

**STANDARD OPERATING PROCEDURES**  
DIVISION OF COMPARATIVE MEDICINE  
UNIVERSITY OF SOUTH FLORIDA

SOP#: 455.4

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TITLE: Naked Mole Rat (*Heterocephalus glaber* ) Husbandry  
SCOPE: Animal Care Personnel  
RESPONSIBILITY: Facility Manager, Technical Staff, Veterinary Staff  
PURPOSE: To Outline the Proper Procedures for Receiving, Physical Examination, Evaluating Health Status, Handling, Care and Husbandry Practices Related to Naked Mole Rats

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**I. PURPOSE**

1. To ensure the highest quality of animal health and preclude the development of spontaneous diseases or disorders, which could compromise the integrity of studies and the interpretation of results.
2. To describe the care and health assessment for the USDA covered species: the naked mole rat (NMR).
3. To ensure personnel handling NMRs perform their duties in a manner that complies with all current governing laws, regulations, and guidelines.

**II. RESPONSIBILITY**

1. The Veterinarians oversee all aspects of animal health and are assisted by all program staff.
2. Facility Managers ensure implementation of all procedures.

**III. GENERAL CHARACTERISTICS**

1. NMRs are hairless, which makes them unable to regulate their body temperature outside a very narrow range.

7. Note: The Guide recommends a cage sanitation interval of at least weekly for most species, but this would not be appropriate for NMRs due to their sensitivity to changes in scent. Absence of scent cues or introduction of foreign scents can lead to fighting and pup cannibalism, so limiting the number of cages changed within a multi-cage colony can help ameliorate these concerns. Additionally, this species has adapted to higher levels of gases such as ammonia (NH<sub>3</sub>) and carbon dioxide (CO<sub>2</sub>), so do not require the higher frequency of cage changes or increased ventilation needed in other more common laboratory rodents, (i.e., mouse and rat).

#### IV. PROCEDURES

##### 1. Receipt

- a. Individual cage cards are prepared for each colony and include the following information:
  1. Investigator
  2. IACUC #
  3. Species
  4. Sex
  5. DOB (or age on arrival if unavailable)
  6. Body Weight
  7. Arrival Date
  8. Source
  9. USDA assigned animal number (e.g. Fiscal Year- N- # of animal)

- b. Animal Medical Records are required for all animals, and can be maintained as either individual medical records or as colony records: (see SOP #012 entitled, Animal Medical Records)

- c. Shipping crates are inspected for signs of damage and shit2 >>BDC -0.(e))JT(hi)2.152(3)2.6 (A

- c. Lighting: 24 hrs of red lights. Do not use white lights in housing room.
  2. Noise/Vibrations: NMRs are extremely sensitive to vibration and noise and disturbances can cause them to become stressed and lead to a panic response.
  3. Open and close doors slowly and quietly so they do not slam shut.
  4. Enrichment: Paper towels, cotton nestlets, and Enviro-Dry placed as needed in cages for nesting materials
  5. Bedding: Approximately ¼ inch of bedding per cage compartment or soft pelleted paper bedding-<https://www.envigo.com/7084-pelleted-paper-contact-bedding>.
- b. Cage Changing
1. Caging systems are generally composed of
    - a. Cage/tunnel system
    - b. Separate nesting chamber
    - c. Separate urination/defecation (toilet) chamber
  2. NMRs are generally docile when being handled, but bite proof gloves worn under nitrile gloves may be needed.
  3. Care must be taken when using cleaning supplies or handling with gloves, as they are highly scent-driven. A complete cage change-out can lead to increased fighting and/or mortality, so dirty bedding and fecal transfer are required to prevent detrimental effects.
  4. The caging system, except for the toilet chamber should not be cleaned unless necessary since they depend on odors in the absence of good eyesight. (See NMR Room Sheet CMDC 271)
  5. The following should be completed daily and noted on the Room Status Sheet.
    - a. Remove and throw away old food left inside each compartment.
    - b. Inspect and remove fecal pellets or mold from all compartments, including the toilet chamber.
    - c. Carefully inspect the bedding for animals/food that may be buried/deceased.
    - d. Ensure temperature and humidity requirements are within set limits and document on Room Status Sheet
    - e. Assess animal health and notify veterinary staff if any issues
    - f. Count and record any new births. If any are noted, place a cage card on the cage to indicate that the colony is not to be disturbed for 48 hours.
  6. The following should be completed daily and noted on the Room Status Sheet.
    - a. Remove and throw away old food left inside each compartment.
    - b. Inspect and remove fecal pellets or mold from all compartments, including the toilet chamber.
    - c. Carefully inspect the bedding for animals/food that may be buried/deceased.
    - d. Ensure temperature and humidity requirements are within set limits and document on Room Status Sheet
    - e. Assess animal health and notify veterinary staff if any issues
    - f. Count and record any new births. If any are noted, place a cage card on the cage to indicate that the colony is not to be disturbed for 48 hours.

- d. Remove a sample cup of dirty bedding (without fecal pellets) from the Toilet Chamber and distribute in any replaced or dumped cages in the system to maintain the scent of the colony.
- e. Toilet compartment change must be delayed by one week to help the NMR reestablish the colony scent . Replace the Toilet

#### 4. Health Surveillance

- a. Each housing room is assigned to an Animal Care Technician. Daily observations of the Animal Care Technician are recorded on the Room Status Sheet within the Room Log Book .
- b. On weekdays, health surveillance will occur twice per day, prior to 9:30 AM, and again after ~1 pm.
- c. Health surveillance on weekends and holidays will occur once per day.
- d. Observations and communications must be noted on the Room Status Sheet and the Facility Manager's Animal Health and Environmental Concern Form .
- e. Each animal/cage is observed to evaluate:
  1. Food intake
  2. Urine and fecal output
  3. Assurance of fresh vegetables and fruit are present
  4. General appearance (presence of lesions/injuries, new pups, deceased animals, disposition)
- f. Emergencies must be immediately reported to the veterinarian, which includes but is not limited to:
  1. Active bleeding
  2. Dull, lethargic, or unresponsive
  3. Ataxia, seizure, other neurologic signs
  4. Open mouth breathing, pale or blue mucous membranes
  5. Increase or excessive vocalization
  6. Limb paresis or paralysis
  7. Any evidence of trauma (fight wounds can be around the mouth with scabs usually apparent on the dorsal abdomen)
- g. Colony medical records must include, at a minimum, weekly entries made by the research staff in the Progress Notes , which at least summarize the following for the colony:
  1. An impression of overall condition
  2. Food intake and voidings
  3. Any clinical abnormalities or complications
  4. Any treatments administered in response to observed abnormalities
  5. Any experimental procedures
- h. At least monthly, each animal's microchip is scanned and the animal is weighed, along with receiving a light swab of olive oil to restore moisture to the skin. Weights are recorded and maintained in the room and in the Box Storage. The technician will send this document to the veterinarian each month to monitor any trends in weight-loss, in which case they may decide to weigh and monitor the animal more frequently.

Whenever health status/observations for an individual animal differ from colony animal's health status/observations, an entry specific to that animal must be made in the colony records. Refer to SOP #006 entitled, Animal Health and Environmental Surveillance for specific procedures of reporting and recording health concerns.

#### 5. Room Duties

- a. Upon completion of cage changing, feed and daily health surveillance, the following tasks are to be performed: (Room duties described below are minimal requirements, additional duties and frequencies are at the Facility Manager's discretion).

1. Daily - complete

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