 100, the AV is initially responsible for reviewing the technical aspects of the submitted protocol. In addition, the AV will also review any changes or deviations for the identified species that are Category D or E. These changes or deviations must be clearly identified and defined within the IACUC protocol. The Director RSF and/or AV is responsible for determining whether particular personnel listed on the protocol are qualified for the responsibilities they are assigned.

The degree of involvement of the Director RSF and/or AV in the pre- and post-surgical period is determined by the individual project. The Director RSF and/or AV will consider a variety of factors including the experience of the surgeon, the proposed procedure, the species involved, and the potential post-operative care required by the animal. At a minimum, on-going veterinary monitoring will consist of regular review of pre- intra- and post-surgical documentation. Animals will be observed to ensure that they are receiving adequate post-surgical care. The Director RSF and/or AV is available for consultation when planning for post-operative care of animals, as well as for post-surgical emergencies.

IACUC Monitoring and Oversight

The IACUC evaluates proposed procedures and pre- and post-operative care during the review of the submitted protocol. On-going monitoring and oversight occurs during the semi-annual inspection process, when animal facilities (including surgical and recovery areas) are inspected. Additional monitoring may occur as deemed appropriate by the IACUC.

Research personnel are encouraged to consult with the Director RSF and/or AV or other experts regarding the proposed surgical procedures prior to submission of a CMRC ASP Form 100. The CMRC ASP Form 100 requires information on various aspects of the surgical procedure and allows reviewers (including the AV) to address any outstanding questions regarding training, equipment, supplies, and care of animals. Surgeries are performed in procedure rooms/labs (rodents) or in the surgical suite (large animals). The CMRC ASP Form 100 must specify who is performing the surgeries, what their training or experience is with regard to the surgery, and details on pre-, intra-, and post-operative monitoring and management of animals. It is the standard of animal care to administer analgesics following any surgical procedure, unless otherwise approved by IACUC.

4.4.3 Assessment of Animal Well-Being

The Director, RSF and/or AV establish appropriate mechanisms to ensure adequate assessment and monitoring of animal well-being. The Director RSF and/or AV routinely monitor animals housed in the RSF. The Director RSF and/or AV may delegate that responsibility to qualified individuals for animals housed outside the RSF.

4.4.4 Euthanasia

Animals must be properly euthanized using the techniques for the species as established by the American Veterinary Medical Association (AVMA), unless otherwise approved under the protocol. The PI is responsible for conducting or arranging for the euthanasia of animals under the protocol. If the Director, RSF and/or AV determine that an animal must be euthanized, outside of the protocol, to humanely relieve the animal of undue pain and suffering, the Director, RSF will immediately notify the PI. It is the responsibility of the PI to arrange for euthanasia of the animal(s) within the time frame required by the Director, RSF and/or AV. If the PI fails to euthanize the animal(s) in a timely manner, the Director, RSF will make the arrangements to euthanize the animal(s) and the PI will be charged for any costs associated with euthanizing the animal(s). Acceptable methods of euthanasia by the AVMA Euthanasia Guidelines, June 2007 are listed on the CMRC IACUC website: <http://www.childrensmrc.org/researchadministration/ORIC/IACUC2/>.

5.0 RSF Maintenance

5.1 CLEANING AND SANITATION

RSF personnel are responsible for all routine maintenance of the RSF, which includes cleaning and polishing floors, managing the storage areas, laundering uniforms, and any other tasks that do not require intervention by CMRC Facilities Management. Animal Husbandry Duty Sheets are located in each room, on a clipboard, are completed and signed off daily by the RSF personnel.

5.1.1 Sanitation

Frequency of Contact and Non-Contact Bedding Changes:

Cage Type	Species	Frequency of bedding changes
Ventilated cages	Mouse/Rat	1 X/wk
Static cage	Mouse/Rat	2 X/wk
Rabbit/Ferret stainless steel cage pans	Rabbit; Ferret	3 X/wk (non-contact)
Cubicle stall	Dog; pig	1X/wk complete cleaning; 7X/ week spot cleaning

Dirty Cage/Soiled Bedding Locations – After soiled cages are replaced and excreta pans are removed from the animal cages, the cages/pans are transported to the dirty cage wash processing area adjacent to the cage washer. The soiled bedding is emptied into a HEPA

filtered bedding dump station.

Cleaning and Disinfection of Primary Enclosures – Washing/Sanitizing Frequency:

	Washing/Sanitizing Method (mechanical washer, hand washing, high-pressure sprayers, etc)	Washing/Sanitizing Frequency
Static Solid bottom cages	Mechanical washer	2X week
Ventilated Solid bottom cages	Mechanical washer	1X week
Solid bottom cages	Mechanical washer	1X week
Rabbit/Ferret Cages	Mechanical washer	1X week
Cage lids	Mechanical washer	2X month
Filter tops	Mechanical washer	2X month
Ventilated Cage racks	Mechanical washer	Every 6months
Shelf racks	Mechanical washer	1X month or as needed
Suspended Cage Pans	Mechanical washer	3X week
Play pens, floor pens, stalls, etc.	High pressure & hand washing	1XWeek

Cleaning and Disinfection of Secondary Enclosures:

- **Animal Room Cleaning Frequency, Procedures, Methods and Agents** –Animal room floors are swept and mopped every weekday, or more often if necessary. All small animal rooms are cleaned and sanitized at least every three months or as the rooms become empty. The rooms are washed using a sponge mop on the walls, ceilings, and floors. Rooms containing large animals housed in pens are disinfected daily. If necessary a high pressure sprayer is used on the floors, walls and ceilings.
- **Corridor and Support Area Cleaning** – The corridors and dirty cage processing areas are swept and mopped daily. Procedure rooms are swept and mopped after each use, or at a minimum, weekly. The feed and bedding storage room is mopped weekly. Other support areas are cleaned monthly or more often if needed. Corridors are stripped, mechanically scrubbed and sealed at least twice a year. Animal rooms are stripped, scrubbed and sealed as they become available. The cage wash area is hosed daily and cleaned with a mechanical scrubber at least monthly.

- **Implements** – Mop heads and buckets are rinsed after each use and placed in the cage washer. Barrier mop heads and buckets are washed every two weeks or more often as needed.
- **Separation of Cleaning Implements by Room** – Cleaning implements are not shared between animal rooms. Each animal room has dedicated cleaning equipment including a broom, dust pan, mop and mop bucket.

Sanitation of Cage Equipment:

- **Procedures and Frequency for Feeders** – Wire bar lids, which serve as feeders in shoebox caging, and hanging cage feeders from suspended rat caging are changed and sanitized in the cage washer every two weeks. Other types of feeders such as bowls and feed pans are washed daily and sanitized weekly.
- **Procedures and Frequency for Watering Devices** – Water bottles and sipper tubes are changed weekly or more often if necessary. Bottles and sipper tubes are sanitized in the cage washer. Water bowls and troughs sanitized daily.
- **Procedures and Frequency for Enrichment Devices** – Enrichment items including Nylabones, balls, lids, and toys are changed and sanitized weekly or more often if the need arises.

Sanitation of Transport Cages and Equipment– Cages and portable kennels used for transporting large animals to the surgical suite are sanitized in the cage washer after each use. RSF carts designated for transporting caging, feed and bedding between animal rooms and both clean and dirty cage processing areas are sanitized after each use.

- **Cage Sanitation Monitoring** – Effective functioning of the cage washer is determined by monitoring the water temperature of the final rinse cycle. The cage washer is programmed for a three-minute 180°F final rinse cycle. Wahl Template® indicators allow for immediate visual verification of the critical final temperature.

5.1.2 Waste Disposal Methods

Soiled Bedding and Refuse – All excreta is transported immediately to the dirty cage processing area where it is either emptied into a HEPA filtered bedding dump station or, for certain biohazards, autoclaved prior to emptying and prior to disposal. All bedding is autoclaved prior to disposal. The dump station's receptacle consists of a HEPA filter dump station. As the disposal container is filled (minimum of once per day) it is taken to the dock area for disposal.

Animal Carcasses – All animal carcasses are placed in a glove or biohazard bag and placed inside a lined biohazard container which is stored in dedicated necropsy refrigerator in the RSF. All containers must be labeled with the PI's name, room number where animals

originated, number of animals placed in container, and date of euthanasia. The contracted biohazard waste disposal firm picks up the containers three times a week for incineration, or more often if needed.

Hazardous Wastes – All potentially infectious waste is placed into a biohazard container lined with a red biohazard bag. When the container is filled it is transported to a dedicated storage area within the RSF prior to removal by a contracted biohazard waste disposal firm. All potentially biohazardous waste (for example, waste containing carcinogens, etc.) is handled on a case-by-case basis.

5.1.3 Pest Control

Program – CMRC has a pest and vermin control program maintained by Andre Pest Control, a commercial pest control company. Glue traps are used to monitor for insects. RSF personnel report any sightings of pests to the Director, RSF and Facilities Management who, in turn, contact Andre Pest Control. Live mouse traps located throughout the facility are used to monitor for rodent pests. These traps are checked daily by RSF personnel and documented on the Animal Husbandry Duty Sheet for each room.

6.0 Animal Occupational Health and Safety – Research Support Facility Personnel

The PHS Policy on Humane Care and Use of Laboratory Animals and *The Guide* identify the need for an occupational health and safety program for all personnel who work in laboratory animal facilities or have regular animal contact at work. This program is administered in collaboration with the Children’s Memorial Hospital (CMH) Occupational Health Services (OHS). The emphasis of the RSF training program is preventing workplace illness and injury, including providing for early diagnosis and treatment when an injury or illness occurs in RSF personnel, which supplements CMRC’s OHSP for all individuals working with or around animals. (See Appendix C, Occupational Health & Safety Program and Appendix B, IACUC Policies and Procedures Manual)

6.1 PROTECTIVE CLOTHING

Animal Rooms and Animal Handling – To maintain the best quality environment for animals and individuals working with animals, the RSF requires that personnel wear protective clothing at all times when in an animal room or when handling animals in the RSF. This applies to all animals, both in and out of quarantine areas.

Personal Protective Equipment/Work Clothing Provided – Protective clothing including gloves, gowns, shoe covers, masks and head covers are provided to all personnel (research and animal care staff) who enter animal rooms within the RSF. All animal care personnel are

also issued uniforms or scrubs and protective eyewear for use while working within the RSF. This clothing is washed within the RSF and does not leave the premises. Scrubs are not to be worn outside of CMRC and personnel are not permitted to wear street clothes while working in the RSF.

Small-Animal Rooms – At a minimum, protective clothing must include latex or vinyl gloves and a lab coat. Additional protective clothing may be required as determined by the Director, RSF and/or AV or per the protocol. If so, this information will be posted on the animal-room door.

Large-Animal Rooms – At a minimum, protective clothing must include a laboratory coat and latex or vinyl gloves. Additional protective clothing may be required as determined by the Director, RSF and/or AV or per the protocol. If so, this information will be posted on the animal-room door.

Zebrafish/Newt Rooms – At a minimum, protective clothing must include latex or vinyl gloves and a lab coat. Additional protective clothing may be required as determined by the Director, RSF and/or AV or per the protocol. If so, this information will be posted on the animal-room door.

De-gowning: Clean Rooms – All gowning materials must be removed when you exit an animal room. Shoe covers must be removed *immediately after* stepping out of the room and *before* walking down the hallway. All other gowning materials must be removed at the nearest hallway trash receptacle. DO NOT enter any other room, including the clean cage storage room, wearing dirty gowning materials. DO NOT re-enter any animal room, for any reason, without first donning fresh gowning materials.

De-gowning: Quarantine or Housing Areas with Biohazards – Under special housing conditions, including quarantine areas and rooms where hazardous materials and/or pathogens are being administered, slightly different de-gowning procedures are required in order to assure potential pathogens are not spread throughout the facility.

6.2 PHYSICALS AND IMMUNIZATIONS

6.2.1 Physicals

All RSF personnel must have a complete physical examination at CMH OHS prior to working with animals. This is arranged by Human Resources during the hiring process.

6.2.2 Tetanus Shot

All RSF personnel working with animals must have a current tetanus shot. The date of immunization must be confirmed by CMH OHS. Tetanus immunizations must be updated every 10 years, following a known injury or upon advice of a physician.

6.2.3 Immunizations for Zoonoses

Zoonoses are animal diseases that can be transmitted to humans through routine contact, animal bites, or scratches. CMH OHS is responsible for ensuring that personnel have received the appropriate based on the individual's expected interaction and contact with certain animals housed in the RSF.

6.2.4 Other Requirements

RSF personnel shall also meet any additional physical examination or immunization requirements set forth by CMH OHS or under the CMRC OHSP program for individuals working with animals.

6.3 MEDICAL CONDITIONS

6.3.1 Allergies

RSF personnel may develop allergies to some animals while working in the RSF. Depending on the severity of the allergy, RSF personnel are provided appropriate protective clothing or reassigned to work with other species or otherwise accommodated. Non-latex gloves are provided should a worker be sensitive to latex. Personnel may be referred to CMH OHS for evaluation of allergies related to their job responsibilities.

6.3.2 Pregnancy

Although cats are not used at CMRC, should this be the case in the future, it is important to note that they can transmit toxoplasmosis to humans. Toxoplasmosis is a disease that may cause complications during pregnancy. Any technician or personnel with direct contact with cats who becomes pregnant is encouraged to notify the Director, RSF and/or AV in a timely manner to minimize exposure to cats during the pregnancy. Staff is encouraged to contact OHS.

The Director, RSF and AV will treat all medical information as confidential and institute appropriate safety precautions as appropriate.

6.4 PROTECTION

6.4.1 Uniforms

For health and safety reasons, scrubs are provided to RSF personnel for wear during working hours. These scrubs are kept and laundered in the RSF. RSF personnel share the responsibility of laundering scrubs.

6.4.2 Safety Equipment

Protective Clothing – The RSF provides protective disposable garments for individuals entering all animal housing areas. These include head cover, gloves (latex or vinyl), gown, mask and shoe covers (see section 5.1 and Appendix C).

Other Safety Items – There are some tasks that require additional personal protective equipment such as goggles, rain suits, aprons, and rubber boots. These and other required items are provided as needed to staff at no cost by the RSF.

6.5 PERSONAL HYGIENE

6.5.1 Hygiene Materials

The RSF provides soap, shampoo, and towels for required showering.

6.5.2 Routine Showers

The RSF recommends that all RSF personnel shower at the end of the day, before changing into personal clothing. Other intermittent showers may be taken, as the workload requires.

6.5.3 Quarantine Areas

RSF personnel must shower immediately after cleaning or working in any quarantine areas and change into a new uniform before working in other areas of the RSF.

6.6 SAFETY

6.6.1 Accidents and Injuries

All accidents and/or injuries must be reported to the Director, RSF or designee immediately. If this is not possible, the technician should contact the OHS and the CMRC Safety Office (Ext: 56549). The CMRC's Safety Office must be contacted as soon as possible after the incident to file a CMRC Incident Report Form. Incident reports can be found on The Point Children's Memorial Hospital website (<http://thepoint.childrensmemorial.org/>) under Safety Event Reporting System. Non-emergency treatment will be provided by CMH OHS as needed. If an injury is life-threatening, personnel are to contact CMRC Security (Ext: 56312) and/or 911. Treatment should be sought at the nearest emergency room. If an injury is not life-threatening employees should report to the CMH OHS, Monday through Friday, 7:00 a.m. – 3:00 p.m., excluding holidays. See the OHSP, Appendix C.

Animal Bites and Scratches – Animal bites and scratches should be reported immediately to the Director, RSF and a CMRC Incident Report Form should be filed with the CMRC Safety

Office. The affected employee shall be referred to a physician for treatment, with consideration of possible tetanus prophylaxis and antibiotic treatment.

Recordkeeping – The CMRC Safety Office maintains a record of all incident reports.

6.6.2 Emergencies

For other emergencies not addressed above, personnel are to contact CMRC Security, CMH Security, Director, RSF to report any emergency. (See the Research Support Facility Disaster Plan, Appendix A.)

6.6.3 Security

No personnel under the age of sixteen is allowed in the animal facility proper, as well as any laboratories or rooms where animals are taken.

RSF Proximity Badge - RSF personnel are issued appropriate badges to access animal rooms in the RSF. All RSF keys, including card keys, must be returned to the Director, RSF or RSF Director upon termination of employment. PIs and research personnel are given badge access for each room in which their animals are housed.

Security in the RSF and Animal Holding Rooms – Access to the RSF floor is by elevator or stairs via proximity badge access. Animal rooms remain locked at all times. The Director, RSF, the AV, RSF staff, Facilities Management personnel and the Vice President and Chief Operating Officer, CMRC have master keys to all animal rooms in the RSF. See the Research Support Facility Disaster Plan, Appendix A.

Other Security Issues - In addition to RSF personnel, only individuals listed on an IACUC-approved protocol are allowed access to the RSF. Persons without keyed access must obtain IACUC approval prior to entry in the RSF. Staff who observe an individual not wearing a CMH badge or who are not recognized by RSF personnel will be approached to ascertain whether or not they are authorized to access the RSF. Any suspicious person(s) or activity should be immediately reported to the Director, RSF and/or the CMRC Security Office.

6.7 HAZARD IDENTIFICATION

Use of agents hazardous to humans: The PI is responsible for identifying any hazards to humans or the environment that may occur as a result of their research. All animals that may be treated or infected with potentially hazardous agents must be disposed of in an appropriate manner. The PI is advised to consult with the RSF Safety Office, Director, RSF and the AV prior to submitting a protocol to the IACUC. It is the PI's responsibility to provide the RSF with written assessment of the risks and proper handling procedures.

7.0 Concerns Regarding the Use of Animals

The IACUC is ultimately responsible for CMRC's animal care program and any complaints related to the use of animals in research and teaching are addressed by the IACUC and ORIC. The IACUC policy on reporting concerns regarding animal treatment is posted on the website. For additional information see the IACUC Policies and Procedures Manual (Appendix B) and the Research Integrity and Compliance Program Manual (Appendix D).