

Caring for Mice

(*Mus musculus*)

The mouse was first domesticated several hundred years ago by mouse fanciers who bred mutants with various colored hair coats. The albino laboratory mouse was derived from these mice in the early 1900s. Today, there is a wide variety of inbred and transgenic mice (mice carrying genes from another organism) that are prominent models for studying human diseases, such as diabetes, cancer, and muscular dystrophy.

Healthy mice should be alert and curious. The hair coat should be smooth and shiny.

BIOLOGICAL INFORMATION

- Life span: 2-2.5 years
- Adult body weight: 20-40 g (0.7-1.3 oz); newborn: 1-1.5 g (0.03-0.05 oz)
- Sexual maturity: 6-9 weeks
- Estrous cycle: 4-5 days
- Gestation: 19-21 days
- Litter size: 6-12
- Weaning age: 21 days
- Adult daily food intake: 5-10 g ($\frac{1}{5}$ - $\frac{1}{3}$ oz)
- Activity: nocturnal

Housing Requirements

Mice are best housed in cages with solid floors and walls that are either solid or wire mesh. Plastic cages made of materials such as polycarbonate are recommended because they allow for easy visualization and are resistant to chewing. However, other materials may be used if they meet these guidelines. Secure cages lids are necessary to prevent mice from escaping; lids are usually made of wire mesh and often contain slots for the placement of a water bottle and pelleted feed.

Bedding should be used in the cages to absorb urine and to allow the animals to modify their environment through burrowing and nest building. Useful bedding materials are wood shavings or chips, cellulose chips, and corncob pellets. Cedar chips or pine bedding should not be used; they are not absorbent and are very abrasive. Additionally, cedar oils are toxic and can cause respiratory and liver damage. Bedding should be changed several times a week and cages should be cleaned at least weekly with detergents and water, and then rinsed well and allowed to dry.



The cage environment for mice can be enhanced by using exercise wheels, plastic “igloos,” and hard plastic toys such as bones and tubes.

Mice should be kept in a room that has a stable temperature within a range of 68° to 76°F (20-25°C).

The light cycle for mice should be approximately 12 hours of light and 12 hours of dark. Mice are nocturnal and are most active at night. The retinas of albino mice are sensitive to bright light; over time, these mice may become blind if exposed to high light intensities. (Albino mice are recognized by their white fur and pink eyes.)

Food and Water

Commercial mouse feed provides a balanced diet that is specifically formulated for the nutritional needs of mice. It usually is manufactured in a pelleted form. Food should be available at all times. Feeding rodents sunflower or other seeds can lead to obesity due to high fat content and low nutritional value, and should be avoided. Young mice at weaning age can easily chew pelleted feed, so an intermediate form of diet is unnecessary. Pelleted feed can be presented in an elevated hopper or in a dish on the cage floor. Mice have incisor teeth that grow throughout life, and pelleted feed helps prevent overgrowth.

Mice are naturally coprophagic (eating their own feces); they derive nutritional benefit from this behavior.

Water should be available at all times. Water is best provided in a bottle with a sipper tube. If there are young mice in the cage, care must be given to ensure that the sipper tube and feed are within their reach. The water bottle must be well-stoppered so



Diseases

Mice are hardy animals, but they may become ill due to viral, bacterial, or parasitic infections. General signs of illness in mice are a hunched posture, decreased activity, weight loss, and a rough hair coat. Signs associated with respiratory infections include a nasal discharge, sniffing, and labored breathing. Infections of the intestinal tract are infrequent but can cause diarrhea. Mice infested with fur mites may have scratches or self-inflicted bite wounds.

Whenever possible, obtain mice from sources that have a known history of being disease-free.

Mice, like other animals and humans, may have diseases more common in old age, such as cancer and arthritis.

Mice housed in groups will commonly develop a hierarchy of dominance that may lead to fighting and barbering. Barbering is biting the fur off specific areas of the subordinate animal, often on the head or muzzle, giving the mouse a shaved appearance. Barbering is more likely to occur when males are group-housed. Barbering is okay, but the mice should be monitored for fighting and injuries. To help alleviate fighting and the wounds associated with biting, it is best to initially place only young mice together within a cage. Placing toys and other enrichment devices in the cage often eliminates barbering.

Human Health Concerns

Rarely, pet mice may harbor the virus lymphocytic choriomeningitis virus (LCMV), which can cause a flu-like illness in people. Wild rodents are the primary carriers of this virus; if they are able to gain entry into the school, they could be a source to contaminate classroom rodents. Washing hands with soap and water after handling pet rodents is recommended.

People may develop allergies to mice.

Seek the advice of a physician if a human disease is suspected due to contact with mice.

Resources

1. Mice, chapter in *Assistant Laboratory Animal Technician Training Manual*, 2008, American Association for Laboratory Animal Science, Memphis, TN.
2. Contact your veterinarian or a local veterinary school or veterinary technology program to get more information about this animal species.

that water does not leak into the cage, potentially chilling animals or drowning them.

Handling

Mice will bite, so care must be taken to avoid being bitten. Prior to picking up a mouse, be careful to not startle it. Unlike with rats, stroking the back of a mouse is not helpful in calming the animal and may result in being bitten.

A mouse should be picked up by gently, grasping its tail near the base with one's thumb and forefinger and enclosing its body with a cupped hand. It is important to grasp the tail near the base to prevent breaking the tail. Also, do not dangle the mouse by the tail, which would frighten it. Instead, when you pick up a mouse this way, immediately cup it in your hand or transfer the animal to a solid surface.

Some of this material has been adapted from the Assistant Laboratory Animal Technician Training Manual, American Association for Laboratory Animal Science, Memphis, TN.