

# Care of Mice and Rats

## Introduction

Domestically raised mice and rats are very popular pets in the United States. They are readily available, relatively inexpensive and easy to care for, and usually enjoy human handling.

These animals have been used extensively in research laboratories for many years. Consequently, their medical problems (many of which are inherited disorders resulting from intensive inbreeding) have been traditionally approached on a group basis rather than on an individual basis. As a result, very little practical and useful information exists on the medical care and treatment of individual pet mice and rats. Furthermore, even less information is available to the pet owner on responsible home care of murine rodents and recognition of their potential medical problems.

## Mice

The mouse, bearing the scientific name *Mus musculus* (interesting in light of the fact that the Great Blue Whale's scientific name is *Balenoptera nusculus*), is thought to have originated in Asia. Its tremendous adaptability, long-time association with people and our dwellings, and unbelievably prolific breeding potential (one reference cites one million descendants from one breeding pair in 1 ½ years) has allowed mice to enjoy a worldwide distribution. Mice are timid, social and territorial animals that spend a disproportionate amount of time in the wild pursuing an omnivorous (animal and plant material) diet. Feeding is most often carried out at night to escape predation. Laboratory and pet mice are not strictly nocturnal (night-active) but tend to exhibit alternating periods of activity and rest throughout the day and night.

In the wild, mice may exhibit aggression among themselves, though establishment of a social "pecking order" tends to reduce this potentially injurious behavior. Individual males apparently dominate groups of mice using the social pecking order. Females with litters may fight to defend their nests.

Domestication and intensive breeding of mice have resulted in a tremendous genetic diversity of mouse populations. The Swiss Albino mouse has become one of the most popular strains for pets but many others are commonly used in this capacity.

## **Rats**

The rat, bearing the scientific name *Rattus norvegicus*, apparently also originated in central Asia. Rats were domesticated in the 17<sup>th</sup> century and the process has continued to the present, resulting in many breeds that are docile and of excellent pet quality. Rats, like mice, have been used extensively in biomedical research. Most of the tremendous numbers of breeds and strains currently in existence have resulted from intensive inbreeding efforts by research laboratories over the years.

Wild rats are found in all kinds of habitats and nearly all land masses of the world, an enduring tribute to their adaptability and their long-time association with people. They tend to be omnivorous (feed on plant and animal material) but exhibit tremendous opportunism in their feeding habits when living in and around human dwellings. Wild rats tend to be nocturnal (night-active) animals but often use daylight hours to forage for food. Laboratory rats, like laboratory mice, on the other hand, are not strictly nocturnal.

Mice and rats are both relatively short-lived animals, which can be disconcerting to owners of these pets. Some, however, feel that having their children experience the relatively short period of companionship and subsequent death of pet mice and rats is a meaningful way to expose children to the “ups and downs” of life.

### **Handling and Restraint**

As stated above, domestic mice and rats generally tolerate gently handling, though both may bite if startled or handled roughly. Mice are more likely to bite than rats under these circumstances. In fact, mice housed alone are more likely to be aggressive with a handler than those housed in groups. Cage territoriality (possessiveness) may be exhibited by some pet rats. We have encountered a large number of pet rats, normally docile in nature, that attack the fingers or hands of a handler opening and entering its enclosure. This aggressive behavior is not noted when attempts to pick up these rats are made outside of their enclosures.

It is customary to pick up a pet mouse by gently lifting it up by the tail and placing it into a cupped hand. If a more secure hold is necessary (giving medications or food orally), the handler may grasp or pinch as much skin as possible over the neck, just behind the head. The mouse can then be picked up and turned over on its back by rotating the wrist. The tail can be restrained by gently grasping it between the fourth (ring) and fifth (pinkie) fingers of the same hand.

Rats can be lifted by their tails but great caution must be exercised in doing so. The skin of a rat's tail can easily tear, so it is best to grasp only the base of the tail. Furthermore, suspending the entire weight of a rat by its tail is, no doubt, painful for the rat. Therefore, this practice should be only momentary. Tail-lifting a rat that is grasping a fabric (wire mesh, etc) may injure the tail and may also break or tear the toenails.

The best way to pick up a pet rat is to place one hand over the back, just behind the head, gently grasp it around the ribcage, and lift it upward. The rat can then be gently cradled against the handler's body, using minimal restraint.

Potentially aggressive or known vicious rats and mice can be captured and restrained using gloves and small towels to protect the hands of the handler. Cage-aggressive rodents should be allowed to come out of their enclosure before an attempt is made to pick them up.

### **Housing**

Proper housing is a major factor in the maintenance of healthy mice and rats. The psychosocial well-being of the animals must be a primary consideration. Mice and rats can be housed within enclosures made of wire, stainless steel, durable plastic or glass. The last 3 materials are preferred because they resist corrosion. Wood and similar materials should not be used in construction of enclosures because they are difficult to clean and cannot withstand the destructive gnawing of rodents. The construction and design of the enclosure must ensure that the resident(s) cannot escape. Furthermore, the enclosure must be free of sharp edges and other potential hazards.

The enclosure must be roomy enough to allow the rodents to pursue normal movement and breeding activity, if the latter is desired. Visual security (a place into or under which the rodents can retreat for privacy) should be provided, as well as exercise wheels for optimum mental and physical health. Rats, in particular, tend to be burrowers and seem to enjoy hiding under things for extended periods.

Enclosures should be easy to clean, well lighted and adequately ventilated. Bedding must be clean, non toxic, absorbent, relatively dust-free and easy to replace. Shredded paper, wood shaving and processed corn cobs are preferred bedding materials. Tissue paper or cotton is often supplied to breeding rats for nest-building material.

Pet mice and rats seem most comfortable when they are spared exposure to excessive noise, needless excitement and confusion, and other similar or perceived stresses. Sudden environmental temperature changes should also be prevented because pet rodents do not tolerate them well.

Mice can be aggressive toward one another, so great care should be taken when housing more than one mouse within the same enclosure. Newly assembled male groups and new males entering established territories, in particular, are likely to fight, so it is wise to always house male mice separately. Domestic female mice seldom fight unless they are defending their nests.

Rats are more communal and, in contrast to mice, several males and females may be housed within the same enclosure, provided that it is roomy enough. In fact, young rats are raised by the group and nursing responsibilities are shared between females. These nursing females may fight among themselves. Males may occasionally bother the young, but aggression between rats is generally infrequent (in contrast to mice).

Every effort to prevent the escape of pet rodents should be made because they can be a tremendous nuisance when allowed the “run of the house.” Escaped rats tend to eventually return to their enclosures, whereas escaped mice tend to fend for themselves within the home and do not return to their enclosures.

### **Hygiene**

The frequency with which the enclosure should be cleaned depends on its design, the materials out of which it is made, and the number of rodents within it. As a general rule of thumb, however, the enclosure and all cage “furniture” should be cleaned and disinfected once weekly. The food and water containers should be cleaned and disinfected once daily. More than one set of containers should be maintained, and the soiled set should be washed in the dishwasher if possible.

Vigorous scrubbing of the enclosure and “furniture” with hot water and soap and a thorough rinse should be followed by the use of a disinfectant. Vinegar is often required to remove the scale deposited by rodent urine.

### **Food and Water**

Good-quality food and fresh, clean water must be readily available at all times. Laboratory rodent chows (milled pellets or blocks) are preferred. These foods are readily available from feed stores, pet shops, and suppliers or users of such commercial diets. Kibble-type kitten chows can be substituted. The rodent diets containing seeds and nuts are not recommended because they contain too many fats and oils, provide inadequate protein levels, and are not necessarily balanced. Obesity is a common problem with pet rodents (especially rats). Consequently, oil-rich and high-fat foods must

be avoided. Healthy maintenance of small pet rodents depends upon their receiving foods with relatively high protein levels (16% or more). Seed/nut-based diets generally fail to meet this requirement.

Table scraps and alternative foods can be offered to pet mice and rats, but these should be limited to healthful items (whole-wheat bread, non-fat yogurt, fresh fruits and vegetables, lean protein sources such as tuna, chicken, etc) and should not exceed 15% of what the pet consumes daily. If the above feeding recommendations are followed, malnutrition and related problems are very unlikely among pet rodents. Vitamin or vitamin/mineral preparations and salt block (licks) are generally unnecessary.

The food can be “dispensed” from a specially designed wire or mesh cage top that provides a generous depression into which the dry food is supplied and through which the food can be eaten by the rodent(s). This food delivery system obviously depends upon the animals’ ability to easily reach the food by standing on their hind legs. This type of arrangement is, therefore, not recommended when there are juvenile rodents within the enclosure preparing to wean. This food delivery system is used most often in laboratory situations. It has 2 major advantages. One is that there is much less wasted and discarded food. The other is that there is little opportunity for fecal (stool) and urine contamination of food. Metal “hoppers” can be used for dispensing food or it can simply be placed in heavy ceramic crocks (preferred because they cannot be easily tipped over) or similar containers.

Water is most easily made available and kept free from contamination by providing it in water bottles equipped with “sipper” tubes. The tubes can become clogged with food debris, so they must be checked daily. The dispensing end of the tube must be accessible to the smallest rodent within the enclosure. Before juveniles are fully weaned, they begin drinking water and eating pelleted foods, so these essentials must be accessible to them at this time. Many deaths involving very young rodents of this age are due to starvation and dehydration.

Food consumption varies with the quality of the food(s) offered, the age, health and breeding status of the individual, the environmental temperature, and the time of day. Both mice and rats tend to feed at night, though daytime feeding among both is quite common. Mice are voracious feeders and consume proportionately more food per day than rats. This is because of their smaller body size and relatively high metabolic rate. Rats tend to be more reserved in their feeding habits. In fact, rats show great caution and selectivity while eating and tend to avoid unfamiliar foods.

## **Breeding Considerations**

### **Sexing**

Sexually mature mice and rats must be properly paired to breed successfully. A single male mouse may be included in an enclosure with one or more female mice without difficulty. Including more than one male mouse in this situation invites fighting between them. By contrast, more than one male and female rat may be housed together for breeding purposes within the same enclosure without aggressive displays.

Sexually mature male mice and rats usually exhibit a prominent scrotum. Sexually mature female mice and rats usually exhibit a prominent double row of nipples. Furthermore, the distance between the rectal opening and the penis of the male is greater than the distance between the rectal opening and the urinary opening of the female in both mice and rats.

### **Mice**

Female mice should not be bred before 50 days of age. They are continuously “polyestrous,” which means that they come into heat at fairly regular intervals (every 4-5 days) throughout the entire year unless they are bred. The period during which the female is receptive to the male and allows breeding is about 12 hours and usually occurs at night. Female mice can come back into heat within 14-28 hours after giving birth to a litter. This is called a “postpartum estrus,” which means that they can be nursing a litter and pregnant at the same time.

Pregnancy lasts an average of 3 weeks but can be extended as much as 10 days longer if the pregnant female is suckling a previous litter. Litter sizes average 10-12 pups, though it is not unusually for a female’s first litter to be smaller in number. Litter sizes decrease as breeding females age. Though mutilation and cannibalism of the young are rare, it is wise not to disturb mice for the first 2-3 days after giving birth. Pups are usually weaned at about 3 weeks of age. The female resumes her breeding cycle 2-5 days after her pups have been weaned (unless she was bred during her postpartum estrus).

### **Rats**

Female rats should not be bred before 65 days of age. They are continuously “polyestrous,” which means that they come into heat at fairly regular intervals (every 4-5 days) throughout the entire year unless they are bred. The period during which the female is receptive to the male and allows breeding is about 12 hours and usually occurs at night. Female rats can come back into heat at 48 hours after giving birth to a litter. This is called a

“postpartum estrus.” This period of receptivity is not used when breeding rats because the breeding male is removed from the enclosure just before the female delivers her litter because of the high probability of injury to the new pups by the male

After mating, a white, waxy substance, called a “copulatory plug,” is visible within the female’s vulva for 12-24 hours. It is not uncommon to find these plugs within the enclosure after they have been discharged.

Pregnancy lasts an average of 3 weeks. Litter sizes average 6-12 pups, though it is not unusual for a female’s first litter to be smaller in number. Litter sizes decrease as breeding females age. Female rats should not be disturbed for the first few days after delivery because stressed females may destroy their pups. Excessive handling, loud noises, and even insufficient nesting material have all been implicated with this destructive behavior. Pups are usually weaned at about 3 weeks of age. The female resumes her breeding cycle 2-5 days after her pups have been weaned.

### **Disease Prevention**

Strict quarantine or isolation of all newly acquired rodents for at least 4 weeks greatly helps prevent disease among pet mice and rats. This recommendation is especially important for pet rodents because of the severity of certain diseases that they may harbor without showing signs of illness.

Mice and rats should be purchases from reputable sources. The prospective pet owner should never purchase an obviously or even suspiciously ill rodent. Furthermore, it is never wise to purchase an animal that has been in contact with one appearing ill, even though the intended purchase appears perfectly healthy. These risky purchases never have happy ending and sometimes unnecessarily expose healthy pet rodents to serious and even life-threatening disease.

Laboratories associated with universities, colleges and research institutions most often purchase mice and rats from pathogen-free (disease-free) colonies. This is the preferred source for pet mice and rats, but purchases from these sources are not always practical or possible.

Rats and mice are especially sensitive to the irritating effects of ammonia. This chemical builds up quickly in the bedding from the relatively large volume of urine excreted by pet mice and rats. Bedding must be changed 2-3 times each week or more often if necessary. Furthermore, ventilation must be adequate to reduce or eliminate the irritating effects of ammonia on the respiratory lining of pet rodents.

## **Conditions Requiring Veterinary Attention**

### **Obesity**

The tendency to become overweight (often grossly overweight) is more often a problem of pet rats than mice. Overindulgent pet owners and the feeding of diets rich in seeds and nuts are most often responsible for this condition. Owners of pet rats must resist the temptation to feed “junk food,” such as french fries, doughnuts, cookies and candy. Commercial diets specifically designed for rats are always preferred and can be supplemented with whole wheat bread, dry cereal, pasta, fruits, vegetables and non-fat yogurt.

### **Overgrown Incisors**

The incisor (front, gnawing) teeth of all rodents and rabbits grow continuously for the life of the individual. The continual wear between the uppers and lowers usually prevents overgrowth of the teeth. Hereditary abnormalities of the jaw bones and/or teeth, abscessation of the incisor teeth, or injury to the jaw may result in malocclusion (improper meeting of the upper and lower incisors). Malocclusion, in turn, results in overgrowth of one or more of the incisors, with subsequent injury to the mouth. Mice and rats with this problem must have their overgrown incisors trimmed periodically by an experienced veterinarian or veterinary technician.

### **Tumors**

Both mice and rats are very susceptible to formation of tumors. Rats over 2 years of age are reported to have an 87% chance of developing one or more types of tumors.

Mice frequently develop tumors representing a wide variety of tissue types. The tumors may be external or internal. Leukemia (cancer involving the white blood cells) is quite common in mice as well.

Both male and female rats develop benign mammary (breast) tumors, and females develop benign tumors of the uterine and vaginal linings. These are the most common tumors of pet rats. Because rats have mammary tissue in locations beneath the skin other than along the underside of the belly, it is not uncommon to find lumps and bumps representing mammary tumors over the shoulders, flanks and base of the tail. These tumors are relatively easy to surgically remove under general anesthesia.

Owners of pet mice and rats should seek veterinary attention at once after discovering a lump, bump or unusual mass protruding from a body opening. The mass can be surgically removed by the veterinarian and

biopsied to determine its exact identity (tissue type, benign vs malignant, etc) which in turn, helps to determine the long-term outlook for the patient. Tumors tend to grow continuously larger and may ulcerate and become infected if they reach very large size. For this reason, it is always preferable to remove them when they are small.

### **Chronic Murine Pneumonia (Murine Mycoplasmosis)**

Chronic murine pneumonia (CMP), or murine mycoplasmosis is the most significant and serious bacterial infection of mice and rats. It is caused by the rather unusual bacterium, *Mycoplasma pulmonis*. This organism is relatively difficult to isolate because it cannot be grown in the laboratory using ordinary culture methods. This makes diagnosis of CMP more difficult except for the fact that the disease is so very common and well recognized. For this reason, CMP is usually diagnosed by signs of illness, without attempts to isolate the causative bacterium.

Signs of CMP include sniffing, sneezing, squinting, red-brown tears, rough hair coat, and labored and audible respiration. If the inner ear becomes involved, a severe, often incapacitating, head tilt usually develops. In colony situations, this disease can seriously affect the reproductive capacity of female rodents, resulting in infertility and reduced litter sizes.

Because this disease tends to have a very chronic (long-lasting) course, afflicted individuals should receive antibiotic treatment as soon as the first signs are recognized. Antibiotics can be added to the drinking water for long periods. Individuals exhibiting serious, life threatening signs must be treated aggressively with injectable antibiotics if there is any hope of helping them. Frequently, other harmful bacteria complicate CMP. This often necessitates use of multiple antibiotics.

Elimination of the *Mycoplasma pulmonis* organism from infected individuals is regarded by most experts as a practical impossibility. However, early treatment reduces the severity of the disease in affected rodents.

The outcome of treatment is always unpredictable because there are so many factors that can have an influence on it: individual susceptibility and resistance to the causative agent; age, physical condition and nutritional status of the individual; and the presence of complicating factors (other bacterial and/or viral infections, high levels of ammonia within the enclosure, etc).

The bacterium responsible for CMP, *Mycoplasma pulmonis*, is highly contagious. It may be transmitted between mother and offspring in the womb during embryonic life and by direct contact after birth. Transmission

among infected and uninfected older rodents results from exchange of respiratory aerosols and sexual activity.

Rabbits, guinea pigs, and other rodents may carry the causative agent but do not manifest signs of disease. Caution must, therefore, be exercised when allowing contact between murine rodents and these potential “carriers.” Mice and rats, too, may carry the *Mycoplasma pulmonis* organism without showing obvious signs of illness. This is especially true of newly acquired mice and rats. This fact underscores the importance of restricting contact between mice and rats of unknown health status and those whose health status has been proven by remaining disease-free for relatively long periods. Furthermore, all newly acquired rats and mice should be quarantined (strictly confined from other pet rodents) for at least 4-6 weeks before contact with them is permitted. Any mouse or rat exhibiting respiratory signs (no matter how mild) should never be housed with or near a healthy pet mouse or rat.

The severity of CMP can be increased substantially by any agent that harms the respiratory linings. Other bacterial and/or viral infections and exposure to the irritating chemical effects of ammonia from urine with poorly maintained enclosures can complicate CMP, making the disease far more deadly.

### **Tyzzler's Disease**

This disease most often infects gerbils and mice, though rats also are susceptible. It is caused by the bacterium, *Bacillus piliformis*, which is usually transmitted by eating contaminated food and water. The bacterium may survive in spore form for extremely long periods in soil, bedding and feed and is, therefore, highly resistant.

Signs of infection are often inapparent but may include lethargy, rough hair coat, and sudden death. Another form of the disease results in chronic wasting and death. Diarrhea may or may not be noted.

The disease is difficult to diagnose in individuals before death. It is considerably easier to diagnose during an autopsy. Sacrificing 1-2 individuals of a large group and performing autopsies on them are recommended to successfully treat and perhaps spare the majority of the group.

Specific antibiotics must be used early in the course of the disease. Some evidence indicates that this disease can be transmitted to pregnant women. Therefore, all necessary precautions should be taken to prevent this possibility.

## **Miscellaneous Bacterial Infections**

A wide variety of other bacteria can cause illness in pet mice and rats. Your veterinarian is best equipped to diagnose and prescribe medications for these diseases.

Wounds (from fighting and other forms of trauma) are commonly infected with bacteria that already exist within the living quarters. Abscesses commonly result from wounds when they have gone unnoticed and untreated. Successful treatment of certain wounds (especially long and deep cuts) and abscesses requires veterinary intervention. Abscesses usually must be surgically opened because the relatively solid nature of rodent pus precludes lancing and draining them.

## **Viral Infections**

Numerous viruses can infect mice and rats. Only a few of the most important viral infections among them will be discussed.

**Sendai Virus Infection:** In many mouse colonies, Sendai virus infection is the most significant and serious respiratory disease. It often complicates chronic murine pneumonia, increasing the death rate. This virus is very unlikely to infect pet mice unless they were acquired from a colony with this infection already established within its members.

Nursing mice and those being weaned are the most commonly and seriously infected. Adult mice may become infected but rarely show signs. Signs of the infection include labored breathing, rough hair coat, weight loss and death. Bacterial infections complicate the picture and usually increase the death rate.

There is no specific treatment for this disease. A commercial vaccine is available but it is only of practical use with large colonies of susceptible mice.

**Sialodacryoadenitis:** Sialodacryoadenitis is a highly contagious viral disease of rats and recently weaned mice. Initial signs include squinting, blinking and rubbing of the eyes. Later, sneezing and swelling in the neck region are noted. As the disease progresses, swellings below or around one or both eyes, bulging of the eyes, red-brown tears, and self trauma to the eyes are noted. Respiratory signs also may occur

There is no specific treatment for this viral disease. This virus is very unlikely to infect pet rats and mice unless they were acquired from a colony with this infection already established within its members.

**Mousepox (Ectromelia):** Mousepox is a highly contagious viral disease of mice that was only recently recognized in the United States. The mouse is the only natural host of the virus.

The acute (sudden onset) form of the disease affects the entire body. Clinical signs include lethargy, hunched posture, rough hair coat, diarrhea, inflammation of the eye membranes, swelling of the face and legs, and death. Another form of the disease results in a body-wide skin rash. Soon, the skin becomes swollen and ulcerated. Because of the resulting pain and discomfort, afflicted mice begin to chew on themselves. This behavior often becomes obsessive, resulting in amputation of appendages.

There is no specific treatment for this viral disease. This virus is very unlikely to infect pet mice unless they were acquired from a colony with this infection already established within its members.

## **Parasitic Infections**

**External Parasite Problems:** Pet mice and rats may be infested with a variety of external parasites. Mites, nearly microscopic, spider-like organisms, live on the skin surface and feed primarily on skin debris. They are transmitted by direct contact between infested and uninfested rodents. Signs of infestation range from mild scratching to severe scratching, with hair loss and ulceration of the skin.

A veterinarian should be consulted if mite infestation is suspected. Microscopic examination of a scraping of the skin is necessary to confirm the diagnosis. Treatment may include an injectable drug (ivermectin) that has proven very effective in treating mange in a wide range of animals.

Lice may also parasitize the hair coats of pet mice and rats. They are flattened, wingless insects that suck tissue fluids and blood from the skin of the host. Lice are larger than mites and can usually be seen without a magnifying lens. Lice are most often transmitted by direct contact with infested bedding and between infested and uninfested individuals.

The lice of mice and rats are found most often on the neck and body. They suck blood and can, therefore, cause anemia (sometimes death) and transmit bloodborne diseases to rodents. Louse infestations may also cause scratching, hair loss and skin wounds. A veterinarian should be consulted if louse infestation is suspected.

**Intestinal Parasite Problems:** Tapeworms and pinworms are the most common intestinal parasites of pet mice and rats. They often go undetected unless present in large numbers. Signs of infection may include weight loss, inactivity, inappetence, constipation, and excessive licking and chewing of the rectal area and base of the tail.

Stool examination should be conducted by a veterinarian to diagnose these parasitisms. Appropriate treatment will be recommended by the

veterinarian. Pinworms are especially difficult (sometimes impossible) to eliminate from mice and rats.

Transmission of these parasites to people is possible but unlikely. Therefore, great care should be taken when handling and disposing of rodent feces. Furthermore, contact between pet mice and rats, their feces, and young children should be limited and always supervised by adults.

### **Miscellaneous Conditions**

**Red-Brown Tears of Rats:** Rat owners, at some point, notice red-brown tears staining the eyelids, nose and sometimes the front paws of their pet rats. This substance is always mistaken for blood. It is actually a normal secretion from a large gland behind the eyes. Red-brown tears are noted most often in response to stressful situations (restraint, fright, illness).

**Cannibalism:** Female rats (mice much less often) disturbed shortly after giving birth to a litter may destroy the pups and eat them. Male rats also engage in the same behavior. For these reasons, it is important not to disturb female rodents for 2-3 days after they have given birth. Male rats must be removed from enclosures just before females deliver their litters.

**Skin Disease:** There are many causes of skin disease in pet mice and rats. Numerous infectious agents, including bacteria, viruses, fungi and parasites, may be involved. Cage-mates may be responsible for hair loss and/or wounds to the skin. Allergies are also a suspected cause of skin disease of pet rodents. In these cases, it is wise to replace the bedding being used with plain white, unscented paper toweling. A veterinarian should be consulted when pet mice and rats exhibit signs of skin disease.

### **Human Allergies to Pet Mice and Rats**

Human allergies to rodents are common. The signs can be serious, even life-threatening. This problem is most frequently reported among laboratory personnel, but individual pet mouse and rat owners are equally vulnerable.

The offending allergens may be rodent skin dander and hair, or the proteins in aerosolized rodent urine. Signs among allergic people may include runny eyes and nose, sneezing, congestion, coughing, shortness of breath, and anaphylactic shock. Some people develop a rash and/or hives, especially in areas contacted by the claws or hair of a rodent.

Allergy to a pet mouse or rat must be considered if someone in a household develops any of these signs. The medical doctor consulted about the problem must be made aware of the existence of a pet rodent within the home.

### **Mouse – Quick Facts**

- Scientific name – *Mus musculus*
- Life Span – 2-3 years
- Potential Life Span – 4 years
- Desirable Environmental Temperature Range – 65-80° F
- Desirable relative humidity range – 30-70%
- Age At Onset Of Puberty – 28-40 days
- Estrous (heat) Cycle Length – 4-5 days
- Estrus Length (period during which female is receptive to male for copulation) – 12 hours
- Gestation (pregnancy) period – 19-21 days
- Average Litter Size – 10-12 (first litter smaller)
- Weaning Age 21-28 days

### **Rats – Quick Facts**

- Scientific name – *Rattus norvegicus*
- Life Span – 3-4 years
- Potential Life Span – 7 years
- Desirable Environmental Temperature Range – 65-80° F
- Desirable relative humidity range – 30-70%
- Age At Onset Of Puberty – 50-60 days
- Estrous (heat) Cycle Length – 4-5 days
- Estrus Length (period during which female is receptive to male for copulation) – 12 hours
- Gestation (pregnancy) period – 21-23 days
- Average Litter Size – 6-12 (first litter smaller)
- Weaning Age 21 days