



United States Department of Agriculture
Animal and Plant Health Inspection Service

DCARE
INS-0000812232

Inspection Report

UNIVERSITY OF MEMPHIS

Executive Vice President for Research & Innovation
365 Innovation Drive
MEMPHIS, TN 38152

Customer ID: 852

Certificate: 63-R-0006

Site: 001

UNIV. OF MEMPHIS

Type: ROUTINE INSPECTION

Date: 22-AUG-2022

2.31(c)(7)

Institutional Animal Care and Use Committee (IACUC).

Protocol #0860 states that the Principle Investigator's staff will conduct daily observations on the animals, and the Assistant Director stated that this is not being done and has not been done in a long time. Significant changes- such as the cessation of daily observations by the investigator's staff- can result in failure to identify and address animal welfare concerns in a timely manner. Correct by 10/1/22 by ensuring that significant changes to protocols are reviewed and approved by the IACUC.

2.31(e)(1)

Institutional Animal Care and Use Committee (IACUC).

Protocol "CY22-008" does not include an approximate number of animals. Species of animals are listed, but there is no corresponding number of animals. In order for the IACUC to accurately evaluate the species and number of animals to be used in a protocol, animal numbers must be provided. Correct by 10/1/22 by ensuring that protocols contain the number of animals to be used.

2.31(e)(3)

Institutional Animal Care and Use Committee (IACUC).

Protocol "CY22-008" does not include a complete description of the proposed use of animals. The protocol indicates that no euthanasia will be performed, and then lists numerous methods of euthanasia along with individuals authorized to

Prepared By: DIANA CARE

USDA, APHIS, Animal Care

Date:

23-AUG-2022

Title: VETERINARY MEDICAL
OFFICER

Received by Title: Facility Representative

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perform euthanasia. The protocol states that animals will be "euthanized for veterinary care/animal welfare issued based on the opinion of the AV." Records review and discussion with an animal husbandry employee confirm that euthanasia is performed on voles on the holding protocol on an ongoing basis by individuals listed on the approved protocol without first consulting with the Attending Veterinarian (AV) as required by the protocol. Protocol #0873 does not include a complete description of the proposed use of animals. The protocol states that euthanasia will be carried out by the PI and describes the method of euthanasia, but does not state when, why, or how many animals will be euthanized. Protocol #0860 also indicates euthanasia will be performed but does not state when, why, or how many animals will be euthanized.

Accurately describing animal usage including determining and describing humane ends points is important for animal welfare. Correct by 10/1/22 by ensuring that protocols completely describe the proposed use of animals.

2.33(b)(3) Critical

Attending veterinarian and adequate veterinary care.

Medical records show that on 5/25/22, a vole was identified by an animal care technician as having a swollen, red, hairless left front limb. The records show that the Attending Veterinarian (AV) recommended euthanasia and the animal was euthanized on 6/23/22. The timing of the AV's recommendation of euthanasia is unclear. The facility does not know which protocol this animal was on. The facility could not locate any additional records concerning the care of this animal between 5/25/22 and 6/23/22. The Attending Veterinarian and Associate Director could not recall this animal. The Associate Director stated that the animal was not provided any medications during the monitoring period because no medications are maintained on site. Animals who have red, swollen limbs may have an infection or injury, and may experience stress, pain, or discomfort. Correct by 8/23/22 by ensuring issues regarding animal health are communicated with the attending veterinarian promptly, and that the AV's instructions for animal care are followed.

2.36(b)(5)

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Annual report.

The facility submitted an annual report for FY21 which listed 217 "common mole rats". The associate director stated that the facility did not have any common mole rats in FY21, instead they had approximately 270 "Damaraland mole rats" which are a different species than common mole rats. Accurate reporting on the annual report is important for transparency and public oversight of animal use in research. Correct by 9/7/22 by ensuring that accurate reporting of animal name, number, and pain category on the annual report.

2.38(f)(1) Critical

Miscellaneous.

Since July 19, 2022 there have been 15 deaths (including animals found dead and those who were euthanized for medical reasons) in the main room housing approximately 250 Damaraland mole rats (DMRs). In contrast, during the timeframe 10/9/21 to 7/18/22 there were only 4 deaths in DMRs in the same room. On 7/19/22 an employee identified a Damaraland mole rat with a "missing rear leg from a fight with other mole rats." The animal was euthanized in consultation with the attending veterinarian. On 8/1/22 an employee identified two Damaraland mole rats with problems- the first had a back rear leg that was broken, and the other had a rear leg that was swollen and red and the animal was unable to bear weight or walk normally. The second animal also had an eye that was swollen shut. The animals were euthanized after prompt consultation with the attending veterinarian. On 8/22/22, two additional DMRs were euthanized per the instruction of the attending veterinarian due to fight wounds on the head and face.

An animal care technician stated that subjectively, the animals had recently appeared to be agitated, and there had been increase bullying and fighting between the animals. The Associate Director stated that the recent deaths were most likely attributable to fighting between animals due to some environmental source of stress, and that they had done an investigation and found that the most likely cause of stress for the animals was the addition of a dehumidifier to the room which was generating a soft noise that might be bothering the animals. The Associate Director also recently discovered

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that the light cycle for the room had been malfunctioning, resulting in 24-hours of continuous light in the room. Both of these issues have now been corrected. Continuous light without periods of dark can cause increased stress and disrupted sleep for animals, which may result in abnormal behaviors such as increased aggression. Noises and blowing air/wind can be disturbing or disruptive to animals. Animals housed socially are especially susceptible to the aggression or bullying caused by other animals as a result of stress from environmental sources. Correct by 9/1/22 by handling animals as expeditiously and carefully as possible in a manner that does not cause trauma, overheating, excessive cooling, behavioral stress, physical harm, or unnecessary discomfort.

2.38(l)

Miscellaneous.

The facility does not have a contingency response plan that addresses the events, personnel, resources, or actions needed in the event of emergencies. Planning for contingencies that can reasonably be expected to occur is important for ensuring that animals do not suffer or die needlessly in the event of an emergency or natural disaster. Correct by 10/1/22 by documenting a contingency response plan to provide for the humane handling, treatment, transportation, housing, and care of animals in the event of an emergency or disaster that could reasonably be anticipated to have a negative impact on the health and wellbeing of animals in the facility's care.

3.125(a)

Facilities, general.

One plastic hard-sided enclosure containing Damaraland mole rats has an approximately 1.5 inch diameter hole in the side, directly under an area where a hollow tube/pipe is connected to the container. A large amount of bedding has fallen out through the hole. An animal care employee who routinely works in the area stated that these animals occasionally escape from their enclosures due to poorly fitting tubes and excessively worn tubes and enclosures. Enclosures with holes or poorly fitting components may cause animals to become trapped or escape, causing the animals stress, injury, or

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death. Correct by 9/23/22 by ensuring that animal enclosures are structurally sound and in good repair, to protect the animals from injury and contain the animals.

3.126(b) Critical

Facilities, indoor.

On April 1, 2022 in the life sciences building, the HVAC unit broke down overnight, resulting in decreased ventilation, increased ambient temperatures, and the death of 12 voles. At the time of the incident, the facility did not have an alarm or monitoring system in place to alert personnel about ventilation problems. Animals without adequate ventilation may suffer from heat, stress, lack of oxygen, and death. Correct by 8/23/22 by ensuring that animals have adequate ventilation for health and to prevent discomfort. Corrected prior to time of this inspection.

This inspection was conducted with the Associate Director of Animal Care Facilities, the IACUC Chair, and the Lead Animal Care Technician. The exit interview was conducted with the Associate Director of Animal Care Facilities, the IACUC Administrator, the Senior Associate Director for Research Compliance, and the Attending Veterinarian.

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Species Inspected

Cust No	Cert No	Site	Site Name	Inspection
852	63-R-0006	001	UNIV. OF MEMPHIS	22-AUG-2022

Count	Scientific Name	Common Name
000263	<i>Fukomys damarensis</i>	DAMARA / DAMARALAND MOLE-RAT / DAMARALAND BLES MOL
000062	<i>Heterocephalus glaber</i>	NAKED MOLE-RAT
000119	<i>Microtus arvalis</i>	EUROPEAN COMMON VOLE
000031	<i>Phodopus sungorus</i>	DJUNGARIAN / RUSSIAN WINTER WHITE DWARF HAMSTER
000475	Total	



CFR:3.125(a)

Photographer: Diana Care

Certificate: 63-R-0006

Date and Time: 8/22/2022 12:00 PM **Legal Name:** UNIVERSITY OF MEMPHIS

Inspection No: 2016090000812233 **Facility Name:** UNIV. OF MEMPHIS

Description: Damaraland mole rat cage with hole



CFR:3.125(a)

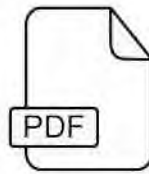
Photographer: Diana Care

Certificate: 63-R-0006

Date and Time: 8/22/2022 12:00 PM **Legal Name:** UNIVERSITY OF MEMPHIS

Inspection No: 2016090000812233 **Facility Name:** UNIV. OF MEMPHIS

Description: Damaraland mole rat cage with hole



CFR:3.126(b)

Photographer: Diana Care

Certificate: 63-R-0006

Date and Time: 8/23/2022 3:00 PM **Legal Name:** UNIVERSITY OF MEMPHIS

Inspection No: 2016090000812233 **Facility Name:** UNIV. OF MEMPHIS

Description: Adverse event report to the IACUC about ventilation shutdown

Institutional Animal Care and Use Committee (IACUC) Meeting
 Semi-annual Program Review
 University of Memphis, EA202c and videoconference via Zoom
 April 22, 2022, 1:30pm, EA202c

IACUC members present: [REDACTED]

Invited guests present: (b) (6), (b) (7)(C) Director Research Compliance), (b) (6), (b) (7)(C) Research Compliance Coordinator)

Agenda:

1. Welcome/Introductions - [REDACTED]
2. Protocol review process update - [REDACTED]
3. Occ Health/Medical Surveillance update - [REDACTED]
4. Transitioning to new Attending Veterinarian - [REDACTED]
 - a. training, services for investigators, post-approval monitoring
5. Adverse event report - [REDACTED]
6. Facility access/locks update - [REDACTED]
7. OLAW Assurance renewal - [REDACTED]
8. Round robin

Discussion:

[REDACTED] welcomed members and introductions were made including our new member [REDACTED] our [REDACTED]

[REDACTED] reported that she is now receiving and routing new protocols, protocol amendments, and annual updates through [REDACTED] will assist as needed for assigning designated reviewers or other tasks.

UTHSC Health Services was provided an initial list of UofM personnel to begin scheduling occupational health visits. UTHSC starting contacting UofM personnel on April 20 and will continue down the list in small groups. A. Curry will continue to provide names and contact information to UTHSC while we are still in the initial enrollment phase.

[REDACTED] informed the committee that he will be on campus about 2 days/month (likely every other Friday). He is available via email for consult with investigators, and will schedule phone, Zoom, on campus meetings as needed. He will provide orientation/training on campus or via Zoom as needed for new personnel.

[REDACTED] announced that Research Compliance will be taking over administrative tasks for the Animal Care and Use program as we transition to part-time attending veterinarian.

[REDACTED] reported that an adverse event occurred at the Life Sciences animal facility on April 1. The HVAC system malfunctioned overnight, and the facility experienced high temperatures resulting in loss of several rodents. [REDACTED] discovered the problem early in the morning and immediately contacted physical plant. The facility was quickly ventilated to reduce temperature while physical plant personnel performed repairs on the HVAC system. [REDACTED] recommend that a temperature monitor/alarm be installed in Life Sciences and Psychology animal facilities to avoid this type of event in future. [REDACTED] and [REDACTED] will look into options for alarm systems. The Office of Laboratory Animal Welfare (OLAW) and USDA were notified. [REDACTED] will draft an adverse event report to OLAW for comment and approval from the IACUC and [REDACTED]. USDA does not require a follow-up report.

Animal facility locks in Life Sciences and Psychology were upgraded to a card swipe access system in February. [REDACTED] will manage access to the facilities. Initially, PIs should send names and UUIDs of personnel that need access to [REDACTED], and PIs should verify that personnel have received appropriate training before personnel are granted access. Going forward, we plan to develop a policy that requires training and Occupational Health medical evaluation prior to being granted access to the facilities.

The UofM has submitted a renewal for OLAW Assurance (required every 3 years) and OLAW has provided feedback with request for revision. [REDACTED] will work with [REDACTED], and [REDACTED] to revise the Assurance.

[REDACTED] suggested that IACUC considers developing policy for post-approval monitoring. [REDACTED] suggested that this could be accomplished during semi-annual inspection by visiting labs outside the facilities that perform procedures. Also discussed need for policy for handling controlled substances such as common analgesics/anesthetics and when PIs should seek their own DEA license. On a related note, [REDACTED] suggested that some level of integration/communication should occur between IACUC and the Institutional Biosafety Committee (IBC).

IACUC members whose terms are ending are [REDACTED], [REDACTED], [REDACTED], [REDACTED], [REDACTED]. All members have served more than one term, and we thank them for their continued support and service over the years. [REDACTED] will follow up with each about continuing on the committee, or if ready to step back.

Semi-annual facility inspection is scheduled for Thursday, April 28th, 10:30am.

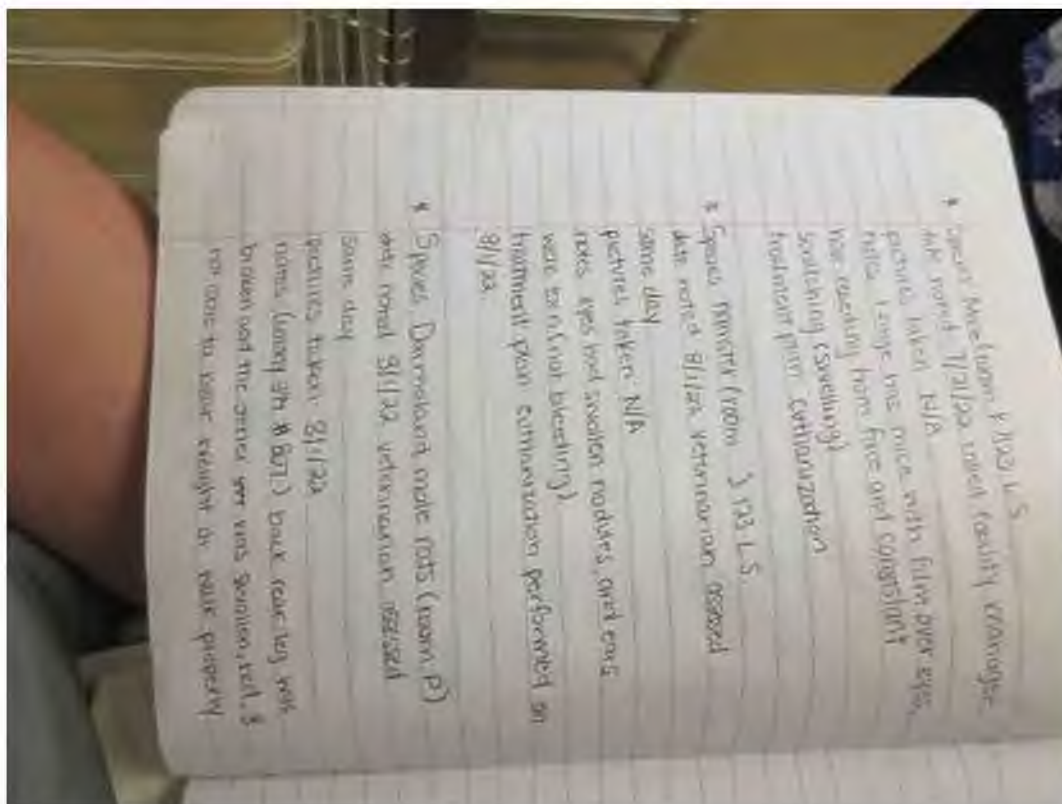
Action items:

- Draft semi-annual report for committee review [REDACTED]
- Draft adverse event report for submission to OLAW [REDACTED]
- Recruit committee member renewal/replacement [REDACTED]
- Develop/prioritize list of needed and new IACUC policies [REDACTED]

Committee meeting was adjourned at approximately 2:30pm.

Respectfully submitted,

[REDACTED]
[REDACTED]
June 14, 2022



CFR:2.38(f)(1)

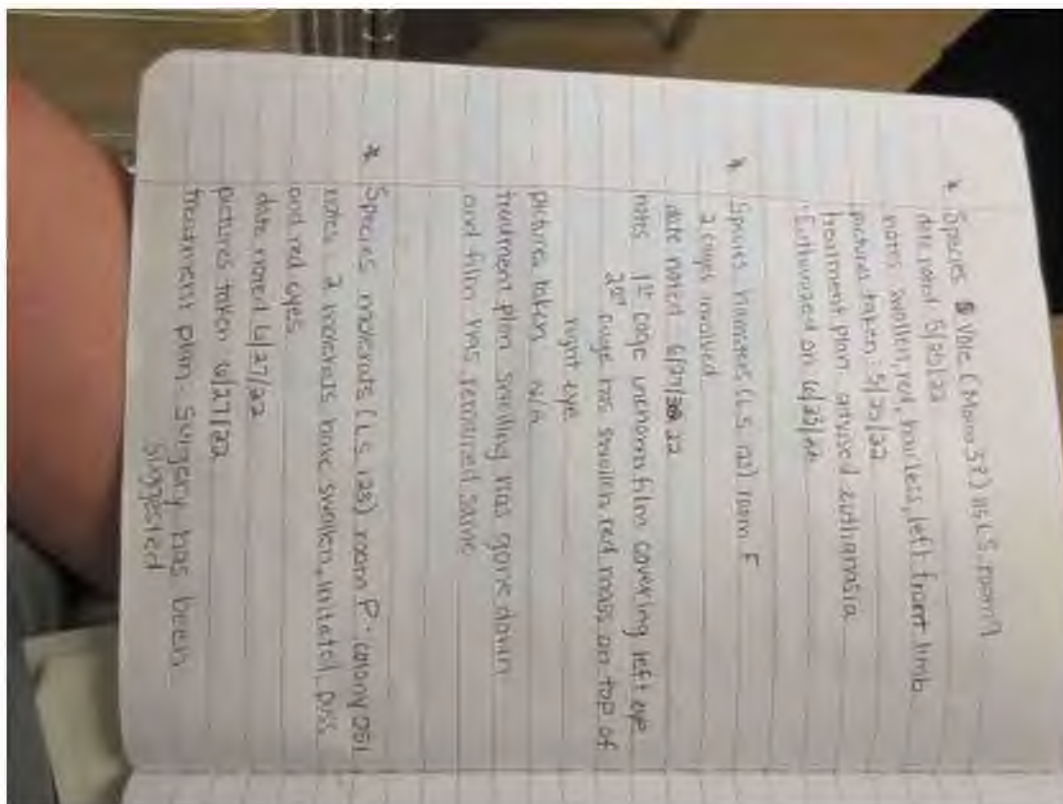
Photographer: Diana Care

Certificate: 63-R-0006

Date and Time: 8/22/2022 2:00 PM Legal Name: UNIVERSITY OF MEMPHIS

Inspection No: 2016090000812233 Facility Name: UNIV. OF MEMPHIS

Description: DMR medical records



CFR:2.33(b)(3)

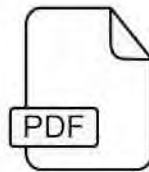
Photographer: Diana Care

Certificate: 63-R-0006

Date and Time: 8/23/2022 3:00 PM Legal Name: UNIVERSITY OF MEMPHIS

Inspection No: 2016090000812233 Facility Name: UNIV. OF MEMPHIS

Description: Vole medical records



CFR:2.31(e)(3)

Photographer: Diana Care

Certificate: 63-R-0006

Date and Time: 8/23/2022 3:00 PM **Legal Name:** UNIVERSITY OF MEMPHIS

Inspection No: 2016090000812233 **Facility Name:** UNIV. OF MEMPHIS

Description: Protocol #0873 naked mole rat breeding

auth?
only PI
authorized
no dissection
if euth. reports

**IACUC PROTOCOL
FOR USE OF LIVE VERTEBRATES FOR RESEARCH, TEACHING OR DEMONSTRATION
UNIVERSITY OF MEMPHIS**

Date submitted to Attending Veterinarian for pre-review: _____

IACUC Protocol # 0873Date Submitted to IACUC 7/07/2021Dates Protocol will be in effect: from 7/22/2021 to 7/21/2024
(not to exceed three years including two yearly renewals)Is this protocol related to an external grant or contract application?
☒Yes ☐ No

If yes, complete the following:

Agency: _____

Date Submitted _____

Grant # _____

University account for Animal Care Facility per diem charge:

If the protocol is not related to an external grant or contract application, complete the following:

University account for Animal Care Facility per diem charge: **(b) (4)**

Project Title: (If project relates to a grant or contract application, give that title; if multiple protocols relate to one grant, give unique titles for each protocol; if the project is related to a class, give the course name and number):

Breeding Colonies of naked mole-rats

I. Personnel

Investigator/Instructor: _____

Department: _____

Academic Rank: _____

Campus phone: 901.678.4316Emergency phone: 605-670-0677

Attending Veterinarian: _____

Phone: 678-2359Emergency phone: 258-1232

List all individuals that will handle animals using this protocol, their affiliation, and their level of expertise (e.g. relevant qualifications). If the protocol applies to a class then so specify.

[REDACTED], College of Health Sciences- Has 10+ years of experience working with mammals including managing breeding colonies of a variety strains of mice and wild-derived mice.

[REDACTED], Department of Biological Sciences-Has 20+ years of managing care of breeding colonies of Damaraland mole-rat. Has also managed breeding colonies of naked mole-rat before.

[REDACTED], College of Health Sciences- Will be trained in all aspects of animal husbandry

If additional personnel become involved in handling animals used in this protocol, it is the responsibility of the principal investigator to notify the Animal Care Facility in writing before they start.

Has the investigator/instructor and all personnel listed above received the appropriate vaccinations (tetanus, rabies)? Yes ☐ No ☐ Not Applicable ☒

Is it necessary for personnel listed on this protocol to be tested for TB? Yes ☐ No ☒

If you have questions about the kind of vaccination or about TB, call the Animal Care Facility at 678 2359.

All U of M personnel involved in this protocol must complete the animal care and use training program before animals can be procured or before experiments/teaching or demonstration. In submitting this protocol, I, as Principal Investigator/Instructor accept the responsibility for compliance with this requirement.

In addition, the Principal Investigator/Instructor must be willing to provide appropriate supervision for all persons working on this protocol. In the case of a class, the Instructor must be responsible for training any students in classes involved prior to using animals.

II. Project Description

A. Summary (Enter a brief description below of your project, using lay terminology):

My laboratory will maintain breeding colonies of naked mole-rats (*Heterocephalus glaber*).

B. Describe IN DETAIL the procedures you will follow. Include accompanying documentation and reference to previously published work in the box below. Provide a complete bibliographic citation and describe any variations from the published technique. The bibliography may be included in the box below or appended to this protocol.

Managed care of naked mole-rats (NMR) will follow Sherman et al. (1). [REDACTED] who is serving as co-PI for this protocol has previously managed breeding colony of NMR. [REDACTED] (b) (6), (b) (7)(C) is also currently managing Damaraland mole-rats colony, which is another eusocial fossorial mammal closely related with NMR (2). Moreover, [REDACTED] who is a pioneer in NMR research and an expert in NMR managed care will also serve as a consultant for the NMR breeding colony (3). We will obtain NMRs from breeding colonies in [REDACTED] at Calico Life Science. At University of Memphis, Breeding colonies including a single breeding female and male and their offspring will be housed in the animal facility in the Life Science building. Cages will be checked for litters daily and the birth date and number of pups born will be recorded. Daily maintenance and health of the animals will be monitored by members of my laboratory as well as by the veterinary staff at the University of Memphis. Their diet consists of ad libitum sweet potatoes supplemented with dry rodent pellets (Harlan 2019, 19% protein diet). To meet their vitamin and mineral needs, other fruits and vegetables such as bananas, apples, oranges, corn, watermelon, cantaloupe, grapes and pears will be provided periodically. Each colony is housed within a complex constructed of static polycarbonate mouse cages (18.4 cm in width, 29.2 cm in Length and 12.7 cm in height) connected by varying lengths of extruded polycarbonate tubing to roughly simulate natural burrow architecture. The number of cages and lengths of tube are dependent upon the size of the colony and all colonies contain a 1:1 mixture of pelleted paper bedding and soft cellulose bedding. Animal room will be kept between 28–31 °C, which is close to their natural burrow temperatures. Main chamber will also be heated by a heating pad since NMR are unable to precisely regulate body temperature outside a very narrow range of ambient temperatures (4).

Reference:

1. Sherman, Paul W., Jennifer UM Jarvis, and Richard D. Alexander, eds. The biology of the naked mole-rat. Vol. 54. Princeton University Press, 2017.
2. Burland, Tamsin M., Nigel C. Bennett, Jennifer UM Jarvis, and Christopher G. Faulkes. "Eusociality in African mole-rats: new insights from patterns of genetic relatedness in the Damaraland mole-rat (*Cryptomys damarensis*).", *Proceedings of the Royal Society of London. Series B: biological sciences* 269, no. 1495 (2002): 1025-1030.
3. Buffenstein, Rochelle. "The naked mole-rat: a new long-living model for human aging research." *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences* 60, no. 11 (2005): 1369-1377.
4. Buffenstein, Rochelle, and Shlomo Yahav. "Is the naked mole-rat *Hererocephalus glaber* an endothermic yet poikilothermic mammal?," *Journal of Thermal Biology* 16, no. 4 (1991): 227-232.

C. Rationale for Involving Animals and the Appropriateness of Species and Number Used.

Indicate **(here)** briefly the short and/or long-term benefits (to humans and/or other animals) of this use of animals for research, teaching or demonstration. Provide rationale for and the number of animals to be used. In addition, state briefly why living animals are required for this study, rather than some alternative model.

(b) (4)

- D. Do the procedures described in B above, have the potential to inflict more than momentary pain or distress (this does not include pain caused by injections or other minor procedures)? Yes ☐ No ☒

I have considered alternatives to procedures that might cause more than momentary or slight pain/distress, and I have not found such alternatives. As such, I have used one or more of the following methods and sources to search for such alternatives: **(check below each method used)**

- | | | |
|--|---|---|
| ☐ Agricola Data Base | ☐ Medline Data Base | ☐ CAB Abstracts |
| ☐ TOXLINE | ☐ BIOSIS | ☐ Lab. Animal Sci. Journal |
| ☐ Lab. Animals Journal | ☐ Lab Animal | ☐ Animal Welfare Info Center |
| ☐ ATLA (Alternatives to Laboratory Animal Journal) | ☐ Quick Biblio. Series | |
| ☐ Lab Animal Welfare Bibliography (QL55L27311988) | ☐ "Benchmarks" | |
| ☐ "Alternatives to Animal Use in Research, Testing and Education" | | |
| ☒ Current Contents | | |
| ☐ CARL | | |
| ☐ Direct contact with colleagues (if selected, you MUST document this below) | | |

List search words for the literature search:

What is the length of time that the literature search covers?

--

III. Animal Use

A. List all animal species to be used (example below).

Species	Number ¹	Age ²	Sex ²	Weight ²	Where Housed (Bldg./Rm#)
Naked mole-rat (Heterocephalus glaber)	60	0-25 years	Male and female	28-42 grams	

¹Individuals using ectotherms need to only approximate numbers.

²Individuals using fish or other ectotherms need not answer this question.

Is any species threatened or endangered?

Yes ☐ No ☒

B. Source of animals

☐ Commercial vendor (Source _____)

x Bred at The University of Memphis

☐ Captured from wild. Identify method of capture: _____

☐ Transferred from another study (IACUC Protocol Number _____)

☐ Donated (Source _____)

☐ Tennessee Wildlife Resources Agency

Is the supplier a USDA approved source?

Yes ☐ No ☐

If not, explain why:

☒ Animals are already in residence at U of M

C. Will surgery be conducted on animals?

Yes ☐ No ☒

If yes, complete this section:

- ☐ Non Recovery Surgery ☐ Recovery Surgery
☐ Multiple Survival Surgery (if the latter is checked, complete section F)

Surgeon(s) (Name/Job/Title/Academic Rank)

Location of Surgery (Bldg. & Room #)

- D. Will Anesthetic(s), Analgesic(s), or
Tranquilizing agents be administered?

Yes ☐No ☒

If yes, complete this section (example below).

Species & Sex	Agent	Dose	Route	Performed by (Name/Title/Academic Rank)

- E. Will euthanasia be carried out?

Yes ☒No ☐

If yes, complete this section (example below).

Species & Sex	Agent	Dose	Route	Performed by (Name/Title/Academic Rank)
Naked mole-rat (Heterocephalus glaber)	CO ₂	N/A	Inhalant	

If no, describe disposition of animal(s) at conclusion of this study in box below.

F. Will special housing, conditioning, diets or other conditions be required?

Yes ☐No ☒

If yes, please explain in box below.

- G. Will animals be removed from the U of M campus at any time? Yes ☐ No ☒

If yes, please indicate to where and for how long in box below.

- H. If they are to be housed for more than 24 hours outside approved facilities at U of M, provide a scientific justification in box below.

IV. Toxic and Hazardous Substances

- A. Check off any of the following below that will be used in these experiments?

- ☐ Infectious agents (Fill out a, b)
- ☐ Radioisotopes (Fill out a, b, e)
- ☐ Toxic chemicals or carcinogens (Fill out a, b)
- ☐ Recombinant DNA (Fill out a)
- ☐ Experimental drugs (Fill out a)
- ☐ Malignant cells or hybridomas (Fill out a, c)
- ☐ Adjuvants (Fill out a)
- ☐ Controlled substances (Fill out a, d, e)

For each checked off category, answer the questions indicated below:

- a. Identify the substance(s) and completely describe their use, including how will be injected or given to the animal(s):

- b. Describe all procedures necessary for personnel and animal safety including biohazardous waste, carcass disposal and cage decontamination:

- c. If transplantable tumors or hybridoma cells are to be injected into the animals, have the tissues/cells been tested for inadvertent contamination by viruses or mycoplasma? Yes ☐ No ☐

If yes, what was the result (indicate in box below).

- d. In the box below, provide a complete list of these substances, and if their use is not explicitly explained in the materials already provided, explain their use and role in the research.

Provide DEA license # covering the use of these substances: _____

To whom (or what entity) is the license issued? _____

e. Provide Radioisotope License Number: _____

To whom is the license issued? _____

**V. Categories of Animal Experimentation Based Upon Level of Manipulation and Pain:
(check off each category that is applicable to this application)**

- ☒ A. Animals will be involved in teaching, research, experiments or tests involving no pain, distress, or use of pain-relieving drugs.
- ☐ B. Animals will be subject to mild stress only (e.g., food or water deprivation of less than 24 hours for use in behavioral studies such as operant conditioning; physical restraint for less than 30 minutes), and will not be subject to surgery, painful stimuli, or any of the other conditions described below. Procedures described in this protocol have the potential to inflict no more than momentary or slight pain or distress on the animal(s)---that is, no pain in excess of that caused by injections or other minor procedures such as blood sampling.
- ☐ C. Animals will have minor procedures performed, blood sampling, etc. while anesthetized.
- ☐ D. Live animals will be humanely killed without any treatments, manipulations, etc. but will be used to obtain tissue, cells, sera, etc.
- ☐ E. Live animals will have significant manipulations, surgery, etc. performed while anesthetized. The animals will be humanely killed at experiment termination without regaining consciousness.
- ☐ F. Live animals will receive a painful stimulus of short duration without anesthesia (behavior experiments with flight or avoidance reactions--e.g., shock/reward) resulting in a short-term traumatic response. Other examples in this category are, blood sampling, injections of adjuvants, or drugs, etc.

- ☐ G. Live animals will have significant manipulations performed, such as surgery, while anesthetized and allowed to recover. Such procedures cause post-anesthetic pain/discomfort resulting from the experiment protocol (e.g., chronic catheters, surgical wounds, implants) which cause a minimum of pain and/or distress. Also included are mild toxic drugs or chemicals, tumor implants (including hybridomas), tethered animals, short-termed physically restrained animals (up to 1 hour), mother/infant separations.
- ☐ H. Live animals will have significant manipulations or severe discomfort, etc. without benefit of anesthesia, analgesics or tranquilizers. Examples to be included in this category are: toxicity testing, radiation sickness, irritants, burns, trauma, biologic toxins, virulence challenge, prolonged: restrictions of food or water intake, cold exposure, physical restraint or drug addiction. All use of paralytic agents (curare-like drugs) must be included in this category. Describe any abnormal environmental conditions that may be imposed. Describe and justify the use of any physical restraint devices employed longer than 1 hour.

VI. Justifications for Category G Studies and Deviations from Standard Techniques

Describe in the box below any steps to be taken to monitor potential or overt pain and/or distress during the course of this study and how such pain or distress will be alleviated. Be as detailed as necessary to justify your procedure.

Daily health checks will be performed by the animal care staff as well as personnel from the PI's laboratory. Any concerns will be reported to the PI or Dr. Karyl Buddington.

VII. Certifications

(By submitting this protocol, I am acknowledging that I comply with the certifications included in Section VII.) (check one)

- ☒ Animal Use for Research. I certify that the above statements are true and the protocol stands as the original or is essentially the same as found in the grant application or program/project. The IACUC will be notified of any changes in the proposed project, or personnel, relative to this application, prior to proceeding with any animal experimentation. I will not purchase animals nor proceed with animal experimentation until approval by the IACUC is granted.
- ☐ Animal Use for Teaching/Demonstration. I certify that the information in this application is essentially the same as contained in the course outline and a copy of the laboratory exercises using animals is on file in the IACUC office. The IACUC will be notified of any changes in the proposed project, or personnel, relative to this application, prior to proceeding with any animal experimentation. I will not proceed with animal experimentation until approval by the IACUC is granted.

Estimate the cost of maintaining animals used in this protocol based on current per diem charge at University of Memphis.

Please specify cost per unit of time: _____

Specify anticipated total costs for project duration: _____

As supervisor of this project it is required that you inform your department chair concerning any animal per diem costs related to this project that are to be paid by the department.

By submitting this protocol, the Principal Investigator/Course Director indicates that the following have been considered:

1. Alternatives to use of animals.
2. Reduction of pain and stress in animals to the lowest level possible.
3. The proper needs of the animals with respect to housing and care.
4. The lowest number of animals used that will give the appropriate experimental results.
5. Use of the most primitive species that will give the appropriate experimental results.
6. Proper training of all personnel in the care and handling of the species used and in the procedures called for in this protocol before beginning the experiment/teaching or demonstration.
7. That this protocol is not an unnecessary repeat of results already in the literature or in the case of teaching/demonstrations, results that can be demonstrated using models or video material.

Principal Investigator/Course Director (Type Name) _____

e-mail address _____

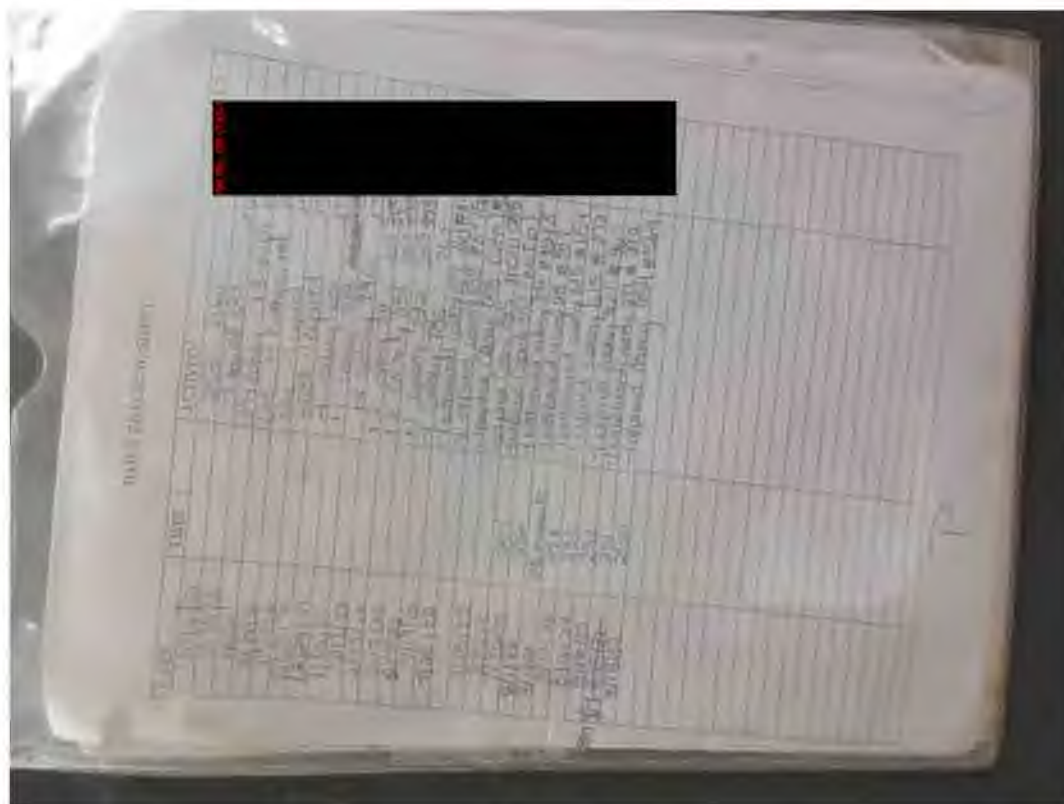
Date 6/5/2021

Federal Law requires that members of the IACUC be given adequate time to read and review protocols including any changes or revisions in them.

Pre-review of protocols by the Attending Veterinarian is required before submission to the IACUC. New protocols or modifications or renewals to protocols must be submitted to the IACUC Chair by the 1st business day of the month to be considered for review during that month. Incomplete protocols will be returned to the principal investigator.

E-mail the completed protocol to the IACUC Chair, _____

February, 2015



CFR:2.38(f)(1)

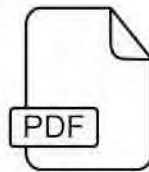
Photographer: Diana Care

Certificate: 63-R-0006

Date and Time: 8/22/2022 2:00 PM **Legal Name:** UNIVERSITY OF MEMPHIS

Inspection No: 2016090000812233 **Facility Name:** UNIV. OF MEMPHIS

Description: Damaraland mole rat mortality log



CFR:2.31(e)(3);2.33(b)(3);2.38(f)(1)

Photographer: Diana Care

Certificate: 63-R-0006

Date and Time: 8/23/2022 3:00 PM **Legal Name:** UNIVERSITY OF MEMPHIS

Inspection No: 2016090000812233 **Facility Name:** UNIV. OF MEMPHIS

Description: Euthanasia records showing vole, Damaraland mole rats

6/23/22

6/23/22

6/30/22

7/5/22

7/9/22

7/16/22

7-19-22

7-15-22

7-18-22

7-19-22

7-21-22

7-22-22

7/29/22

8/1/22

8/1/22

8-2-22

8-2-22

8/12/22

8/17/22

8/17/22

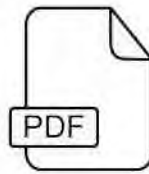
8/22/22

8/22/22

(b) (4)

3/3/22 [REDACTED]
3/5/22 [REDACTED]
3/11/22 [REDACTED]
3/13/22 [REDACTED]
3/14/22 [REDACTED]
3/16/22 [REDACTED]
3/28/22 [REDACTED]
4/7/22 [REDACTED]
4-7-22 [REDACTED]
4-16-22 [REDACTED]
4/18/22 [REDACTED]
4/22/22 [REDACTED]
4/25/22 [REDACTED]
5/2/22 [REDACTED]
5/10/22 [REDACTED]
5/24/22 [REDACTED]
6/6/22 [REDACTED]
6/6/22 [REDACTED]
6/10/22 [REDACTED]
6/10/22 [REDACTED]
6/15/22 [REDACTED]
6/20/22 [REDACTED]
6/22/22 [REDACTED]

(b) (4)



CFR:2.31(e)(1);2.31(e)(3)

Photographer: Diana Care

Certificate: 63-R-0006

Date and Time: 8/23/2022 3:00 PM

Legal Name: UNIVERSITY OF MEMPHIS

Inspection No: 2016090000812233

Facility Name: UNIV. OF MEMPHIS

Description: CY22-008 holding protocol - during the inspection, voles were the only animals on the holding protocol



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Memphis, TN 38152-3370
Office: 901.678.2705
Fax: 901.678.2219

Animal Use Protocol

Use of Live Vertebrates for Research, Teaching or Demonstration

Protocol Information – Please Leave Blank	
Protocol #	CY22-009
Approval Date:	August 5, 2022
Expiration Date:	August 4, 2025

Date Submitted to IACUC MM/DD/YEAR

Project Title: PROJECT TITLE: Animal Holding Protocol

Estimated Protocol Effective Dates: MM/DD/YEAR to MM/DD/YEAR
(Not to exceed 3 years including two yearly renewals) 07/01/2022 07/30/2025

Is this protocol related to an external grant or contract application? ☐ Yes ☒ No

If yes, complete the following:

Agency: (AGENCY)

Date Submitted: (DATE)

Grant #: (GRANT #)

University account for Animal Care Facility per diem charge: (ACCOUNT #)

If the protocol is not related to an external grant or contract application, complete the following:

University account for Animal Care Facility per diem charge: (ACCOUNT #)

When animals are placed on the holding protocol, grant funds may not be used to pay per diem. The PI of the original protocol that is no longer approved or their respective department chair will provide an account to be billed for per diem.

Personnel

1. Primary Investigator/ Instructor Information

Name: [REDACTED]

Academic Rank: [REDACTED]

Campus Phone: (CAMPUS PHONE)

Emergency Phone: (EMERGENCY PHONE)

2. Attending Veterinarian

Name: [REDACTED]

Campus Phone: (CAMPUS PHONE)

Emergency Phone: [REDACTED]



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3. List of all individuals that will handle animals using this protocol, including their email address, affiliation, and level of expertise (e.g., relevant qualifications). If the protocol applies to a class, then specify.

Detail:

██████████ 28 years of experience in animal research and animal care at multiple institutions, including 16 years in laboratory animal research and managing laboratory animal care facilities at University of Memphis.

If additional personnel become involved in handling animals, used in this protocol, it is the responsibility of the Primary Investigator to notify the IACUC and Animal Care facility in writing prior to start.

4. Has the investigator/instructor and all listed personnel above received the appropriate vaccinations?
☒ Yes ☐ No ☐ Not Applicable
5. Is it necessary for personnel listed on this protocol to be tested for TB?
☐ Yes ☒ No ☐ Not Applicable
- i. If you have questions about the kind of vaccination or TB, call the Animal Care Facility at 678 2359.
- ii. All U of M personnel involved in this protocol must complete the animal care and use training program and be enrolled in the occupational health and safety program before animals can be procured or before experiments/teaching or demonstration. In submitting this protocol, I, as Principal Investigator/Instructor accept the responsibility for compliance with this requirement. (NOTE FOR IACUC: highlight indicates revision to text)
- iii. In addition, the Principal Investigator/Instructor must be willing to provide appropriate supervision for all persons working on this protocol. In the case of a class, the Instructor must be responsible for training any students in classes involved before using animals.

Project Description

- A. Summary (In the textbox below, enter a brief description of your project using lay terms)

The purpose of this protocol is to provide for housing and daily care of animals that have been transferred from a research protocol that is no longer approved due to suspension, expiration, or other circumstances. Per regulations and the UM PHS assurance, all animals in the AC facilities must be assigned to a valid, approved protocol. When circumstances for a given protocol change and that protocol is not longer approved, those animals will be transferred to the approved holding protocol for maintenance only. There will be no breeding, experimental procedures, research observations, or data collected while animals are on the holding protocol. In addition, grant funds may not be used to cover any housing costs while animals are on the holding protocol. Animals will receive daily care and veterinary care as prescribed by the Attending Veterinarian. When a new or alternate research protocol is approved, animals assigned to the holding protocol may be transferred to that protocol. The intent of the holding protocol is to provide for daily care and compliance. Animals should remain on the



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holding protocol for the shortest period of time that is reasonable while a new protocol is being prepared reviewed, and approved.

Assignment of animals to the holding protocol is an IACUC function. PIs are notified prior to expiration of protocols by the IACUC Chair or Administrator of the need to transfer animals to the Holding Protocol. PIs may request transfer of animals prior to protocol expiration.

- B. Describe IN DETAIL the procedures you will follow. Include accompanying documentation and reference to previously published work in the box below. Provide a complete bibliographic citation and describe any variations from the published technique. The bibliography may be included in the box below or appended to this protocol.

Animals will be transferred to the approved holding protocol as directed by the IACUC per policy. Once assigned to the holding protocol, all breeding will cease, males and females will be separated into compatible same sex groups, and any visibly pregnant animals will be separated so they will be singly housed for birth and while nursing a litter. Each cage of females will be examined for animals that may be pregnant. If identified, those animals will be separated. Animals will receive daily care, food, water, daily observation, and veterinary care as needed. No experimental manipulations or observations will take place, there will be no genotyping or other procedures which support breeding or colony maintenance. All experimental treatments will be discontinued, including those in which discontinuation of the experimental treatment will render those animals unsuitable for further research. Only treatments that are life sustaining, as determined by the AV will be allowed.

Lab Animal. 2012; 41(8). Management of a holding protocol.

- C. Rationale for Involving Animals and Appropriateness of Species and Number Used.



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Indicate (here) briefly the short and/or long-term benefits (to humans and/or other animals) of this use of animals for research, teaching or demonstration. Provide a rationale for and the number of animals to be used. In addition, state briefly why living animals are required for this study, rather than some alternative model

The reasons for involving animals in the holding protocol is solely to comply with the PHS and USDA requirements that every animals be assigned to an approved protocol.

D. Do the procedures described in B above, have the potential to inflict more than momentary pain or distress (this does not include pain caused by injection or other minor procedures)?

☐ YES

☒ NO

I have considered alternatives to procedures that might cause more than momentary or slight pain/distress, and I have not found such alternatives. As such, I have used one or more of the following methods and sources to search for such alternatives

☐ Agricola Data Base

☐ TOXLINE

☒ Lab. Animals Journal

☐ ATLA (Alternatives to Laboratory Animal Journal)

☐ Google Scholar

☐ Alternatives to Animal Use in Research, Testing and Education

☐ CARL

☐ Other, list here: _____

☒ Direct contact with colleagues (if selected, you MUST document this below)

☒ PubMed.gov

☐ BIOSIS

☒ Lab Animal

☐ CAB Abstracts

☐ Lab. Animal Sci. Journal

☐ Animal Welfare Info Center

☐ Quick Biblio. Series

☐ "Benchmarks"

Attendance at national and regional meetings where representatives from OLAW and USDA spoke about holding protocols.

E. List keywords used for literature search and date(s) of search(es):

Keywords Holding + protocol were searched on June 27, 2022

F. What time period does the literature search cover?

1977 - 2022

Animal Use

A. List all animal species to be used. See example below



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Species	Number ¹	Age ²	Sex ²	Weight ²	Housing Location (Bldg./Rm#)
Hooded Wistar Rats	45	2 Months	M	250-350 mg	PSY Bld./ 422I
Mice					
Rats					
Dwarf Hamsters					
Naked mole rats					
Damaraland mole rats					
Voies					
House finch					
Zebrafish					

¹Individuals using ectotherms need to only approximate numbers

²Individuals using fish or other ectotherms need not answer

Are any species threatened or endangered? ☐ Yes ☒ No

B. Source of animals

☐ Commercial Vendor: (SOURCE)

☐ Bred at the University of Memphis

☐ Captured from wild. Identify the method of capture: (METHOD)

☒ Transferred from another study: (IACUC PROTOCOL #)

☐ Donated: (SOURCE)

☐ Tennessee Wildlife Resources Agency

Is the Supplier USDA approved? ☐ Yes ☒ NO

If not, explain why:

☒ Animals already resided at UM

☐ Other: (REASON)

C. Will surgery be conducted on animals? ☐ Yes ☒ NO

If yes, complete this section:

☐ Non-Recovery Surgery ☐ Recovery Surgery

☐ Multiple Survival Surgery (if the latter is checked, complete section F)



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Surgeon(s) (Name/Job/Title/Academic Rank)	Location of Surgery (Bldg./Room #)
1.	
2.	

D. Will anesthetic(s), analgesic(s) or tranquilizing agents be administered? ☐ Yes ☒ NO

If yes, complete this section:

Species & Sex	Agent	Dose	Route	Performed By: (Name/Title/ Academic Rank)
M Hooded Wistar rats	sodium pentobarbital	50 mg/kg	i.p.	Mr. Smith/Research Technician/B.S.

E. Will euthanasia be carried out? ☐ Yes ☒ NO

If yes, complete this section:

Species & Sex	Agent	Dose	Route	Performed By: (Name/Title/ Academic Rank)
M Hooded Wistar rats	sodium pentobarbital	50 mg/kg	i.p.	Mr. Smith/Research Technician/B.S.
Mouse M & F	Carbon dioxide	Inhalation to effect	inhalation	[Redacted] Lead animal technician
Rat M & F	Carbon dioxide	Inhalation to effect	inhalation	[Redacted] Lead animal technician
Dwarf Hamster M & F	Carbon dioxide	Inhalation to effect	inhalation	[Redacted] Lead animal technician
Vole M & F	Carbon dioxide	Inhalation to effect	inhalation	[Redacted] Lead animal technician
Zebra Finch M&F	Carbon dioxide	Inhalation to effect	inhalation	[Redacted] Lead animal technician
House Finch M&F	Carbon dioxide	Inhalation to effect	inhalation	[Redacted] Lead animal technician
Naked Mole Rat M&F	Carbon dioxide	Inhalation to effect	inhalation	[Redacted] Lead animal technician
Demaraland Mole Rat M&F	Carbon dioxide	Inhalation to effect	inhalation	[Redacted] Lead animal technician



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				Lead animal technician

If no, describe the disposition of animals(s) at study conclusion

Description: animals will be euthanized for veterinary care/animal welfare issues based on the opinion of the AV. If euthanasia is warranted, standard euthanasia procedures will be used consistent with the recommendations of the AVAM guidelines on euthanasia. It is possible that animals which are not longer suitable for research may be euthanized due to age, previous research use, or lack of a valid funded research plan. For the latter, effort will be made to transfer animals to another investigator and euthanasia will be directed by the AV and/or IACUC Chair.

F. Will special housing, conditioning, diets or other conditions be required? ☐ Yes ☒ NO

If yes, please explain.

Description:

G. Will animals be removed from the UM campuses at any time? ☐ Yes ☒ NO

If yes, please indicate where (Bldg./Room #) and for how long.

Description:

H. If they are to be housed for more than 24 hours outside approved facilities at UM, provide scientific justification in the box below.

Justification:

Toxic and Hazardous Substances

A. Check off any of the following below that will be used in your experiments

- ☐ Infectious agents (Fill out a, b)
- ☐ Radioisotopes (Fill out a, b, e)
- ☐ Toxic chemicals or carcinogens (Fill out a, b) Recombinant DNA (Fill out a)
- ☐ Experimental drugs (Fill out a)



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- ☐ Malignant cells or hybridomas (Fill out a, c) Adjuvants (Fill out a)
- ☐ Controlled substances (Fill out a, d, e)

For each checked off category, answer the questions indicated below

- a. Identify the substance(s) and completely describe their use, including the route of administration to the animal(s)

- b. Describe all procedure necessary for personnel and animal safety including biohazardous waste, carcass disposal and cage decontamination

- c. If transplantable tumors or hybridoma cells are to be injected into the animal(s), have the tissues/cells been tested for inadvertent contamination?

☐ YES

☐ NO

If yes what was the result? (Indicate in the box below)

- d. In the box below, provide a complete list of these substances, and if their use is not explicitly explained in the materials already provided, explain their use and role in the research.

- e. DEA license Information:

To Whom the License is Issued: _____

DEA License Number: _____

- f. Radioisotope License Information

To Whom the License is Issued: _____

Radioisotope License Number: _____

Pain and Distress Classification



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Check off each category that applies to this application and provide the estimated number of animals to be used in each category

Category	Animal #	Description of Pain Category
☒ A	0	Animals will be involved in teaching, research, experiments or tests involving no pain, distress, or use of pain-relieving drugs
☐ B	0	Animals will be subject to mild stress only (e.g., food or water deprivation of less than 24 hours for use in behavioral studies such as operant conditioning; physical restraint for less than 30 minutes), and will not be subject to surgery, painful stimuli, or any of the other conditions described below. Procedures described in this protocol have the potential to inflict no more than momentary or slight pain or distress on the animal(s)--that is, no pain in excess of that caused by injections or other minor procedures such as blood sampling
☐ C	0	Animals will have minor procedures performed, blood sampling, etc. while anesthetized
☐ D	0	Live animals will be humanely killed without any treatments, manipulations, etc. but will be used to obtain tissue, cells, sera, etc.
☐ E	0	Live animals will have significant manipulations, surgery, etc. performed while anesthetized. The animals will be humanely killed at experiment termination without regaining consciousness
☐ F	0	Live animals will receive a painful stimulus of short duration without anesthesia (behavior experiments with flight or avoidance reactions--e.g., shock/reward) resulting in a short-term traumatic response. Other examples in this category are, blood sampling, injections of adjuvants, or drugs, etc.
☐ G	0	Live animals will have significant manipulations performed, such as surgery, while anesthetized and allowed to recover. Such procedures cause post-anesthetic pain/discomfort resulting from the experiment protocol (e.g., chronic catheters, surgical wounds, implants) which cause a minimum of pain and/or distress. Also included are mild toxic drugs or chemicals, tumor implants (including hybridomas), tethered animals, short-termed physically restrained animals (up to 1 hour), mother/infant separations
☐ H	0	Live animals will have significant manipulations or severe discomfort, etc. without benefit of anesthesia, analgesics or tranquilizers. Examples to be included in this category are: toxicity testing, radiation sickness, irritants, burns, trauma, biologic toxins, virulence challenge, prolonged: restrictions of food or water intake, cold exposure, physical restraint or drug addiction. All use of paralytic agents (curare-like drugs) must be included in this category.

Justification for category G studies and deviations from standard techniques

Describe in the box below any steps to be taken to monitor potential or overt pain and/or distress during this study and how such pain or distress will be alleviated. Be as detailed as necessary to justify your procedure.

Description:



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Certifications

By submitting this protocol I am acknowledging that I comply with the certifications included in this section (Check One)

- ☒ **Animal Use for Research.** I certify that the above statements are true and the protocol stands as the original or is essentially the same as found in the grant application or program/project. The IACUC will be notified of any changes in the proposed project, or personnel, relative to this application, prior to proceeding with any animal experimentation. I will not purchase animals nor proceed with animal experimentation until approval by the IACUC is granted
- ☐ **Animal Use for Teaching/Demonstration.** I certify that the information in this application is essentially the same as contained in the course outline and a copy of the laboratory exercises using animals is on file in the IACUC office. The IACUC will be notified of any changes in the proposed project, or personnel, relative to this application, prior to proceeding with any animal experimentation. I will not proceed with animal experimentation until approval by the IACUC is granted.

Estimate the cost of maintaining animals used in this protocol based on current per diem charge at University of Memphis.

Please specify cost per unit of time: \$ _____

Specify anticipated total costs for project duration: \$ _____

As supervisor of this project it is required that you inform your department chair concerning any animal per diem costs related to this project that are to be paid by the department.

By submitting this protocol, the Principal Investigator/Course Director indicates that the following have been considered:

1. Alternatives to use of animals.
2. Reduction of pain and stress in animals to the lowest level possible.
3. The proper needs of the animals with respect to housing and care.
4. The lowest number of animals used that will give the appropriate experimental results.
5. Use of the most primitive species that will give the appropriate experimental results.
6. Proper training of all personnel in the care and handling of the species used and in the procedures called for in this protocol before beginning the experiment/teaching or demonstration.
7. That this protocol is not an unnecessary repeat of results already in the literature or in the case of teaching/demonstrations, results that can be demonstrated using models or video material.

Principal Investigator: _____

Email Address: _____



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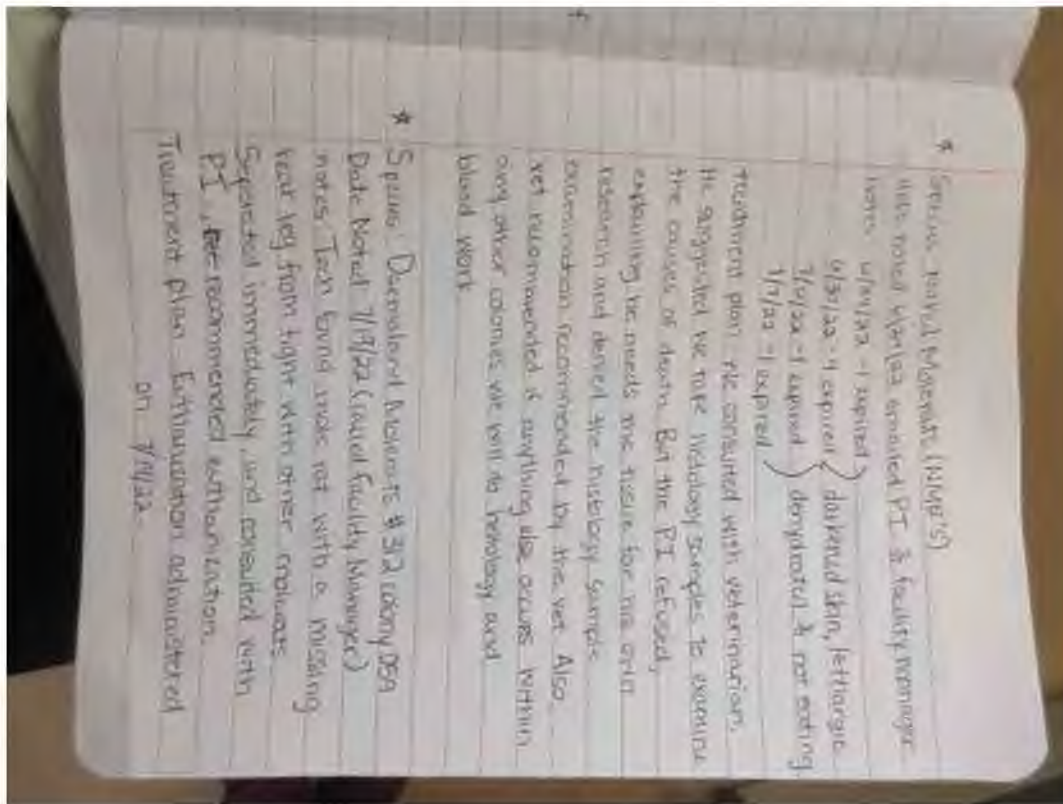
Institutional Animal Care and Use Committee
215 Administration Bldg.
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Office: 901.678.2705
Fax: 901.678.2219

Date: _____

New protocols or modifications or renewals to protocols must be submitted to the IACUC Chair by the 1st business day of the month to be considered for review during that month. Incomplete protocols will be returned to the principal investigator.

Federal Law requires that members of the IACUC be given adequate time to read and review protocols including any changes or revisions in them

IACUC Animal Use Form must be completed and submitted to iacuc@memphis.edu.



CFR:2.38(f)(1)

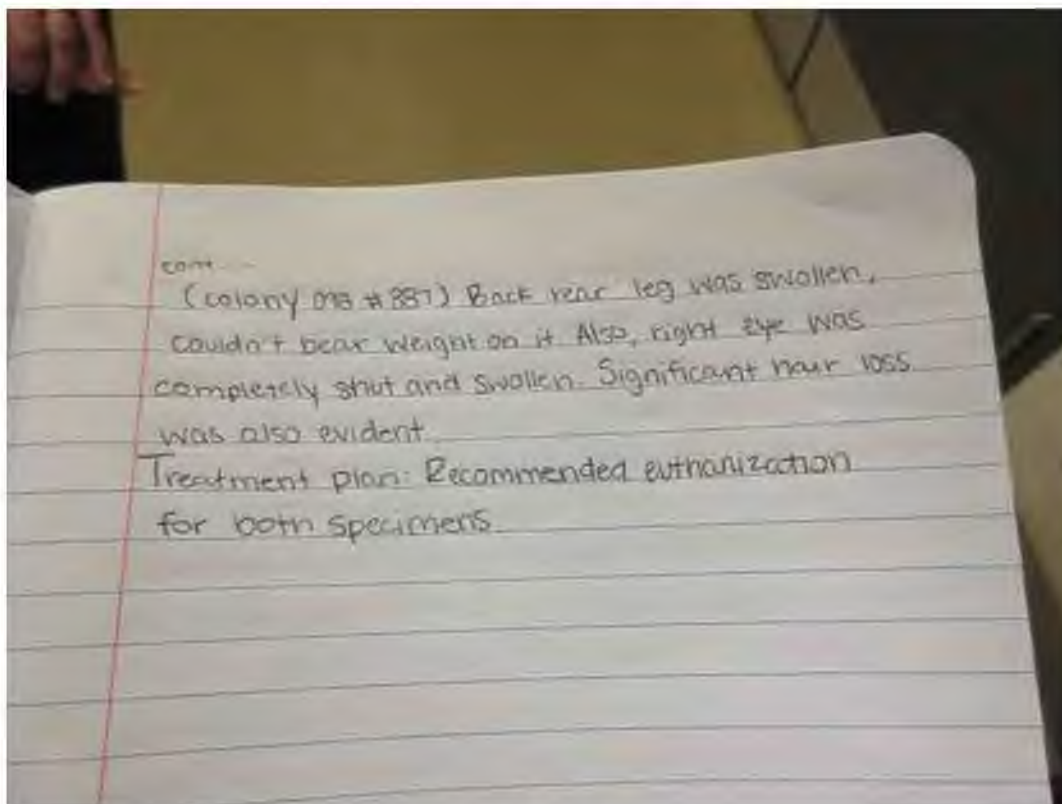
Photographer: Diana Care

Certificate: 63-R-0006

Date and Time: 8/22/2022 2:00 PM Legal Name: UNIVERSITY OF MEMPHIS

Inspection No: 2016090000812233 Facility Name: UNIV. OF MEMPHIS

Description: DMR medical records



CFR:2.38(f)(1)

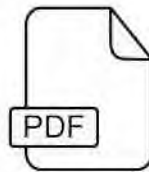
Photographer: Diana Care

Certificate: 63-R-0006

Date and Time: 8/22/2022 2:00 PM **Legal Name:** UNIVERSITY OF MEMPHIS

Inspection No: 2016090000812233 **Facility Name:** UNIV. OF MEMPHIS

Description: DMR medical records



CFR:2.31(c)(7);2.31(e)(3)

Photographer: Diana Care

Certificate: 63-R-0006

Date and Time: 8/23/2022 3:00 PM **Legal Name:** UNIVERSITY OF MEMPHIS

Inspection No: 2016090000812233 **Facility Name:** UNIV. OF MEMPHIS

Description: Protocol #0860 also known as #0796, Hamster breeding



IACUC PROTOCOL ACTION FORM

To:	[REDACTED]
From:	Institutional Animal Care and Use Committee
Subject:	Animal Research Protocol
Date:	October 26, 2020

The institutional Animal Care and Use Committee (IACUC) has taken the following action concerning your Animal Research Protocol No. 0860

0860 Breeding Colony of Siberian hamsters

- ☒ Your protocol is approved for the following period:

From: To:

- ☐ Your protocol is not approved for the following reasons (see attached memo).

- ☐ Your protocol is renewed without changes for the following period:

From: To:

- ☐ Your protocol is approved with the changes described in your IACUC Animal Research Protocol Update/Amendment Memorandum dated for the following period:

From: To:

- ☐ Your protocol is not renewed and the animals have been properly disposed of as described in your IACUC Animal Research Protocol Update/Amendment Memorandum dated _____

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] Criminal Care Facilities

**IACUC PROTOCOL
FOR USE OF LIVE VERTEBRATES FOR RESEARCH, TEACHING OR DEMONSTRATION
UNIVERSITY OF MEMPHIS**

Date submitted to Attending Veterinarian for pre-review: 03/09/2020

IACUC Protocol # 0796 Date Submitted to IACUC 6/3/2020

Dates Protocol will be in effect: from 10/26/2020 to 10/25/2023
(not to exceed three years including two yearly renewals)

Is this protocol related to an external grant or contract application? Yes ☐ No ☒

If yes, complete the following:

Agency: _____ Date Submitted _____

Grant # _____

University account for Animal Care Facility per diem charge:

If the protocol is not related to an external grant or contract application, complete the following:

University account for Animal Care Facility per diem charge: (b) (4)

Project Title: (If project relates to a grant or contract application, give that title; if multiple protocols relate to one grant, give unique titles for each protocol; if the project is related to a class, give the course name and number):

Breeding Colony of Siberian hamsters

I. Personnel

Investigator/Instructor: [REDACTED]

Department: [REDACTED]

Academic Rank: [REDACTED]

Campus phone: 2959 Emergency phone: 901-359-3671

Attending Veterinarian: [REDACTED]

Phone: 678-2359 Emergency phone: 258-1232

Breeding pairs of adult (>2 months of age) male and female hamsters will be housed in the animal facility in the Life Science building. Cages will be checked for litters daily and the birth date and number of pups born will be recorded. Pups will be weaned and separated by sex at 17-19 days of age (day 0 = day of birth). Daily maintenance and health of the animals will be monitored by members of my laboratory as well as by the veterinary staff at the University of Memphis.

C. Rationale for Involving Animals and the Appropriateness of Species and Number Used.

Indicate (**here**) briefly the short and/or long-term benefits (to humans and/or other animals) of this use of animals for research, teaching or demonstration. Provide rationale for and the number of animals to be used. In addition, state briefly why living animals are required for this study, rather than some alternative model.

Siberian hamsters are the animal model used in my laboratory. This species is not available commercially, thus, I must maintain my own breeding colony. We need to maintain ~20 breeding pairs in order to maintain genetic diversity in our colony. We need to produce enough offspring to conduct multiple experiments.

- D. Do the procedures described in B above, have the potential to inflict more than momentary pain or distress (this does not include pain caused by injections or other minor procedures)?

Yes ☐ No ☒

I have considered alternatives to procedures that might cause more than momentary or slight pain/distress, and I have not found such alternatives. As such, I have used one or more of the following methods and sources to search for such alternatives: (**check below each method used**)

- | | | |
|--|---|---|
| ☐ Agricola Data Base | ☒ Medline Data Base | ☐ CAB Abstracts |
| ☐ TOXLINE | ☐ BIOSIS | ☐ Lab. Animal Sci. Journal |
| ☐ Lab. Animals Journal | ☐ Lab Animal | ☐ Animal Welfare Info Center |
| ☐ ATLA (Alternatives to Laboratory Animal Journal) | ☐ Quick Biblio. Series | |
| ☐ Lab Animal Welfare Bibliography (QL55L27311988) | ☐ "Benchmarks" | |
| ☐ "Alternatives to Animal Use in Research, Testing and Education" | | |
| ☒ Current Contents | | |
| ☐ CARL | | |
| ☐ Direct contact with colleagues (if selected, you MUST document this below) | | |

List search words for the literature search:

Siberian Hamster husbandry

What is the length of time that the literature search covers?

1990-2020

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D. Will Anesthetic(s), Analgesic(s), or Tranquilizing agents be administered?

Yes ☐No ☒

If yes, complete this section (example below).

Species & Sex	Agent	Dose	Route	Performed by (Name/Title/Academic Rank)

E. Will euthanasia be carried out?

Yes ☒No ☐

If yes, complete this section (example below).

Species & Sex	Agent	Dose	Route	Performed by (Name/Title/Academic Rank)
Phodopus sungorus	CO2	N/A	Inhalant	[REDACTED]

12.110, describe disposition of animal(s) at conclusion of this study in box below.

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F. Will special housing, conditioning, diets or other conditions be required?

Yes ☐No ☒

If yes, please explain in box below.

G. Will animals be removed from the U of M campus at any time? Yes ☐ No ☒

If yes, please indicate to where and for how long in box below.

H. If they are to be housed for more than 24 hours outside approved facilities at U of M, provide a scientific justification in box below.

IV. Toxic and Hazardous Substances

A. Check off any of the following below that will be used in these experiments?

- ☐ Infectious agents (Fill out a, b)
- ☐ Radioisotopes (Fill out a, b, e)
- ☐ Toxic chemicals or carcinogens (Fill out a, b)
- ☐ Recombinant DNA (Fill out a)
- ☐ Experimental drugs (Fill out a)
- ☐ Malignant cells or hybridomas (Fill out a, c)
- ☐ Adjuvants (Fill out a)
- ☐ Controlled substances (Fill out a, d, e)

For each checked off category, answer the questions indicated below:

a. Identify the substance(s) and completely describe their use, including how will be injected or given to the animal(s):

b. Describe all procedures necessary for personnel and animal safety including biohazardous waste, carcass disposal and cage decontamination:

c. If transplantable tumors or hybridoma cells are to be injected into the animals, have the tissues/cells been tested for inadvertent contamination by viruses or mycoplasma? Yes ☐ No ☐

If yes, what was the result (indicate in box below).

- d. In the box below, provide a complete list of these substances, and if their use is not explicitly explained in the materials already provided, explain their use and role in the research.

Provide DEA license # covering the use of these substances:

To whom (or what entity) is the license issued?

e. Provide Radioisotope License Number:

To whom is the license issued?

**V. Categories of Animal Experimentation Based Upon Level of Manipulation and Pain:
(check off each category that is applicable to this application)**

- ☒ A. Animals will be involved in teaching, research, experiments or tests involving no pain, distress, or use of pain-relieving drugs.
- ☐ B. Animals will be subject to mild stress only (e.g., food or water deprivation of less than 24 hours for use in behavioral studies such as operant conditioning; physical restraint for less than 30 minutes), and will not be subject to surgery, painful stimuli, or any of the other conditions described below. Procedures described in this protocol have the potential to inflict no more than momentary or slight pain or distress on the animal(s)---that is, no pain in excess of that caused by injections or other minor procedures such as blood sampling.
- ☐ C. Animals will have minor procedures performed, blood sampling, etc. while anesthetized.
- ☐ D. Live animals will be humanely killed without any treatments, manipulations, etc. but will be used to obtain tissue, cells, sera, etc.
- ☐ E. Live animals will have significant manipulations, surgery, etc. performed while anesthetized. The animals will be humanely killed at experiment termination without regaining consciousness.
- ☐ F. Live animals will receive a painful stimulus of short duration without anesthesia (behavior experiments with flight or avoidance reactions--e.g., shock/reward) resulting in a short-term traumatic response. Other examples in this category are, blood sampling, injections of adjuvants, or drugs, etc.
- ☐ G. Live animals will have significant manipulations performed, such as surgery, while anesthetized and allowed to recover. Such procedures cause post-anesthetic

pain/discomfort resulting from the experiment protocol (e.g., chronic catheters, surgical wounds, implants) which cause a minimum of pain and/or distress. Also included are mild toxic drugs or chemicals, tumor implants (including hybridomas), tethered animals, short-termed physically restrained animals (up to 1 hour), mother/infant separations.

- ☐ H. Live animals will have significant manipulations or severe discomfort, etc. without benefit of anesthesia, analgesics or tranquilizers. Examples to be included in this category are: toxicity testing, radiation sickness, irritants, burns, trauma, biologic toxins, virulence challenge, prolonged: restrictions of food or water intake, cold exposure, physical restraint or drug addiction. All use of paralytic agents (curare-like drugs) must be included in this category. Describe any abnormal environmental conditions that may be imposed. Describe and justify the use of any physical restraint devices employed longer than 1 hour.

VI. Justifications for Category G Studies and Deviations from Standard Techniques

Describe in the box below any steps to be taken to monitor potential or overt pain and/or distress during the course of this study and how such pain or distress will be alleviated. Be as detailed as necessary to justify your procedure.

Daily health checks will be performed by the animal care staff as well as personnel from the PI's laboratory. Any concerns will be reported to [REDACTED]

VII. Certifications

(By submitting this protocol, I am acknowledging that I comply with the certifications included in Section VII.) (check one)

- ☒ Animal Use for Research. I certify that the above statements are true and the protocol stands as the original or is essentially the same as found in the grant application or program/project. The IACUC will be notified of any changes in the proposed project, or personnel, relative to this application, prior to proceeding with any animal experimentation. I will not purchase animals nor proceed with animal experimentation until approval by the IACUC is granted.
- ☐ Animal Use for Teaching/Demonstration. I certify that the information in this application is essentially the same as contained in the course outline and a copy of the laboratory exercises using animals is on file in the IACUC office. The IACUC will be notified of any changes in the proposed project, or personnel, relative to this application, prior to proceeding with any animal experimentation. I will not proceed with animal experimentation until approval by the IACUC is granted.

Estimate the cost of maintaining animals used in this protocol based on current per diem charge at University of Memphis.

Please specify cost per unit of time: (b) (4)

Specify anticipated total costs for project duration: (b) (4)

As supervisor of this project it is required that you inform your department chair concerning any animal per diem costs related to this project that are to be paid by the department.

By submitting this protocol, the Principal Investigator/Course Director indicates that the following have been considered:

1. Alternatives to use of animals.
2. Reduction of pain and stress in animals to the lowest level possible.
3. The proper needs of the animals with respect to housing and care.
4. The lowest number of animals used that will give the appropriate experimental results.
5. Use of the most primitive species that will give the appropriate experimental results.
6. Proper training of all personnel in the care and handling of the species used and in the procedures called for in this protocol before beginning the experiment/teaching or demonstration.
7. That this protocol is not an unnecessary repeat of results already in the literature or in the case of teaching/demonstrations, results that can be demonstrated using models or video material.

Principal Investigator/Course Director (Type Name) _____

e-mail address _____

Date 12/13/2016 _____

Federal Law requires that members of the IACUC be given adequate time to read and review protocols including any changes or revisions in them.

Pre-review of protocols by the Attending Veterinarian is required before submission to the IACUC. New protocols or modifications or renewals to protocols must be submitted to the IACUC Chair by the 1st business day of the month to be considered for review during that month. Incomplete protocols will be returned to the principal investigator.

E-mail the completed protocol to the _____

February, 2015