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Chapter 1: History of the Rat

Rats in the wild fall under two categories, the Black Rat (*Rattus Rattus*) and the Brown Rat (*Rattus Norvegicus*). Both lines are believed to have originated in Asia and spread throughout the world with the help of early travelers and settlers.



The Black Rat is small built and a very agile climber. Preferring to nest in trees or high up in the roofs of houses, it is often referred to as a roof rat.

They are also most popularly known for their role in the carrying of fleas which transmitted the bubonic plague in the middle ages. Today they have been widely supplanted by their larger cousin the Brown Rat.

The Brown Rat vastly outnumbers its cousin the Black Rat and is also directly responsible for our pet rats today. It is commonly referred to as the Norwegian Rat, although it is not known for certain why, as it did not originate in Norway. It is much heavier and larger in build and prefers low nesting areas like burrows, sewers or under houses. It is also an excellent swimmer.



A sport, now illegal, called rat-baiting became mostly responsible for our first domesticated and laboratory rats. The sport involved the catching or breeding of brown rats to be used as live bait. Dogs were released into a ring with the rats and scores were based on the number of rats killed by the dog in a prescribed time. Following the outlawing of the sport the brown rats, and in particular albino specimens, were often kept aside and bred selectively. They soon became popular for use in laboratory testing and as pets.



Pet rats today, however, are far removed from these original wild descendants. Pet rats can be compared to their brown or black rat cousins only in the same manner that a dog could be compared to a wolf.

They are fully domesticated and make wonderful pets. If you're ready to welcome the fun and enjoyment that comes with owning pet rats, then this rat care guide is for you!

Chapter 2: Part of the Family

Rats make fantastic pets for both young and old alike and are often overlooked because of the misunderstanding and prejudice often directed at them due to their wild ancestors' history. They are a particularly good choice for people with limited living areas or mobility, as they do not require the space that other pets sometimes do.

It is extremely important to remember that rats should never be kept on their own. They are colony animals by nature. They are happy and healthiest in pairs and even more so in larger groups. Caring for even two rats is no more work or cost than caring for one and you're assured of content and well-adjusted pets.

Rats are extremely sociable creatures both with each other and with their owners. This makes them somewhat different from other rodents such as mice or hamsters. They are quicker to seek out human company and a far more willing to interact and play with their owners. They also love to be petted. They enjoy being rubbed behind their ears or scratched on their cheeks and shoulders. Some rats will roll over on their back so their owner can rub their tummy. Many rats will lick or attempt to groom their owners to show affection, just like a dog.

They are very intelligent creatures and are also easily toilet trained. Often they can be taught simple tricks in response to voice commands, by using food as a reward. With patience, most will also learn to come to their name when called. People often refer to them as "small dogs" in this respect as they can be trained much as you would a puppy.

Contrary to belief rats are also very clean animals and will groom themselves several times a day in the same manner as cats. If taught to use specific toilet areas in their cage, the odour is also kept to a minimum and their areas easily kept clean. They also will rarely, if ever, bite. Like any animal, dogs or cats included, they may do so if scared, stressed or hurt. Rats that have been abused or brought up without human contact may be more prone to bite for these reasons.

Choosing to keep males or females is another question often asked by prospective rat owners. It's impossible to say which is better. Male rats and female rats have many similarities, but also several differences. It's best to keep only one gender at a time, but you may also wish to keep a mixed sex group with the rats of one or both genders spayed or neutered.

Most importantly male rats are much larger than females and can be prone to obesity. This also means they require more living space than a group of females would. Generally female rats are also much more active and playful than their male counterparts, but both require adequate daily playtime and handling.

At the end of the day, don't worry too much if you can't decide between male and female rats. If you've done your homework and chosen a good breeder or rescue organisation, those people will be able to guide you toward which rats are a good fit for your lifestyle.

Please do ensure, especially when buying from pet stores, that your young female ratty doesn't turn into a male overnight! It often takes a while for young males to show and this causes untold problems if you thought you bought two "girls".

Chapter 3: Interesting Facts

- A group of rats is called a “Mischief”
- A female rat is called a Doe and a male rat is called a Buck. Babies are called Kittens, but are often referred to as Kits or Bubs.
- Rats don’t have thumbs, they also don’t have canine teeth, gallbladders or tonsils
- Porphyrin is the term used for the secretions that lubricates a rat’s eye. It is red in colour and is often mistaken for blood. Large amounts of porphyrin around the eyes or nose usually indicates stress or illness - much as we would have excess mucus when we’re sick.
- Unlike other pets, chocolate is fine for rats to eat, but only in small quantities. The higher the cocoa % the better it is for them and it can even help relieve respiratory problems.
- Bruxing is the behaviour of rats whereby they will grind their incisor teeth together. It may indicate stress, but generally is a sign of relaxation and contentment.
- Boggling is where a rat’s eyes appear to vibrate rapidly in and out of the eye socket. This is caused by muscles which pass through the eye socket behind the eyeball and are responsible for moving the jaw rapidly up and down when a rat bruxes.
- Rats rely predominantly on smell, taste, touch and hearing rather than their very poor vision. Most of the world would appear extremely blurry to your average rat. Those with ruby or pink eyes especially. You may see rats weave their heads from side to side in an attempt to see better. They may also be able to distinguish colours in the blue to green range but are otherwise fairly colour blind.



- Rats use sounds in a variety of situations. We may only hear a few squeaks, but that’s because the human auditory range falls below that of rats. A lot of their communication falls outside our range of hearing as ultrasound.
- Rats should never be picked up by their tails as this can result in serious injury or even “de-gloving” of the tail - this is where the top layer of skin is sheared off.
- Sawdust, woods chips and scented shavings are toxic to rats. These products have been linked to both respiratory and liver disease.
- Rats reach sexual maturity as early as 5 to 6 weeks of age and an entire mating between a male and female rat lasts just a few seconds.
- Rats are omnivores, which means their diet is much like ours, consisting of both plants and animals. Your pet rats may have enough instinct in them to still consider birds, fish or other small rodents as prey!
- Rats cannot be housed with mice or hamsters.

Chapter 4: Varieties & Appearance

(Not all are available in South Africa)

Pet rats today, often referred to as fancy rats, come in a large variety of colours, markings, body characteristics and coat types. They may also have black, ruby or pink eyes. This offers the prospective pet owner many options when choosing their pet rats. Thanks to our South African breeders a large portion of these varieties and types are now available to us.

Coat Types:

Standard

A smooth, short coat with longer guard hairs.

Velveteen

Wavy, dense, soft coat with curly whiskers.

Rex

Short, curly coat and whiskers. The coat texture feels rougher than Velveteen.

Double rex

A rex coat which falls out in patches, giving a somewhat moth eaten appearance.

Satin

A smooth, soft, shiny coat with thinner hairs which are slightly longer than in standard rats.

Harley

A long haired rat. This variety was discovered in September 2002 and named after the original rat owned by Odd Fellows Rattery in Washington, USA. This variety requires special care of its coat. Not recommended for first-time rat owners.

Hairless

No hair at all on body, except some fuzz around the eyes and whiskers in some individuals. Whiskers can be straight or curly. This variety also requires special care for its skin.

Differences in Body Type:

Standard Eared

Ears are round and set high on the head.

Dumbo Eared

Large, round ears set low on each side of the head.

Tailless

A rat without a tail. The body may also tend to be more rounded and stocky.

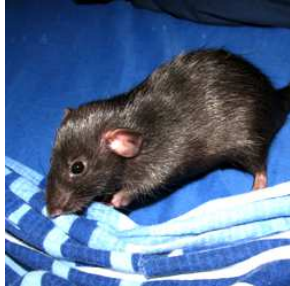
Dwarf

A rat which is about one third the size of a normal rat in adulthood. Feet and legs are smaller in proportion to body size compared to standard rats plus tails are also shorter in proportion to body size.

Colours:

Agouti

This colour is a deep, rich brown in colour. They can have many other colours flecked amongst their fur, such as reddish browns, light tans, cream, and black. This is the typical "wild rat" colour. Agoutis usually have lighter coloured bellies.



Black

This colour should be solid black and preferably have no red or "rust" in it, but rusting tends to happen as the rat ages. The eyes will be black as well.

Pink Eyed White - Also known as Albino or PEW

Probably the most infamous of rat colours. This coat is completely white and the rat will have pink eyes. A yellowing of the coat can be found sometimes in the older rats. Black eyed whites (BEW) are also found, but some classify this as a marking, rather than a colour.



Siamese

This is a beige base colour with darker points on the nose, ears, tail, rump and feet. Siamese rats are born darker and fade into their beige colour and points. The true Siamese will then keep their beige colour throughout their lives, whereas the lesser quality will fade to a cream-white colour. Most commonly found is 'seal point' which is a black point marking, but other colour variants can be found, such as mink points, blue points, etc. Here in South Africa we also have a local variety called the Sable Siamese.

Himalayan

This is a cream base colour and like the Siamese they have dark points. In contrast a Himalayan is born white and develops their darker points at around 6 weeks of age. Also, unlike Siamese, the points only appear on the nose, feet and tail and are not as pronounced. Himalayans are actually born white and progress as they age. Eyes can be pink or black.



Burmese

The ideal Burmese colour should be a mid-brown, with darker points of the same shade. They do not change colour, just their points come in at around 6 weeks of age and there should be a clear contrast between the points and the body colour. Burmese shades can vary greatly from dark to light browns and beiges.



Slate/Powder Blue

Slate or Powder blues can come in a variety of shades, but the most common being a blue like the mid-day sky.



Russian Blue & Russian Silver

Russian Blue colouring is a nice deep shade of blue, similar to the cat breed of the same name. Slight feathering of silver is found on each hair. Russian Silver is a lighter version. Eyes can be black or Ruby.



Amber

This is a light orange colour, with flecks of white. The belly should be off white and the eyes pink. Amber rats take about 4 to 6 months before the final colour shade is reached and can often be confused with Champagne.



Fawn or Topaz

This is an orange colour, with flecks of white in the coat. Eyes are pink or ruby.



Champagne

Sometimes confused with Amber. Eyes are pink and the coat is a light pink colour.

Mink

An even grey-brown colour. Eyes are black.

Cinnamon

Or also referred to as a mink agouti which has reddish brown color with agouti ticking.



Chocolate

Chocolate colour is, simply, a rich chocolate brown. Flecks of white in the coat are avoided. Eyes are black.

Markings:

Self

This is a solid colour with no markings and without any trace of white patches on the body. White markings may, however, be seen on the toes.



Irish & English Irish

Irish is a marking of a triangular white spot under the chest, between the forearms. Alternatively this white spot can be found on the belly. This marking could be as small as a tiny patch of white hairs. The front feet should be white and back feet should also be white to half their length.

Hooded

A very common marking found most frequently in "pet-shop rats". This marking is a coloured head, with a line running down the centre of the back. Ideally the line should be 1cm thick and unbroken, but this is rare. Most hooded markings include a white strip under the chin down to the chest.



Variegated

Variegated rats are similar to hooded rats. The head and shoulders are solid in colour but instead of a solid spine marking seen in hooded rats, they will have patches and flecks of colour running in a line down the back and sometimes extending onto their sides.

Berkshire

The whole belly area between front and back feet should be white, but the white should not extend up onto the rat's sides. Front legs should be white up to half their length and back feet should be white to the ankles.



Variegated Berkshire or Variberk

Similar to a Berkshire but the white marking is irregular and may extend up onto the rat's sides.

Bareback

Almost identical to the hooded, but without the marking down the back. The marking should fully cover the head, neck, and shoulders.



Capped

Capped markings should only cover the face up to the base of the skull. A small V shaped cutout at the back of the cap is also acceptable. Ideally this marking should have no jagged edges, and run smoothly throughout.



Baldie

The baldie marking is similar to the capped marking. Baldies will have a white triangle in the middle of the head, from between the eyes, with a stripe running down to the white on the neck. Colour fading is normal.

Blazed

Easily identified by a white mark on the face. Ideally it should be evenly spaced down the centre. Other variations are lightning and half-moon/crescent. This marking can be combined with other markings such as variegated and capped, but not all are accepted in showing classes.



Husky/Roan

Husky markings start out solid, but fade with age - sometimes they can fade to almost white. The end result of a husky marking resembles that of the dog breed of the same name. This marking can be combined with blazed, berkshire or badger markings.

Dalmatian

Markings are similar to variegated color with splashes or spots on a white background, and free from any solid clear-cut markings. The splashes or spots should be numerous, ragged in outline and cover the entire body.



Masked

The body is pure, clean white, free from spots or colouring. A colored mask is found over just the face, including the area around the eyes and above the nose. The mask does not extend down the sides of the face onto the jowls or under the chin.

Essex

Recognised in any standard colour, with the effect of lightening the main coat colour. The darkest area is along the spine, becoming less intense down the sides of the animal.

Chapter 5: A Place to Stay

Before you bring your new family members home, you need to look at what housing you'll need for them. **The average hamster cages and small bird cages found at pet stores are NOT suitable or big enough for rats.**

Environment & Cleaning:

Rats should be kept in a place in your house where the temperature doesn't dip too low or too high and where there are no drafts blowing over their cage/s. The optimal temperature range for rats is between 19° to 25° C with a relative humidity of 40 to 70%. They cannot live outdoors and an outdoor room / outbuilding is not acceptable.

Each adult rat needs at least 260 square centimeters of floor space and a minimum of 30 centimeters of cage height. These measurements are the very bare minimum required per adult animal. Rats thrive in solid-bottom cages with deep bedding and ample nesting materials.

Cages and accessories should be thoroughly cleaned with a non-toxic disinfectant (F10 concentrate is a good option) and rinsed thoroughly at least once a week. Be careful of using household soaps and detergents as they can cause respiratory distress in your rats. Do not use any fabric softeners when washing any of your fabric rat accessories or bedding. Rather obtain a safe non-toxic alternative from your vet or pet store. Rinsing your cages, fabrics, etc with a dilution of water and vinegar before drying can also ensure any smells/chemicals are eliminated.

Wire Cages - The Best Way to Go:

Wire cages are the most common type of homes chosen for rats, and are widely priced and easy to find. They are reasonably inexpensive and most pet shops stock them, so they're very accessible. They are easily decorated with toys and rat-houses, and can easily have extra levels, ladders and ramps attached. Try to place some covering over the wire shelves and platforms to give their little feet a break from the harsh wire bars. Sheets of signage plastic, cardboard or pieces of fabric work well. The advantage of this option is that wire cages also allow for decent air flow, though you must avoid putting them, and your rats, in very draughty areas.



If your pet store does not stock proper rat cages, then the larger bird cages / rabbit cages work well also, but just keep an eye on the bar spacing. Most young rats and even smaller adults can squeeze through the larger spaced cage bars. Remember though that rats need more space to run than to climb, so larger flatter bird cages are better than the tall narrow kind. You can also join cages together using items like plastic piping to make your own unique homes for them. Do not however purchase cages that are manufactured from galvanized wire. Galvanised wire is the kind not covered with the usual white or coloured paint / powder coating and will start to smell horribly from the rats' urine and faeces. It is also prone to oxidization or chemical reactions from the rat urine and can be horribly toxic to your rat.

Aquariums:

These are nice and sturdy, but rather cumbersome to move after fully set up. The unfortunate thing about aquariums is that they aren't properly ventilated, even with the grid on top. If you can, try drill some holes in the sides to help with air flow. Ammonia can build up in the tank from the urine and cause all sorts of respiratory problems in your rats, which could end up fatal! You should look for a 10 gallon tank at least (this is the minimum size for even one rat!), and of course the larger the better (aim for 20 gallon or larger). When acquiring your tank, be sure to get a ventilated grid to securely attach to the top. This is to keep jumpers in and predators out! If you cannot find one to fit your tank, you can make one using powder-coated wire. Cut it large enough so you have enough to bend down over the edges of the tank, and find something to weight it down. Rats can be very determined, so don't underestimate them - they will push it open if it's not secured properly!

Home-made 'mansions':

These can be old bookshelves or cupboards converted into a cage. Be careful of using sheets of plain pine or other wood as this can be toxic to your ratties in the same way as wood shavings/sawdust. Melamine shelving is the best option when building a mansion from scratch. Conversions can include the adding of doors with powder coated wire mesh, cutting access holes to each level, adding toys and sleepy places, etc. The latter obviously opens you up to a whole lot of possibilities for your rats' cage and allows you to build as big as you can, providing your pocket and home allow it. A word of warning if you're going to use this housing option, keep an eye on your babies that they don't chew their way out - so be sure to provide them with ample gnawing alternatives. Also, wood can soak up urine and odours very quickly and it's impossible to clean, so it's not always practical.



Chapter 6: Beddings & Accessories

Depending on the type of cage you have, you should choose your bedding accordingly. There is however, one BIG fact when it comes to bedding and litter, which most pet stores fail to mention or are unaware of, is that **wood shavings and sawdust are highly toxic to rats!** Using it will damage your rat's lungs and possibly cause liver damage. For your rats' sake, do not use it! There are other options available which are much safer and friendlier to your pet.

Paper:

Plain white office paper (e.g. Rotatrim) that's been shredded in a shredder is a good option. Alternatively you may contact your nearest packaging or furniture removal companies to obtain rolls of unprinted newspaper (newsprint) at very low cost. Remember that printing inks can contain toxins which may be ingested by your rats, so it's best not to use printed papers.

Fabrics:

Any old material or cloth is also a good alternative for bedding, especially for warmth in the colder months of the year. Be sure to wash any material bedding regularly! Old cotton t-shirts, bed linen, fleece blanketing, etc are all good options to use.

Kenaf:

Made from the hibiscus plant, this bedding is a very good option for litter areas in your cage. It is affordable, has low dust, good odour-control and a little goes a long way. It has had very good feedback as a rat bedding. It is available online or direct from suppliers. See page 33 for info.

Corncob:

The Amazing Corncob Bedding by Cobtech is great for odour control, especially in the "toilet areas" of your cage. It helps to absorb urine and keeps your cages smelling cleaner for longer. The Amazing products are generally available at your nearest pet stores, Pick 'n Pay Hypermarkets or Super Spars. Or alternatively speak to your local pet store about ordering it for you. These Amazing Corncob products come in different grain coarseness and size. Generally the cat litter version is slightly finer and kinder to your rats' feet. It is also very cost effective - simply scoop out any rat droppings and leave in the sun to dry, then re-use. See page 33 for info to buy. **Please note, however, that normal cat litters are not suitable for rats, including wood pellets and clay.** Some may contain added chemicals or be processed from toxic material.

Rabbit Pellets:

Generally made out of alfalfa, these are also an option for odour control and for use as litter in your cages. They have no nutritional value for your rats, so are unlikely to be eaten and they are great for absorbing any urine and mess. Be aware of dust when using this option though.

Hammocks & Snooze Cubes:

Your rats are bound to greatly appreciate you adding accessories to their cage like hammocks and snooze cubes. These make great places for your rats to sleep, keep warm or relax. They also give your rats a sleep area off the floor and away from their litter and toilet areas. See page 33 for info on suppliers.



Chapter 7: Feeding

The basic diet of your rats should be designed specifically for them. **Commercial hamster mix is neither adequate nor suitable for rats! They may also contain toxic ingredients such as peanuts.** Most of your basic dry feed mixes can be left in the cage for a day or two, as otherwise your rats are likely to pick out the tastier pieces each day and leave the rest - not a balanced diet! Water should be changed daily.

Commercial Pet Foods:



Various rat feeds are available from pet stores, veterinary feed stores or veterinary clinics. Alternatively most of these stores will be happy to order these along with their regular bird food, reptile food, etc from their suppliers, just ask! Some of the commercially available rat foods include:

- Avi-Products Top Pet Rat's Delight
- Avi-Products Rodent Blocks
- Marlton's Reggie Rat Food
- Imported - Rat Nature (Beware of peanuts in this one)

Ratanooga Home-Made Mix:

An alternative is the following home made feed which will meet all your rats' daily dietary requirements. All the ingredients can be purchased at your local supermarket. Mix them together and store in an airtight container to keep it fresh:

- 200g Puffed Rice
- 200g Rolled Oats
- 150g Sunflower Seeds
- 125g Puffed Wheat
(the un-coloured / not the sugar coated version)
- 225g Tri-Coloured Pasta (raw)
Try get the natural flavoured ones (made from tomato, spinach and pumpkin) rather than the artificial coloured ones. Crush them slightly before adding.
- 100g Pronutro Flakes Cereal
This can be found in most cereal isles at your local Pick 'n Pay/Checkers/etc branch.
- Handful of Dry dog pellets
Try to find one with no more than 18% protein.

Treats and Snacks:

Supplement your rat's diet with fresh foods like fruits, vegetables, live-culture yogurts, etc. Always remember to wash and peel fruit and vegetables before feeding them to your rats and do not leave perishable foods in the cage for more than a few hours.

Rats, like dogs and cats, can also safely be given bones to gnaw on. Even large chicken bones are suitable. But ensure that meat on the bones is not raw as this could contain bacteria.

DANGEROUS Foods:

Remember that your rats can also share almost anything else you eat too, **but be beware of the foods listed below that can be dangerous to your rats:**

- **Peanuts** - contain anti-nutrients that destroy vitamin A and enzymes needed to digest protein and starches and causes red blood cells to clump.
- **Almond Nuts** - These contain high levels of natural cyanide. Very toxic to small animals.
- **Fruit Seeds** - Ensure to remove all seeds or pits from fruit before feeding. All fruit seeds contain natural cyanides which can be highly toxic for small animals.
- **Blue Cheese** - the mould in it is toxic to rats
- **Carbonated Beverages** - rats cannot burp, so the gas can cause severe discomfort.
- **Green Bananas** - inhibits starch-digesting enzymes
- **Green Potato Skin and Onions** - contain solanine, a toxin.
- **Licorice** - suspected to cause neurological poisoning in a rat.
- **Orange Juice** - forbidden for male rats only, d-limonene in the skin oil, which gets into the orange juice during squeezing, can cause kidney damage and kidney cancer due to a protein that only male rats have in their kidneys.
- **Raw Artichokes** - inhibits protein digestion.
- **Raw Bulk Tofu or Meat**- can contain bacteria, packaged raw tofu is safe.
- **Beans** - contains anti-nutrients that destroy vitamin A and enzymes needed to digest protein and starches and causes red blood cells to clump.
- **Raw Red Cabbage and Brussel Sprouts** - contains anti-nutrient that destroys thiamin.
- **Raw Sweet Potato** - contains compounds that form cyanide in the stomach.
- **Rhubarb** - contains high levels of oxalates.
- **Sticky foods such as Peanut Butter or Mash** - pose a choking hazard. Peanut butter can be "cut" with jam or honey to make it more liquid, and reduce the possibility of choking.
- **Wild Insects** - can carry internal parasites and diseases.
- **Dried Corn** - can contain high levels of fungal contaminates which has been shown to cause liver cancer in rats.
- **Avocado Pear** - Be very careful when feeding avo to rats - avoid the area by the seed/stone and the dark green bits by the skin.
- **Spices and salts** - As with humans, too much spicy or salty food is not healthy for rats.
- **Junk foods** - this is just as unhealthy for them as for you. Limit their intake very strictly!
- **Dairy Products** - Rats like most animals are lactose intolerant. Soya versions of milk, etc are good alternatives. But every rat likes a sneaky bit of cheese now and again!



Fresh Water:

It is a good idea to obtain bottled water for your pet rats. Regular tap water can be high in chemical content. This option is inexpensive, as most bottled water sells for about R20 per 5 litres. Alternatively if you use water filtering at home, this is just as good.

Chapter 8: Playtime!

Rats are very playful and interactive with each other and humans. Keeping them active and amused ensures happy, healthy rats. There are plenty of things you can try and the only limit is your imagination and theirs! Here are some ideas to get you started:

Games & Fun:

Rat Toss:

Stand at the foot of your bed and have a large pillow on the bed in front you. Make a cup with your hands, palms facing up in front of you and have your rat sit there - or gently cup your hands over your rat. Slowly swing your arms back and forth while counting to 3. On 3 gently toss them so they land on the pillow (they learn to get ready on 3). Be cautious at first though, as you won't know how afraid they might be of this game, and you can increase the swing and distance as they get more confident and adventurous. Do not do this from too high above the pillow!



Pouncing:

Some people like to drag items like pencils, shoelaces, ropes around until the rat notices and pounces. Sometimes you can give them a little chase before succeeding, and other times you can have a slowpoke shoelace. The more rats you have, the more entertaining it is for both you and your rats.

Wrestling:

Rats aren't always fond of this game, but give it a try anyway. Basically it's you pretending your hand is a rat and chasing and pinning your rat down - gently does it now! Then letting them reciprocate. Always let them win at least a 60 - 70% of the time, if not more, so they don't get discouraged.

Hunting:

This can be with almost anything your rat likes, be it food or toys. Hide them in various places around the room and even rub it all over the general area that you hide it in so it's easier to smell. Then watch them search. You might have to give them a few hints at first, but being the intelligent creatures that they are, they'll soon get the hang of it. You could also have a 'special spot' which you can leave a treat for them every time you let them out the cage which they will get to know and go to inspect first thing!



Bobbing for Vegetables:

Fishing for frozen veggies is great fun in hot weather. Place a tray or tupperware filled with water where they rats can splash and make a mess and throw in frozen corn, peas or other vegetables for them to fish for. Most rats love water and will have fun splashing about!

Rat Friendly Toys:

Plastics:

Try plastic baskets or paper trays - such as those stackable ones in offices. These are relatively cheap to buy and can get washed out easily. This can double as a bed and a toy for an adventurous rat! Containers, piping, etc are also great.

Hidey-Holes:

These can either be anything you find around the house. Store-bought birds nest, like the woven kind, tubes, a tissue box, or any other box for that matter are great. Cut peep holes and door-ways in different shapes to make it more fun for them, though they'll be more than happy to make their own doorways!



Cat Toys:

Balls with bells in it are a favourite amongst some active rats, and will be pushed and beaten thoroughly by each ratty family member.

Parrot Toys:

Contrary to popular belief, these toys are nicely suited for rats. Some rats may take some time to warm up to the new toys, but most will chew and climb on them until they're exhausted! Even budgie or parrot seed bells make excellent edible toys. Just ensure that they do not contain any peanuts or other harmful ingredients!

Ropes:

Another very popular toy to add to a cage. They come in different lengths and thickness, and with a bit of imagination can be hung up from corner to corner in their cage. Just make sure they are properly secure, as a heavy rope can do damage if it falls onto a tiny rat head, and make sure the rat hasn't got too far to fall if they slip off the rope - maximum distance 15cm!



Treat Toys:

If you look around the house, you'll find many items suitable for making rat toys. We recommend the Egg Box Treat Dispenser. Taking wire, make an X from top left corner to bottom right corner, and vice versa, forming a loop at the top from which to hang it from. Then simply put treats in the egg holes and hang inside the cage. Your rats may need a small helping hand if they don't know what to do with it, but if you sit back and watch for a little bit, you'll see they learn pretty quickly!

Rat-friendly wheels:

DO NOT get the ones with spaces between the bars. These are not suited to rats or mice, as their tails can get caught. Look for a wheel that has a solid running platform. Be aware though that most rats don't take to a wheel even if they're introduced to it when young.

Chapter 9: Hot and Cold

As already noted, rats are particularly susceptible to changes in temperature and humidity. Here are some helpful ideas to keep your rats cool or warm:

Cool Rats:

In hot weather, it's important to keep an eye on your rats for signs of heat stress. In particular, any of your rats who are overweight or sick as they will be more affected. Check for signs of:

- Slowed movement, lethargy or loss of appetite
- Tails, feet, ears and noses that are hot to the touch
- Sprawled position, often with feet stretched out behind them so that they can lose heat through the soles of their feet.
- Mouth gaping open or panting and drooling



The best option for preventing overheating is to keep your rats in an air conditioned room. If this is not possible, you need to keep them cool in other ways. Some options include:

- A ceiling fan on low or a standing fan (not pointing directly at cage). Be careful the fan isn't too strong and that your rats have somewhere to move out of the drafts created.
- Fill a spray can with water and wet the rats down - don't spray it in their eyes!
- Drape a wet towel over part of their cage and provide a cooling fan or open window
- Bath them in cool water.
- Freeze a bottle of water, wrap it in a towel and place it in the cage.
- Provide them with lots of cool or refrigerated water to prevent dehydration.
- Give them a terracotta pot. These make great sleeping areas in summer as they stay cool.
- Fishing for frozen veg (see page 15)
- Fruitsicles - Cut up fruit or vegetable pieces and freeze. Good choices are watermelon, grapes, banana, honeydew, peas, corn, blueberries, etc.
- Wading pool - Use a heavy shallow food bowl (or a pot plant drip tray), fill with water and toss in a few ice cubes. The rats may also sleep beside it to cool off.
- Icehouse - Place their snooze cube or hammock in the fridge or freezer then put in cage.

Warm Rats:

Rats can generally cope with colder temperatures much better than hot. But if it is cold in your rat room during winter, there's lots of ways to provide warmth for your rats in their cage:

- Polar fleece hammocks or cubes are favourite winter haunts.
- Give your rats lots of paper towels in their nest box. They'll have fun shredding them and this creates a very warm and cozy environment.
- Provide your rats with lots of fabric strips ... old T-shirts, socks, fleecy off cuts, etc
- A "warm buddy". Fill a bottle with warm water, wrap in a towel and place in your rat's cage. They can snuggle up next to it for warmth if they need to. This is also a handy method for keeping rats warm during illness or transportation.

Wherever possible, try to keep the temperature in your rat room consistent. Large variations in temperature can make them more susceptible to illness. And avoid drafty areas!

Chapter 10: Physiology

Determining Gender:

Hold your rat gently yet firmly in your hands and turn it over so that its belly is facing you. Look at the belly and genital area. Then look for the following signs of gender differences.

Younger rats, as young as a day old can be sexed, females will have small dots where the nipples will be and males will have a small bump where the testicles and penis will be located. It often takes a while for young males to show however so be very careful.



Male - 2 weeks old



Female - 2 weeks old

For older rats, a male rat will have large testicles and a female rat will have nipples. Be aware that male rats will draw in their testicles when they get scared, so they may be hard to find.



Male - Adult



Female - Adult

It is also useful to bear in mind that females can be spayed and male rats can be neutered. Neutering is preferable if you want to keep your rats in mixed sex groups, because this procedure is less invasive than the surgery required for spaying. However, spaying can offer a lot of health benefits to female ratties, including reduced cancer risks, so if you have a veterinarian with proper experience in the procedure then it is something to be considered.

Aging and Lifespan:

One of the biggest downfalls about keeping pet rats is their lifespan, which remains incredibly short in relation to other domestic pets. Your average rat will live 2,5 to 3,5 yrs of age. Males generally live longer than females.

Rat Age in Months	Rat Age in Years	Equivalent Human Years
1.5 months	0.125 years	12.5 years
6 months (maturity)	0.5 years	18 years (maturity)
12 months	1 year	30 years
18 months	1.5 years	45 years
24 months	2 years	60 years
30 months	2.5 years	75 years
36 months	3 years	90 years
42 months	3.5 years	105 years
45 months	3.75 years	113 years

Caring for Older Rats:

You might have noticed one of your rats getting on in years. He or she is no longer the bouncy, playful rat they were in their prime, but rather are now more cuddly and slow. You might even notice some back leg degeneration. Here's a brief article on caring for older rats, since they deserve it!

Just changing around their surroundings can help them in a great way. Keep in mind some of the following to change:

- Move food and water closer to the ground level of the cage, so it's easily accessible. Avoid making them stand up for their food/water bottle. You may have to change food bowls to a shallow, low bowl instead.
- If there are levels, try bringing them closer together, so if the rat takes a tumble they won't fall as far as normal.
- Add some cloth or similar to the ladders, to make sure there is ample grip. Lower levels also help ladders not be too steep.
- Cover any exposed wire. Weaker rats are more likely to get their feet or claws caught in it.
- Try new beds that are lower to the ground, like boxed filled with tissue/toilet paper instead of hammocks. Climbing in and out of a hammock could add extra strain.
- Keep an eye on the temperature around the cage. Older rats have weakened immune systems and draughts are not good.
- You'll need to clean the cage more regularly, as older rats may not be able to move away to the toilet, and their nesting area will get dirty.

Older rats will also need extra care with feeding. Keep the following in mind:



- Extra high calorie treats are good to help keep muscle condition.
- Extra vitamins are helpful to be added into the diet.
- Provide soft foods that don't require being held to eat.

Also keep an eye that your older rat's food is not being stolen/eaten by other cage mates. If necessary, take him/her out to eat separately, so you can monitor daily intake. Foods like baby food, soft cooked noodles/pasta, pureed vegetables and fruits, rat blocks soaked in soy milk, "nutritional" high calorie paste, porridge, yogurt, etc are all good to give.

You'll also need to give extra attention to grooming, but don't despair, this is a great time for bonding with your old rat.

- A daily wipe down with a damp cloth or wet soft bristled brush can help keep his coat groomed. If you use a damp cloth, make sure the fur is not wet, which could lead to a cold!
- Rats use their feet to clean their ears, so you may need to remove built-up wax. You can roll up a bit of toilet paper and gently wipe inside and around the ear, but do not go too deep as you can damage delicate ear drums.
- Sometimes, a simple thing like holding your rat upright in your lap can allow them to groom using both hands, something which is difficult with hind leg weakness. Although you might find when you try to assist, they think you're offering them something or doing something interesting and they forget all about grooming to inspect what you're doing.
- Regular clipping of his back claws will be necessary as they won't be worn down normally. Do not cut too close to the quick to ensure that no bleeding occurs.
- Old rats may start having bladder control problems. If this happens, keep their belly clean after they urinate, as the urine can burn and irritate the skin.
- Moving his limbs around with gentle range of motion exercises will help keep his joints flexible.

All this should help your old rat live out a happy retirement life, and will also help you bond with him/her. There is nothing more rewarding than hearing the bruxing of a happy rat after you've helped them groom their face.

Remember to also be prepared to say goodbye, and try keeping their best interests in mind. As much as it pains you to have to say goodbye, and believe me we all know just how sad it is, there may have to be a time for you to make "The Decision" for your rat. Please don't let your rat suffer, rather cherish the memories you have and let him/her have a peaceful send-off. Your veterinary is qualified to assist you in this.

Breeding and Pregnancy:

Though rats are not considered fully grown until 7-10 months of age, they can become sexually mature at as young as four weeks old. Rats generally become sexually active at about five weeks, and should be separated from littermates of the opposite gender at this age.

Female rats generally go into heat every 4 to 5 days and remain so for around a day. You might find when you try to handle your rat during this time she will arch her back at your touch or her head and ears will vibrate. These are just signs that she is in heat and not a problem.

The usual gestation period for a rat is 18 to 28 days. Most rats give birth sometime around the 21 to 23 day mark. If your rat is obviously pregnant and hasn't given birth by about the 25th day, it is probably best to consult a vet.

Most pregnant females develop large bellies by the third week of pregnancy- some a little earlier and some a little later. Some mothers don't show at all until a couple of days before giving birth, when they very suddenly look like they've swallowed a tennis ball. Her nipples will become more prominent, and she will begin showing some nesting behavior.

If you suspect your female is pregnant, most breeders will agree that it is best to separate her from her cage mates. Female rats tend to squabble over babies, and some females will steal babies from lower ranking females. This can lead to extreme stress in the mother, and starvation and death of the kittens. For the safety and well being of all involved, it's best to set up a safe, quiet maternity cage for the mother to raise her babies free from being hassled by the other females.

One level, solid containers are preferred for very young babies. A 20 gallon aquarium or a modified plastic bin will do just fine. The mother should be provided with a nest box and nesting material. A covered basket, shoebox, or plastic igloo will work well. Nesting material can be shredded paper, paper towels, or cloth. When using cloth, make sure that no strings can come loose and wrap around a leg, tail, or neck. Of course, food and water should always be available.

In addition to her normal diet it's a good idea to add protein to her diet as soon as you find out she's pregnant and throughout the time she's nursing. Generally, with pregnant and nursing mothers, try have their normal food and some fresh food available to them at all times, and try to give a couple of the following things twice a day:

- Oatmeal or Baby Cereal in Soy milk or KMR (Kitten Milk Replacement)
- Scrambled or boiled eggs
- High quality dry kitten food
- Nuts
- Cooked meat, especially chicken, liver, turkey, or fish
- Wet dog or cat food

Generally, with pregnant moms, if she wants it, she gets it. Moms can get leftovers from dinner, some sweets - anything she wants within reason.

During labour, chances are that all will go well, unless she's extremely young or extremely old. That said, complications can occur, and here are some signs to look for if something is wrong:

1. Excessive blood - of course, some blood is normal, but if it really seems to be gushing out that's cause for concern. If, for instance, you see some blood on her nesting material, maybe a little on her hands and coming from her vagina, that's normal - but if her whole bottom is covered in blood, more than a handful or so of bedding has blood on it, and she's got it everywhere, that isn't normal.

2. Extreme straining or discomfort - If you see her leaving her nest while in active labor and straining, lying on her belly and back and pushing really hard, looking dazed, or in a lot of pain, there is probably a baby that's breached or too large to come through, and that's definitely cause for concern.

3. Prolonged pregnancy - if she goes longer than she should with a very large belly, more than a week to a week and a half, she may have necrotic fetuses inside of her that will need to be removed surgically.

If you see any of those things, get her to the nearest vet immediately. Don't wait, because you can lose a mother very quickly from birth complications. She may need an emergency C-section (or Oxytocin) to save her life. If you don't have a good rat vet now, you may want to start calling around and get one lined up just in case.

Mothers usually choose to deliver early in the morning or late at night, mothers could give birth at all hours. Most mothers give birth in a sitting position, with their backs propped against a wall, and their hind legs spread. They help the baby leave the birth canal with their hands, cleaning the blood and afterbirth and stimulating the baby with their tongue as they go. Some mothers will eat any stillborn young- this is normal and you should leave her to it. It's just her way of recycling the protein and keeping the nest clean.

Rats can have anywhere from 1 to 20 babies in a litter, but the average number is 8 to 12. The babies will be born blind, naked, and deaf. They will not be able to see or hear until around 2 weeks of age, and they will grow their fur in at about a week.

Baby rats will begin nibbling solids at around 2 weeks of age. At about 2 and a half weeks, you can offer them soft food- soft fruit, oatmeal and baby cereal in soymilk, scrambled eggs, lab blocks softened in water, etc. At four weeks they will be fully weaned. You should separate the babies into male/female groups by the time they're five weeks old and at six weeks they can go on to new homes.



Chapter 11: Rat Introductions

So, you've had rats for awhile, and now you're suffering from "Gotta Get More Rats Syndrome" (GGMR)? Make sure you know a little about introductions before bringing new ones home. Also make sure you have a lot of time and patience to see the introductions through. Do be aware that not all introductions will be successful, but 9 out of 10 times it will, providing it's done properly.

Bear in mind, adults will be more accepting of young rats as opposed to another adult. Baby rats usually know they aren't boss when they enter the group and are usually submissive to the adults. When getting new baby rats, always try and get two. If your new baby has a friend, then at least they have each other, and more than likely, will not feel so nervous of making friends with the other, older residents.

Once you have your two (or more) new babies - DO NOT PUT THEM IN WITH THE EXISTING RATS STRAIGHT AWAY! They need to be properly introduced.

You can start by taking an item from one cage, and placing it in the other cage and vice versa. It's a good way to start mixing smells. Keep this up for a couple of days. Then, move the cages closer so both groups of rats can smell each other, but do not let them touch!

Next, you can start swapping the rats into the other's cage. Make sure you swap all the rats! The two groups should not meet face to face at this point! They will run around sniffing the new smells and marking territory. Do this for about 20 - 30min each day for a couple of days.

Now they are ready to meet face to face. The bathtub is a good area, as it is neutral spot to both groups. You might want to dab some vanilla essence on each rat's neck, especially if you have males. There will be power-grooming and squeaking in the beginning of the first meeting, as well as mild 'scuffling'. This is normal, as they are sorting out "who is boss". Keep a water bottle at the ready to spray them in case a serious fight starts. Be careful of being bitten when separating rats that are fighting, so please wear gloves.

If all is going well, let them be around each other for about 30min and then back to their separate cages. Keep this up for about a week, once a day. After the week has gone by, and all meetings have been successful, then it's time to move them in together. Make sure you thoroughly clean everything in the cage...toys, accessories, bedding, etc. Anything that might have rat smells on them. Then restock the cage with the clean things, add new bedding, and dab more vanilla essence on each rat.

When placing them in the cage together, keep a close eye on them. There will be more shows of dominance, with shoving, pinning down, etc. Leave them be, unless it becomes serious or blood is drawn!! There will be squeaking and mild fighting over the next week or so, but this will diminish once ranks are determined and they get more used to each other. And the little ones do tend to push the older one's buttons and try their luck, so they will be disciplined for it.

If all went well then congratulations, you have successfully introduced rats!

Chapter 12: Surgeries

Often surgery becomes a consideration for your rat, whether it's a simple neuter or tumour removal operation. This does not have to be a scary prospect and rats are very fast healers. There are several points about surgery on rats that are different from other pets though. It's vitally important you find an experienced 'rat-friendly' vet and discuss the following with them:



- 1. Keeping food from rats overnight before surgery is not necessary and can be dangerous.** Rats have a flap in their stomach that covers the oesophagus and prevents both vomiting and burping. Rats do most of their eating at night and an overnight fast will deplete their energy reserves which they will need to survive the surgery. When taking your rat to the hospital for surgery, make sure your rat has eaten something that morning, and that the cage has food and water; it may be a while before the surgery. Food and water should be offered to the rat as soon as it awakens from the anaesthetic at the hospital.
- 2. It's very important that rats be kept warm during and after surgery.** General anaesthesia prevents normal temperature regulation of the body. Rats are so small they lose body heat rapidly and if heat is not supplied, for instance by a heating pad, they can easily die from hypothermia. However, rats should never be placed directly on a heating pad. This can cause burns or heat stroke. The heating pad must be covered by something such as a towel.
- 3. Only inhalant anaesthetics should be used for rats.** This is so the level of anaesthesia can be carefully controlled. Injectable anaesthetics can be deadly as they can't be precisely controlled.
- 4. A full course of an antibiotics to prevent infection is recommended,** especially for neuters, major surgeries, for older rats, or if a rat has other health problems. If a rat who has had respiratory problems needs surgery, they should be put on antibiotics suitable for mycoplasmosis several days before the surgery to help protect them against a relapse during the stress of the procedure. These should be continued at least until the incision has fully healed.
- 5. It is important that your rat be given at least a few days of painkiller/anti-inflammatory medications after surgery.** Besides not wanting your rat to be in any discomfort, a rat experiencing pain will be more likely to chew at the wound site and remove stitches.
- 6. Unless there are complications, you should be able to take your rat home the same day as the surgery.** It's best to schedule the surgery on a day when you will be home afterwards so you can keep an eye on the patient in case of bleeding or other problems. A rat may be sleepy from the anesthesia and analgesia that day, but should be back to normal the next day.
- 7. Within a day, most rats should be put back with their cagemates for comfort and warmth.** Your vet may insist you keep them separate for precautionary measures, but a rat will rarely bother the incision of another rat unless they are an obsessive groomer or barber.

Chapter 13: Health & Veterinary

It is important to understand that the first point of contact, when dealing with a sick or injured animal, is a qualified vet. And this applies to your rats too. When getting rats, it's best to do research on the available veterinarians in your area to see who has rodent experience and is most qualified to meet your rat's future veterinary needs.

The following ailments and/or diseases are those most commonly afflicting the pet rat and are purely guidelines to assist you in better helping your rat. We in no way suggest that you attempt to treat your rat yourself and it's always best to seek professional advice.

1. Mycoplasmosis (Also known as Myco) - Respiratory Illness

Symptoms: Sneezing, wheezing, mucus from nose, porphyrin staining around nose or eyes, coughing (almost like hiccups), noisy breathing or head-tilting.

Diagnosis: One of the most common health problems in rats is respiratory illness. *Mycoplasma pulmonis* (Myco) is a bacteria that is found in almost every rat. When rats are young and healthy, their immune systems are able to keep the bacteria in check, but if their immune systems are weakened the bacteria can multiply and cause more damage.

Treatment: Treatment should be started as soon as symptoms appear, or irreversible damage may be done to the sinuses and lungs. It may be an underlying infection such as pneumonia, which should be taken very seriously as it can kill a rat in only a few days. The Myco can spread to the inner ear which results in a pronounced head-tilt or even to the uterus/genitals.

There is no cure for Myco, but the secondary respiratory infections associated with it, such as pneumonia, can be treated. Antibiotics, a healthy diet, a clean cage, and an environment free from stress will help keep your rat's immune system strong and able to fight the Myco.

If a Myco flare-up or secondary infection occurs, you need to get antibiotics from your vet. Baytril (see medication warning on page 32) or Doxycycline are the most effective antibiotics against Myco and are sometimes used in combination for extremely resistant cases. Other options include Tetracycline, Tylosin, and Erythromycin which are also capable of fighting Myco and any secondary infections. Never use antibiotics for less than 10 days or the Myco will become resistant to the medications. In most cases a course of 14 to 21 days is advised.

Humidifiers, Bisolvon (A syrup available at pharmacies), nebulizers, or even putting your rats in the bathroom while a shower is running to create steam, can all help ease congested lungs. You can also try sprinkling Olbas aromatherapy oil in and around their cage to help clear airways.

In most cases, eventually the Myco will become resistant to treatment and the rat will not be able to breathe freely. In the late stages the rat may gasp through his/her mouth, become restless, the feet and tail tip may turn blue from lack of oxygen, and if the infection reaches the inner-ear head-tilt will also develop. When your rat's quality of life becomes poor, euthanasia (with anesthesia given before the injection) should be considered.

2. Tumours - Cancers & Growths

Symptoms: Visible growths / lumps beneath the skin varying from soft and movable when touched to slightly more firm and attached, weight loss, poor appetite, lethargy.

Diagnosis: Most commonly found in female rats that are prone specifically to mammary tumours. Males are prone to testicular cancers. Rats in general however can be susceptible to tumours and cancers throughout the body. Fortunately not all are malignant.

Treatment: Your veterinarian may suggest surgery to remove tumours or cancerous growths that have appeared. Providing that they are not directly attached or affecting major organs and that your rat is in an otherwise healthy condition. Generally further growths may occur and it is up to yourself and your veterinarian to decide whether to then opt for further surgeries.

Ensure that post surgery your rat is kept warm and administer pain medications as advised. This will prevent your rat from chewing at their stitches in an attempt to relieve pain at the incision. If the incision appears to be draining or leaking, ensure it is kept clean by wiping it with warm saline water. For the first couple of days after surgery make sure your rat receives plenty of iron rich foods such as cooked liver, scrambled eggs, etc. You can also offer soya milks or electrolyte replacement drinks (found in powdered form at pharmacies) to help encourage water intake while recuperating.

3. Bumblefoot

Symptoms: Small red bumps on the underside of paws that resemble calluses or open sores.

Diagnosis: Bumblefoot (ulcerative pododermatitis) is a mass of rough, over keratinized tissue that develops on the heels. It starts out as a small cut or puncture surrounded by redness, and if left untreated, develops into a raised sore/scab. The sore will usually fill with blood, rupture and bleed, and then form a bigger sore that will again rupture. Inflammation will usually occur around the sore, but in some cases the whole foot may swell and cause a great deal of discomfort.

There are many factors that can contribute to the formation of bumblefoot. Any type of uneven flooring that may cause tiny cuts or pressure points on the feet will increase the risk. Obesity also plays a major role because the feet are constantly under more pressure, and there is more friction/rubbing as they walk. Some rats may also have a genetic predisposition to bumblefoot. Health problems, such as type II diabetes and poor blood circulation can also be a factor.

Treatment: Your veterinarian will prescribe a broad spectrum antibiotic to administer to your rat. As well as medication, the common treatment regime would consist of cleaning the affected areas daily with a mild saline solution or 1% dilute of antiseptic liquid (ie: Dettol). Then a topical antibiotic ointment such as Neosporin should be applied to the area.

Bacterial and fungal infections are likely to develop in the area, which may cause an abscess to form. If proper treatment is not started promptly, there is a risk of the infection spreading to the bone or blood.

4. Hind Leg Paralysis - Degenerative Osteoarthritis

Symptoms: Lack of mobility in hind legs and rear end, loss of bladder or bowel control

Diagnosis: This condition involves the gradual deterioration of cartilage, the formation of new bone growths (commonly called spurs), and the thickening of membranes surrounding joints. It occurs in older rats and is more common in males. It is unfortunately a progressive condition and only the symptoms can be treated. It can affect any joint in the body but it's most visible in the spine, hips, knees, and toes.

As the cartilage deteriorates, it flakes away causing the joints to rub against one another. When the spurs develop and the membranes thicken, the spaces in the joints narrow and compress causing inflammation, pain, and stiffness. When osteoarthritis occurs in the spine, the spinal cord is damaged and mobility is lost.

Ageing and genetics are the main factors that contribute to hind leg paralysis but obesity can increase the severity and bring it about at an earlier age. Frequent strain on the joints, infection, or injury will also speed up the progression of the condition.

Treatment: When symptoms first begin to appear, apply topical DMSO gel (dimethyl sulfoxide) and provide a Glucosamine-Chondroitin supplement. Use only human/pet approved DMSO and if you notice redness, itchiness, or inflammation of the skin, discontinue use.

Ibuprofen can also be given to reduce inflammation. A B vitamin complex seems to delay the symptoms in some rats and a dose of 1-5 mcg of B12 in the complex daily is recommended. If the above treatments no longer relieve pain and inflammation, talk to your vet about prednisone, antibiotics, and a probiotic (prednisone weakens the immune system so it should be used in conjunction with antibiotics and a probiotic).

It's recommended that you put the rat into a one-level cage with cloth bedding so they can't fall and injure themselves. Lower the water bottle, food dish, and hammocks to prevent further strain to joints and ensure that they're able to eat and drink.

When your rat is no longer able to hold food in his hands, consider feeding him baby or pureed foods. Gentle massages and range of motion exercises should be done at least daily to prevent stiffness and help with circulation. You should also groom your rat at least on a daily basis. Use a damp cloth to wipe down the entire body, especially the belly and anal area. Remove earwax with an ear-bud by cleaning the outside of the ear (never attempt to insert the ear-bud into the ear canal!). With lots of care your old rats, although paralyzed, can enjoy a good quality of life.

4a. Skin Problems - Mites

Symptoms: Itching, scabs, small growths around the edge of ears, on tail and on nose

Diagnosis: Parasites can cause a lot of itching and scratching, which can lead to other problems such as infections and scabs. If one of your rats has parasites then most likely they all will. To check for parasites, take a white piece of paper and run your fingers through your rat's coat while holding him/her over the paper. Mites are tiny and hard to see, but if you spot red/brown specs on the paper then your rat has mites. Brown oval-shaped specs will be lice, and black specs will be fleas. You will also most likely find white eggs at the base of your rat's hairs.

Treatment: You should treat with either topical Ivermectin, which is only administered by veterinarians or you can try a Horse De-wormer or Revolution.

You should see improvement in a week or so, and make sure to treat all your rats. **Also, rats should never be given an injection of Ivermectin!** Ensure that your veterinarian is aware of this and that he applies a topical dose of Ivermectin to the back of your rat's head. You may need to repeat this treatment once more in 10 to 14 days to ensure it is properly cleared. If you decide to use a horse de-worming paste, the most important thing to remember is to mix it thoroughly before getting the dose size. If the dose is too concentrated it can paralyze or even kill your rat! Give no more than a grain of rice sized amount to each rat.

4b. Skin Problems - Allergies, Feeds, Fungi & Stress

Stress can suppress the immune system of your rat, making it easier for bacteria, parasites, fungi, and other factors to cause skin problems.

Protein in big quantities in your rat's diet can cause itchy skin and scabs. Protein scabs are common around the eyes, chin, neck, and shoulders. Your rat only needs about 10% of his diet to be protein so make sure that it doesn't include too many nuts, meats, dairy products, etc.

Eczema is a chronic, non-contagious skin disease caused by stress, allergy, hypersensitivity, or other unknown factors. The skin will usually be dry, crusty, and very itchy, and may also have lesions, blisters, or skin spots. The symptoms can be controlled with a steroid cream or shampoo from your vet. In most cases, continued treatment is required throughout the rat's life.

Allergies are fairly common in rats. The most common allergens are dairy foods and nuts. You should eliminate these foods for at least a week and hopefully your rat's skin will improve. If not, you might have to remove all foods except a staple diet and slowly start adding a different food every week until you find the allergen. Most allergies, and eczema, can be treated with hydrocortisone creams or steroid treatment.

Fungi can also cause itching, but it's fairly rare. If you've already treated for parasites and your rat isn't allergic to anything, then you should treat for fungi. Your vet can do a skin scraping or biopsy to test for fungi, but the test usually isn't very accurate and comes up with a false negative. For a mild fungal infection, you can try an over-the-counter antifungal cream. For severe infections, you can use an oral fungicide such as Ketoconazole, but always ask your vet.

5. Seizures

Symptoms: A sudden occurrence of involuntary muscle contractions or stiffness accompanied by changes in consciousness, behaviour, and involuntary bodily functions.

Diagnosis: Usually seizures last only a few seconds or minutes and no bodily harm is done, but there is a danger of the air passages closing up. Seizures are a sign of either a hereditary or an acquired imbalance in the central nervous system. Head traumas, strokes, tumours or a brain abscess, toxic substances, rapid changes in blood sugar or oxygen in the brain, or infection can all bring about a seizure.

Once your rat has a seizure, there is a very high chance they will occur again, usually becoming more frequent. If your rat has a seizure write down what your rat was doing before it had a seizure, how long it lasted and the severity, and if he/she lost consciousness. Take your rat to the vet and supply him/her with as much information as you can.

Treatment & Care: Your vet can prescribe an anticonvulsant such as Phenobarbital or Diazepam but it will take a few weeks to take effect. If an infection is thought to be the cause of seizures then antibiotics should be prescribed and a corticosteroid for any inflammation.

Make sure to keep the rat well hydrated and provide a healthy diet low in sugars. It's best to move the rat into a one-level cage with soft bedding to prevent injury during seizures. It's also very important to provide a stress-free environment. Ensure that they're not startled by loud noises or sudden movements, that temperature remains at a constant comfortable level, and leave them with cage mates unless they're causing stress. Avoid touching your rat during a seizure unless there is a possibility that they'll fall and injure themselves.

6. Choking

Symptoms: Hunched up body, flattened ears, bringing chin in close to neck repeatedly, heavy salivation, feet or nose turning bluish in colour.

Diagnosis: Choking can be a common occurrence. When it occurs, its important to stay calm and know the signs. Most importantly though check for signs of breathing immediately!

Treatment: If they are breathing, you can try to gently massage the back of the neck, but the best thing to do is to leave the rat to dislodge it itself. Keep a close eye on him/her, and maybe separate the choking rat from others for the recovery time.

If they're not breathing, then get to a vet immediately. It's not recommended for people to try anything if inexperienced, but this is suggested by Debbie Ducommun of the Rat Fan Club: Hold your rat firmly around the neck with one hand, and by the base of the tail with the other to hold her securely. Make sure there are no objects within an arm's length. Lift the rat overhead and bring her down in a rapid arc, so that at the end of the path she's tail up and head down. This can be repeated three to four times, then give the rat a rest, check her breathing, and see if anything is visible in the mouth. This is extremely effective in dislodging objects in the throat. However, do NOT use this procedure if your rat can breathe, or you might make it worse."

7. Urinary Tract Stones - Urolithiasis

Symptoms: Difficulty or lack of urinating, foul odour, distension, cloudy or bloody urine, dehydration and poor appetite, restlessness, biting itself, and twitching/spasms caused by pain

Diagnosis: Urinary tract stones (urolithiasis) are stones/crystals that can be found anywhere in the urinary tract and are more common in males. Normally the rat will not show any symptoms until a stone blocks the flow of urine or enough stones have formed to distend the bladder. The stones rub and irritate the linings of the urinary tract and as urine is obstructed there is a very high chance of infection occurring.

The many factors that can contribute to stone formation are: genetic predisposition, diet imbalance, diabetes, high blood calcium, dehydration, bacterial infections, bladder thread worm, or loss of bladder control due to a stroke or hind leg paralysis.

Stones are very difficult to treat in rats and it's important that it's done by a qualified, experienced vet. Antimicrobials may be used to help dissolve smaller stones or surgery can be used to remove them. If the bladder is distended a catheter can be used to drain the urine. A sedative or muscle relaxant should be provided to help relieve pain, antibiotics to treat infection, and if bladder thread worm is suspected also treat with ivermectin or fenbendazole. If the rat is dehydrated, an injection of fluids should be given but only in moderation until the urine is able to flow again! The diet should also be modified to include less calcium and protein (and if urine is able to flow) encourage drinking to prevent dehydration. If treatment is ineffective and the rat's quality of life is poor, you should consult with your vet about euthanasia.

8. Rat 911 - General Ailments & Emergencies

Abscesses:

This can occur after a bite wound or a similar laceration. It will be red and swollen. It will be painful for your little one, so handle with care. They can break and drain pus. Frequently clean it with a warm compress, and keep an eye on it. As soon as it ruptures, clean it with a syringe (see Wounds below). Keep it clean as possible, and it should heal.

Bleeding:

If your rat is bleeding, stay calm. It might not be as bad as it looks. If the bleeding is minor, then apply some styptic powder or potassium permanganate (what parlours use on clipped dogs' nails, but careful, these stain!), flour, or even cornstarch to the wound to stop the bleeding. If the bleeding is serious then, using paper towels, gauze pads, or a clean rag, gently apply firm pressure to the wound. Keep the pressure on for at least 2 min or up to 6 minutes if the bleeding is severe. Gently remove the compress and check to see if bleeding has stopped. If it hasn't, repeat the process. If the bleeding still doesn't stop, then get your rat to the vet as soon as you can. It's imperative that you keep applying pressure, so get someone to take you.

Degloving:

This is a defense mechanism for rats, similar to a lizard/gecko. The whole tail is not dropped (like the aforementioned lizard/gecko), but rather the outer layer of skin tears away from the tail bone. It's very painful for the rat, and can occur when the rat's tail is trapped and they pull away, or by picking the rat up by the tail (which is a big no-no!). This injury can be very prone to infection and should be treated correctly immediately.

If the injury is extensive, wrap the tail in a clean cloth and seek vet assistance. The vet will advise what needs to be done - amputation is a possibility. They might also prescribe antibiotics and/or pain medication. If the injury is minimal, then wash the wound with a saline solution (a solution that is least toxic to sensitive tissue although it is not an antiseptic solution), which you can make from 1 teaspoon of salt in 470ml lukewarm water. Dry it by gently patting it with a dry towel, and apply an antiseptic cream like Dermavet. The wound should dry up and heal.

Electrical Shocks:

This can occur if you leave your rat to play in an un-rat-proofed room! Your rat might receive burns to the mouth and paws, loss of consciousness and possibly even cardiac arrest! Check for breathing. If its not breathing, then you can attempt resuscitation. Be aware that it might not always be effective, your chance growing slimmer the longer the rat has been unconscious. Place your mouth over the rat's nose, and breathe gently about 30 times a minute. At the same time, use your thumb and forefinger to gently compress the chest directly behind the elbow about 60 to 100 times a minute.

Eye Injuries:

This can be caused by fighting, sharp objects in their cage, among other possibilities. Your rat might show signs of pain, light sensitivity, or be holding its eye shut, and even aggressive behaviour. Get your rat to the vet immediately for treatment. This injury is a delicate one and needs to be handled by a professional. If they eye seems to be gummed up, you can try applying a used and cooled Rooibos teabag every few hours, then seek veterinary attention.

Broken Bones:

This can happen due to falls, catching feet in wire floors of their cage, or even being stepped on while having their daily roaming time. It might be difficult for you to assess, especially if it's of the ribs, skull, or paws, but the treatment will be the same: gently put the rat into its comfy travel cage and get to the vet. Make the journey as smooth-going as possible, as a broken leg or paw can hurt a lot when trying to balance against the force of your car turning sharp corners. Each incident is different and a vet will advise on what to do next for individual cases.

Wounds:

Rats being rats are bound to have a little tussle now and then, and sometimes it can get a little more serious. Gently but firmly restrain your rat and assess the damage. Use tweezers to remove anything stuck to the wound, and control the bleeding if necessary (see Bleeding). Use a syringe, without the needle, to wash out the wound with a saline solution. Then apply an antiseptic cream like Dermavet to the wound to clean it further. Repeat this procedure twice a day for the next few days until you see that it's healing with no infection. Do be careful to watch that an abscess does not form. If you see signs of infection or the wound is very large, seek advice from your vet immediately.

Head Injuries:

This is a very serious injury that should be treated immediately by a vet. Your rat may bleed from the nose or ears, fall in and out of consciousness, or even have seizures. Stay calm, for both your sake and the injured rat, and gently place your rat in its comfy travel cage. Have a friend or family member drive you to the vet, while you try to keep the rat as comfortable as possible. Signs of head-tilt may also indicate head injury, if no (inner) ear infection can be detected. Like previously said, this injury can be serious, and can end in death. Although it may be hard to decide, you might be faced with the decision of euthanising your little one.

Heatstroke

Although not common, it can happen if your rat is left in the hot South African sun for long periods of time without shade or water - please note, this is cruelty to animals and action can be taken against you. Your rat might drool, become immobile and unwilling to move, and even lose consciousness. Check the tail - it will be very warm! Place your rat into cool water, keeping the head above water, or wet its fur with cool water using a cloth. You can try feeding it a sports drink/water with a syringe (no needle please!) if the rat is conscious. Get it to the vet as soon as possible, as complications can include organ failure, blood clotting, and even brain damage. Rats cannot sweat like humans can. Keep their cage out of direct sunlight, and if temperatures soar then keep a fan blowing in their direction. You can also freeze water in a plastic bottle, and put this in the cage - a home made rat air-conditioner.

Poisoning:

If your rat has ingested a poisonous substance, various symptoms can occur. Some include frothing at the mouth, diarrhea, bleeding from the mouth or rectum, and lack of co-ordination. Get your rat to the vet, bringing the offending substance along (preferably in its original packaging/container). Your vet will advise further action.

Toenail Injuries:

Whether your rat injured themselves or you did it, it will bleed - a lot - and will need to be treated. If the toenail is still attached, remove what you can (carefully!!) with clippers - you might want to ask a friend or two to help restrain the rat gently. Use styptic powder or potassium permanganate (be careful, these stain), flour, or cornstarch to stop the bleeding. This type of wound doesn't normally have complications, but keep an eye on it for the next week, and if complications happen, then seek your vet's advice.

9. !!!!MEDICATION WARNINGS!!!!

Baytril:

Please advise your vet against giving Baytril injections. Baytril is caustic and can cause nasty scabbing and wounds around the injection site. Injectable Baytril can be diluted and given orally. It is also not advised to give Baytril in the water supply, especially if the sick rat is caged with healthy ones. Baytril is bitter so rats can avoid drinking it and you can't be sure the rat is going to get the correct dose.

Ivomec/Ivermectin:

This common medication used to treat mites can lead to fatality or severe reactions if injected. NEVER allow your vet or anyone else to inject this into your rats under ANY CIRCUMSTANCE! A drop of topical ivomec/ivermectin should be applied to the back of their necks only and repeated again in 7 to 10 days.

Chapter 14: Useful Links & Contacts

Fancy Rat Breeders

Jackalhead Rattery:	http://www.freewebs.com/jackalheadrats
Little Squeakers Rattery:	http://www.littlesqueakers.co.za
Pretoria Rattery:	http://www.ratsforafrica.webs.com
Runebound Rattery:	http://www.runeboundrattery.bravehost.com
Settican Rattery:	http://www.rattery.settican.com
Waverley Rattery:	http://www.waverleyrattery.co.za
Wheatfields Rattery:	http://www.wheatfieldsrattery.co.za
Whiskers Rattery:	http://whiskersrattery.weebly.com

Rat Clubs & Rescues

Ratanooga:	http://www.ratanooga.co.za
Ratanooga Forums:	http://forums.ratanooga.co.za
Rascals Rescue:	http://www.rattyascals.co.za
Rascals Forums:	http://www.rattyascals.co.za/forums
Rats In Action:	http://ratsinaction.weebly.com/
SocRatties:	http://www.freewebs.com/socratties

Rat Cages, Toys & Accessories

Online Rat Store:	http://www.mischiefproducts.com
Hammocks & Cubes:	http://www.ratcomforts.co.za
Hammocks & Cubes:	Email: hemming.lolly@gmail.com
Hammocks & Cubes:	Email: uphighhammocks@gmail.com
Petmania Pet Store:	http://www.petmaniaonline.co.za
Rat Year Calendars:	http://www.ratanooga.co.za

Bedding & Litter

Kenaf Litter Direct:	http://www.kenaf.co.za
Amaizing Corncob:	http://www.rascalspetlitter.co.za

Rat Health & Veterinarians

Recommended SA Vets	Vet listings at http://www.ratanooga.co.za
The Rat Health Guide	http://ratguide.com

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