

Sam Houston State University Science Annex

Rattus norvegicus Care

SOP #: RN-001

Date adopted : _____

Last revision : _____

Purpose

To explain the daily responsibilities associated with the care of laboratory rats (*Rattus norvegicus*).

Responsibility

It is the responsibility of the SHSU Science Annex Operations Manager to ensure that all needs for rat care are provided for while adhering strictly to the procedures outlined in this document.

It is the responsibility of the Principal Investigator to ensure that the Operations Manager is fully aware of any special requirements or treatments. Additionally, it is incumbent upon the Principal Investigator to address any care issues he or she observes with the Operations Manager.

Procedures

Rats obtained from approved vendors do not require quarantine, but should be given one week after arrival to acclimate.

Rats are typically housed in solid bottom caging with approximately 2 cm of Sani-Chips as bedding unless a departure is necessitated by experimental design.

The rodent room at the SHSU Science Annex is maintained at a consistent 21°C, however *Rattus norvegicus* can be maintained anywhere from 18-26°C depending on study requirements.

Rats at the SHSU Science Annex are maintained on a 12:12 photoperiod, however each room is controlled by an individual timer, so any day/night cycle can be implemented.

The rodent room at the SHSU Science Annex is maintained at a relative humidity of 50%, although *Rattus norvegicus* can be maintained at 30-70% humidity without adverse effects.

For enrichment purposes, rats are housed in groups (never containing more than a single male and only then for breeding purposes) whenever possible. Rats are placed into their intended study group as early as possible to reduce anxiety and aggression.

Although it is preferable to allow as much space as possible, the cages at the Science Annex (~45.5 x 23.5 cm) can house up to nine rats depending on mass. Housing densities for rats of various sizes can be found in the chart below.

Rat size	Floor space per individual (cm²)	Individuals per cage
< 100g	109.6	9
100-200g	148.35	7
201-300g	187.05	5
301-400g	258	4
401-500g	387	2
>500g	451.5	2

Rats housed singly require a justification for isolation in the IACUC protocol and must be provided with enrichment unless prohibited by protocol. Enrichment options include, but are not limited to, paper towel rolls, nestlets, pvc elbows and putting seeds in the bedding after a cage cleaning

Each cage is labeled with a cage card. Cage cards must minimally contain the following information: species, sex, number, strain, arrival date, Principal investigator and IACUC protocol number.

A daily activity log is maintained to keep track of feeding, watering, cage changing, rat condition and any change in census information.

Daily

Animals are observed daily for both general condition and cage condition and observations are recorded in the appropriate log.

Science Annex staff are to be familiar with any potential side effects or abnormal behaviors that may result from the treatments being administered.

The Principal Investigator is immediately informed of any animals showing any unanticipated (as described in the experimental protocols) indication of illness, pain or distress. These may include but are not limited to porphyrin staining, protecting, licking, biting, scratching or shaking a body part, vocalizing, restlessness, abnormal posture or gait, lack of normal interaction with surroundings, lack of mobility and failure to groom. Upon observing the animal's condition, the Principal Investigator along with the attending veterinarian will decide how to proceed.

If the problem potentially stems from stress or lack of stimulation, environmental modification options will be presented to the Principal Investigator and implemented if deemed acceptable.

If the problem stems from aggression, cage mates may need to be separated and/or euthanized at the Principal Investigator's discretion.

If illness is suspected, the attending veterinarian is contacted immediately and the entire cage is placed in the Quarantine Room, while the issue is identified.

Cages that are excessively soiled, have visibly wet bedding or have an ammonia odor are changed immediately.

When changing cages, only one cage is to be changed at a time. Rats should be transferred from cage to cage using gloved hands or forceps only.

When cleaning a rat cage, all resident rats are put into a clean cage with fresh bedding. The old bedding is disposed of into a garbage bag that will go directly outside. Cages are cleaned with dish soap and a scrub brush then treated with a veterinary disinfectant.

Replenish the feed hopper if the rats are being fed *ad libitum*. If food appears moldy, discard all food in the hopper, sanitize the cage and replace the wire lid and water bottle.

Fill water bottles with fresh water. If it appears that no water is being consumed, check the condition of the stopper and adjust or replace as necessary.

Sweep the room, including the spaces behind and beneath the racks if necessary.

Clean any soiled surfaces using an all-purpose cleaner.

Log all activity in the room's activity log.

Weekly

Regardless of cage condition, all cages are cleaned and disinfected at least once a week. A regular maintenance routine should be established to limit stress on the animals.

Change water bottles, cleaning and disinfecting the old ones in the same manner as the cages.

Wipe shelves down with a veterinary grade disinfectant.

Mop floor and disinfect with a veterinary grade disinfectant.

Monthly

Change out all wire cage tops, cleaning and sanitizing the old ones.

Wipe down all surfaces with a veterinary grade disinfectant.