

## Gerbils

### Gerbil Facts

Scientific Name:	Meriones unguiculatus
Life Span:	2 – 4 years
Environment Temperature Range:	65F - 85F
Relative Humidity Range:	30 – 50%
Breeding Range:	10-12 weeks
Estrous Cycle:	4-6 days
Gestation Period:	24 – 26 days -- 27 – 48 days (with lactation)
Litter Size:	3 – 7 young
Weaning Age:	21 days

The native color variety is agouti, mixed brown with dark pigmented skin, light brown to white ventrum (chest and abdomen) and darker dorsal (back) coat. Other color varieties that exist include black, white and cinnamon. Color combinations of black or brown with a white band over the chest area are also common. Gerbils have a marking scent gland, which appears as a tan colored hairless area in the middle of their abdomen.

The gerbil is a curious, friendly and nearly odorless rodent, which makes it a very popular pet. They have adapted well to captivity and tend to be relatively free of naturally occurring infectious diseases. These rodents rarely bite or fight, are easy to keep clean and care for and are relatively easy to handle. These qualities make the gerbil an ideal pet as well as laboratory rodent.

## Diet and Handling

### Diet

As with any pet, good quality food and clean, fresh water must be provided at all times. In the wild, these animals feed on leaves, seeds and roots. Current recommendations for feeding in captivity are pelleted rodent ration containing 20% - 22% protein. These rations are typically processed as dry blocks or pellets designed for rodents. Seed diets are also “formulated” and sold for gerbils, but these diets should only supplement the basic rodent pellet. Gerbils prefer sunflower-based diets to pellets, but these seeds are low in calcium and high in fat and cholesterol. When fed alone, seed diets often lead to obesity and potential nutritional deficiencies. Other supplements to the diet may include sugarless breakfast cereals, whole wheat breads, pasta, cheese, fresh fruits and vegetables; all fed in moderation. Gerbils eat approximately 5 to 8 grams of food daily; eating both day and night.

Although gerbils in the wild require little water to drink since they derive most of their fluid from the foods they ingest, caged gerbils must be provided with a continuous source of clean water. Inadequate water consumption can lead to infertility, lower body weight and eventually death. Water is easily provided in water bottles equipped with sipper tubes. This method also helps keep the water free from contamination. Always make sure that the tubes are positioned low enough to allow the pet easy access. The average adult gerbil drinks approximately 4 to 10 ml of water daily. Although this amount is only a fraction of the total bottle volume, fresh water should be provided daily, not only when the bottle empties.

### Handling

The gerbil's natural curiosity and friendly disposition makes it fairly easy to handle. Most gerbils will approach a hand introduced into their cage and can be easily scooped into the palm of the hand or picked up by grasping the

base of the tail. Be careful only to grasp the gerbil by the base of the tail, for the skin over the end of the tail is easily pulled off. Gerbils not accustomed to being handled may jump and run, but rarely turn aggressive. Once picked up, the gerbil can be restrained by one hand with the over-the-back grip. This is done by scruffing the loose skin over their neck between your thumb and index finger while the base of the tail is held between your fourth and fifth fingers. The gerbil may struggle when held on its back or manipulated, so be careful not to let it escape.

## Housing and Breeding

### Housing

Several types of cages are available which are suitable for housing gerbils. Many of these units come equipped with cage “furniture” such as exercise wheels, tunnels and nest boxes as added luxuries. Such accessories, as well as sufficient litter depth within which to burrow, are desirable for the pet’s psychological well-being.

Cages should be constructed with rounded corners to discourage chewing. Gerbils will readily chew through wood, light plastic and soft metal; so recommended caging materials are wire, stainless steel, durable plastic and glass. Beware that glass and plastic containers drastically reduce ventilation and can lead to problems with temperature and humidity regulation. These materials make suitable cages when at least one side of the enclosure is open for air circulation. In addition, make sure that the enclosure is escape proof.

Gerbils thrive in solid bottom cages with deep bedding and ample nesting material. Bedding must be clean, non-toxic, absorbent, relatively dust free and easily acquired. Shredded paper or tissue, pine shavings and processed corncob are preferred beddings. Be sure that the wood shavings and ground corncob are free from mold, mildew or other contamination before using. Do not use cedar chips or chlorophyll impregnated shavings since they have been associated with respiratory and liver disease. Provide at least two inches of bedding in the cage to allow normal burrowing behavior. Cotton and shredded tissue paper make excellent nesting materials.

Adult gerbils require a minimum floor area of 36 square inches and a cage height of 6 inches. A breeding pair of gerbils requires a much larger area, approximately 180 square inches. Optimal temperature range for gerbils is between 65&Mac176; and 85&Mac176;F. The relative humidity should be between 30% and 50%. Twelve hour light cycles are preferred, with gerbils being roughly equally active day and night.

Gerbils are social animals that tend to cohabitate well together. The typical social interactions consist of grooming, wrestling and communal sleeping. However, gerbils may become aggressive to intruders, and they may fight when crowded or mixed as adults. Breeding pairs are kept together, with the male even helping to raise the young.

As a rule of thumb, the cage and accessories should be thoroughly cleaned at least once weekly. An exception to this schedule is when newborn babies are present, then wait until they are at least two weeks old. Other factors that may require increased frequency of cleaning are the number of gerbils in the cage, the type of bedding material provided and the cage design and size. Cages are sanitized with hot water and nontoxic disinfectant or detergent then thoroughly rinsed. Water bottles and food dishes should be cleaned and disinfected daily.

### Breeding

Gerbils should be paired by the time they reach sexual maturity, at 7 to 8 weeks of age. Life long, monogamous pairs typically form. The first mating typically occurs at about 10 to 12 weeks of age. Loss of or separation from a mate can make it difficult to rebreed a gerbil. Harem breeding of two females to one male has also been successful, but may lead to some fighting. The male gerbil participates in the care of the young. In fact, if a male is removed from the cage for an extended length of time after birth, fighting may ensue when reintroduced only a few weeks later. The gestation period of non-lactating gerbils is 24 to 26 days on average. A fertile postpartum

estrus may result in pregnancy, with a gestation length of over 30 days when the female is nursing young. Litter size averages 4 to 6 pups, which are born blind and naked.

Ears open at 3 to 7 days, hair coat develops at 7 to 10 days, incisors erupt at 12 to 14 days and eyes open at 14 to 20 days. Weaning occurs by the age of 21 days. The estrus cycle lasts 4 to 6 days with spontaneous ovulation. Monogamous pairs may produce a new litter every 30 to 40 days, for a total of 6 or 7 litters during their reproductive lives. The female gerbil is reproductively active until about 18 months of age. Males may continue to be fertile to at least 24 months of age.

Young gerbils are rarely abandoned or cannibalized. Some factors that may lead to abandonment include small litters, excessive handling of young, lack of nesting material and lack of an area for concealment of the nest. If a mother gerbil abandons a nest, fostering may be possible if the orphans and host litters were born within a few days of each other. Hand feeding of neonatal rodents is difficult and often unrewarding.

## Non-Infectious Conditions

### Epilepsy

The gerbil has a genetic tendency to develop epileptiform seizures. The occurrence rate for the general pet populace is 20 to 40%. These seizures may be initiated by fright, handling or exposure to a new environment. The attacks can be mild (slight shaking) to very severe (violent convulsive body jerking, erratic movements and collapse). The convulsions appear not to have any long-term effects. In some instances, however, death may result following very severe seizures, but this is rare. Anticonvulsant therapy is not indicated, and can cause more serious side effects than the seizures themselves. Frequent handling during the first few weeks of life and providing a stable environment with a complete, balanced diet can help suppress the seizures in genetically predisposed gerbils.

### Tail Sloughing

Improper handling of gerbils can result in the loss of fur from the end of the tail. This occurs when the animal is grasped by the tip of the tail. The skinless tail dies off and sloughs, with the stump usually healing without complications. In some instances, the tail may need to be amputated.

### Nasal Dermatitis (Bald Nose)

Gerbils commonly develop hair loss on the nose and muzzle with open lesions and crusting. This condition is often attributed to abrasions from coarse bedding or rough surfaces within the cage or environment, but the Harderian gland may also be involved. The Harderian gland is located behind the eye and produces a secretion that empties onto the globe. From the eye, this material is drained into the nose by way of the nasolacrimal duct. This secretion is mixed with saliva and spread over the hair coat during grooming. This condition can arise if this material is over produced or not used.

Nasal dermatitis tends to affect young, mature gerbils most often. It spreads from being a localized nasal hair loss to involving the face, legs and ventral body surfaces in advanced cases. Cedar shavings used as bedding tend to worsen the condition. In severe cases, secondary bacterial infections may occur. If treated early in the course of the disease with appropriate antibiotics, this condition often resolves; but if not attended to early, the treatment may be unrewarding. Surgical removal of the Harderian gland results in recovery of the condition, but the procedure is rarely performed. A veterinarian may recommend the use of sand baths to aid in removing the excessive secretions, thus resulting in partial recovery.

## Disease Conditions

### Renal Disease

Old gerbils 2 1/2 to 4 years of age, often present with a history of weight loss, loss of muscle mass, poor appetite and lethargy. In addition, an increase in water consumption may be observed. These are all signs consistent with renal disease in old gerbils. Treatment is only supportive in rodents, with emphasis on providing ample fresh, clean water and food at all times to prevent stress that may trigger full renal failure.

### Neoplasia (Cancer or Tumors)

Gerbils have a relatively high incidence of cancer after they reach 2 years of age. The organ most affected is the ovary. Ovarian tumors are common in female gerbils with poor reproductive performance. They may present with early cessation of reproduction, decreased litter size or distended abdomens. All of these signs may also be present with cystic ovaries as well.

The skin is the second most affected site for tumors in the gerbil. Squamous cell carcinomas and melanomas are most frequently encountered. Melanomas have a tendency to develop around the ear, foot or base of the tail.

The ventral marking scent gland is the third most common site of neoplasia. This gland is located in the mid-abdominal area. It is a hairless, oval tan structure, which tends to be more prominent in males. The gland produces an orange-colored secretion, which is used to mark territory. Tumors of this gland appear as "abscesses" on the abdomen. Usually the tumor is not malignant, but may have a secondary bacterial infection.

Many other organs may be affected by cancer, but much less often. Where possible, surgical intervention as early as possible is the treatment of choice.

### Tyzzler's Disease

The most commonly reported infectious disease of gerbils is Tyzzler's disease, caused by *Bacillus piliformis*, a gram-negative bacteria that infects living cells. The disease causes a high death rate especially in young male gerbils. Clinical signs are nonspecific, primarily consisting of ruffled fur, lethargy, hunched posture and poor appetite. Diarrhea may also be present. The disease causes changes in the heart, liver, lymph nodes and digestive tract which can be observed at necropsy. Special stains of tissue samples from dead rodents can confirm diagnosis.

Treatment of affected colonies with tetracycline antibiotics in the drinking water may be of some benefit in an epidemic. Supportive care with fluid therapy is often necessary in affected animals.

Prevention is the key to this disease. High-level sanitation and minimal stress greatly reduces the occurrence of this disease in colony situations. Tyzzler's disease typically affects gerbils that are stressed by weaning, shipping and adjusting to new environments. Strict sanitation prior to introduction of new animals is important in preventing outbreaks.

*Special thanks to Drs Harkness and Wagner, Dr. Bobby Collins and Drs Wagner and Farrar whose published information on this subject was compiled to produce this paper.*