THE MANX

OTHER NAMES	MANX SHORTHAIR, MANX LONGHAIR (ALSO KNOW AS CYMRIC)
GROOMING	+ + +
LIFESTYLE	INDOOR - OUTDOOR
SIZE	MEDIUM
WEIGHT MALE	4.5 - 5.5 KG
WEIGHT FEMALE	3.75 - 4.5 KG

Affectionate	Independant
Calm	Hyperactive
Social	Exclusive
Quiet	Talkative

CHARACTER

These gentle cats are generally playful and their powerful hindquarters make them excellent jumpers, able to get to the highest corner to investigate something that has attracted their interest. The Manx is a very calm cat and has a high social intelligence. They are people-orientated cats who form strong bonds with their families. They get on with children and other pets when properly introduced. These even-tempered cats have a lot of affection to share and prefer not be on their own for long periods of time.

AN EVEN-TEMPERED
AND VERY SOCIABLE CAT.

BREEDERS' TIPS

Make sure to watch food intake to maintain optimal body condition (they like to eat) and make sure they get lots of exercise.

tailless or short tail

MORPHOLOGY

A medium-sized cat with a robust, well-muscled body. Its hind legs are longer than its forelegs, making the body arch up to a rounded rump where there would normally be a tail. There are not only tailless versions, but some with a very short rudimentary tail and some with long tails. It has a fairly large and round head with prominent cheeks.
It has soft, dense undercoat and glossy, guard hairs. In the long-haired version (Cymric), the outer coat is considerably longer and has a silky texture.

COLOURS

All colours and patterns.

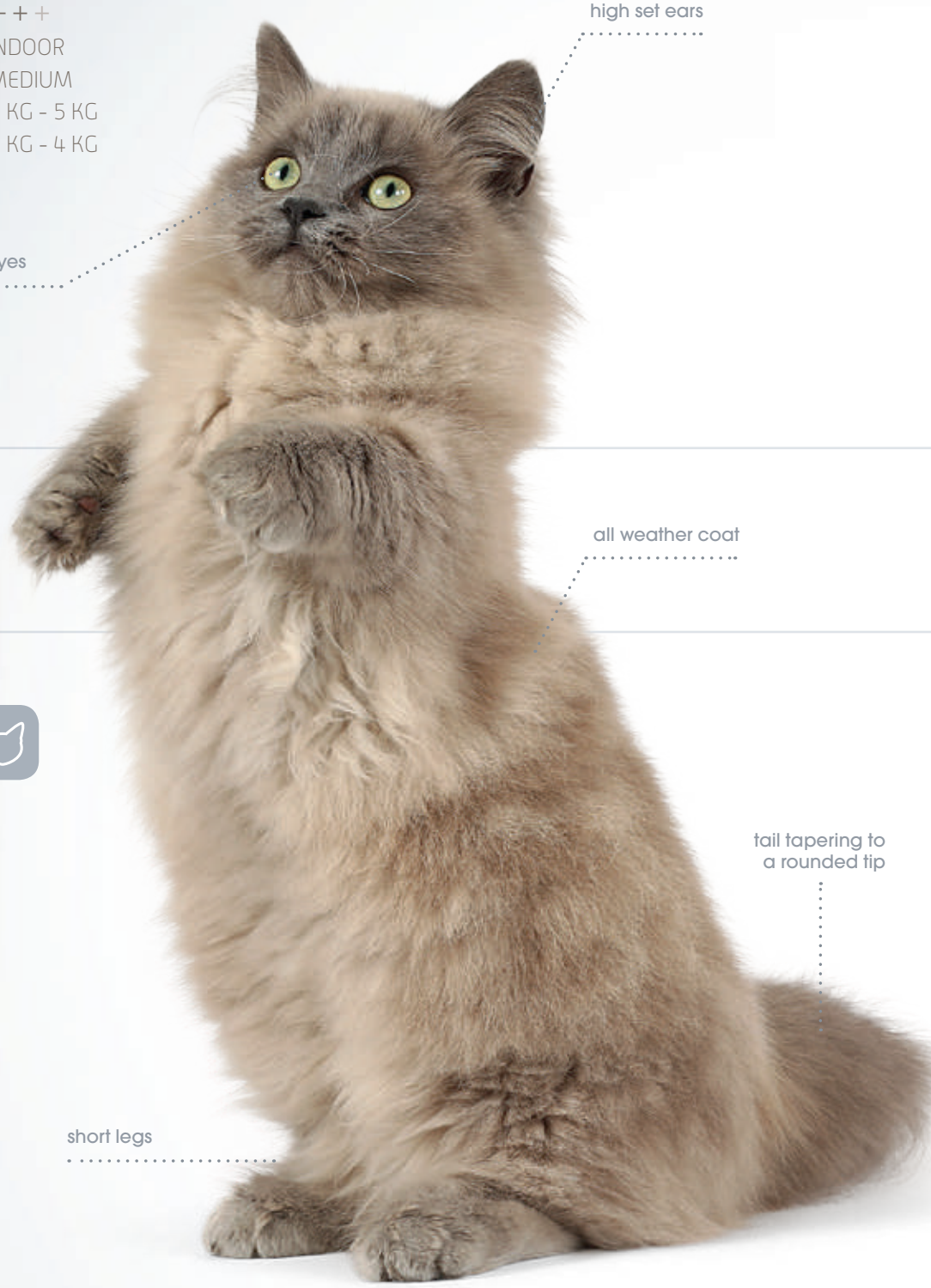
THE MANX

ORIGINS

The breed originated in the Isle of Man, an island in the Irish Sea off the coast of England, and has been known since the early part of the 19th century. Although there are many legends concerning this cat, it has probably developed from a spontaneous mutation for taillessness, which would have spread through the cat population on the island, because of the lack of genetic diversity. They were first exhibited at a show in London's Crystal Palace, in 1871, and became very popular there and in the USA, where they were recognised in the early 1900s. The long-haired variety, known in some organisations as the Cymric, was later developed in Canada.

THE MUNCHKIN

OTHER NAMES	MUNCHKIN SHORTAIR, MUNCHKIN LONGHAIR
GROOMING	+ + +
LIFESTYLE	INDOOR
SIZE	MEDIUM
WEIGHT MALE	3 KG - 5 KG
WEIGHT FEMALE	2 KG - 4 KG



Affectionate	● ● ● ● ● ● ● ● ●	Independant
Calm	● ● ● ● ● ● ● ● ●	Hyperactive
Social	● ● ● ● ● ● ● ● ●	Exclusive
Quiet	● ● ● ● ● ● ● ● ●	Talkative

CHARACTER

These sociable cats are extremely playful and love to run, chase and play with toys. They love company, including children, dogs and other pets. Munchkins are extremely curious and will sit up on their hind legs like a rabbit to get a better view of something that has caught their attention. They may not jump from the floor to the top of the bookcase in a single bound, but they will show off their jumping prowess and intelligence as they find a path that takes them there in smaller steps.

A CURIOUS AND PLAYFUL CAT.

BREEDERS' TIPS

Grooming is quick and easy. Munchkins should be combed once a week to help remove loose dead hair and prevent tangles or mats from forming.

MORPHOLOGY

The Munchkin is a small to medium-sized cat. Its outstanding and unique characteristic is its short legs. Everything is moderate in this cat, the body is semi-foreign and the tail should be the same length as the body. It has an alert, open expression created by her walnut-shaped eyes and high set ears. The coat is an all-weather coat; on the short-haired variety it has a semi-plush texture whilst the semi-longhair variety has a silky semi-longhair coat with a slight ruff and a plumed tail.

COLOURS

All colours and patterns recognised.

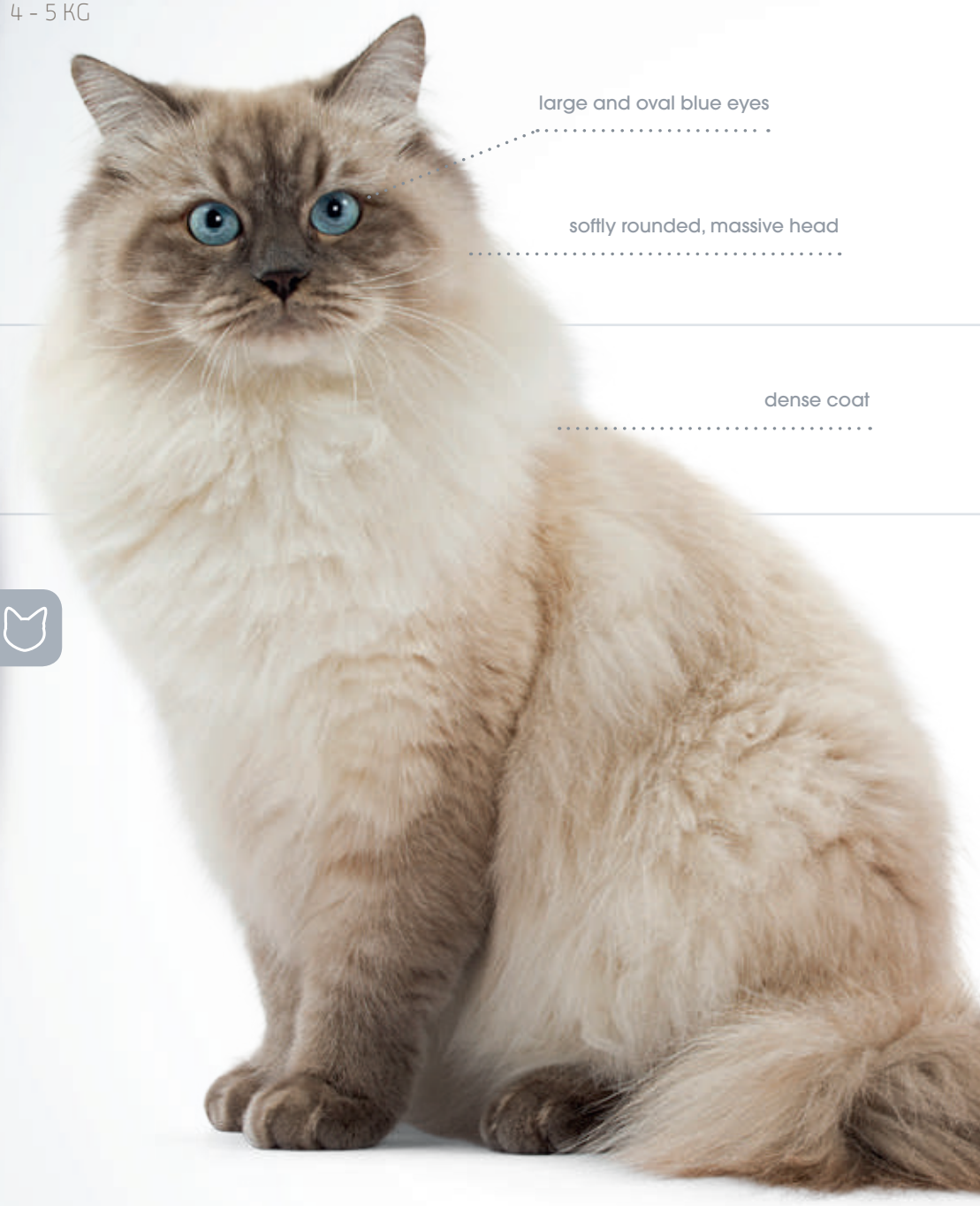
THE MUNCHKIN

ORIGINS

Short-legged cats have appeared in different places and times for many years. There was a line of short-legged cats in the UK in 1944, but this disappeared during the Second World War. Similar cats have also been seen in Russia and in different parts of the US. In 1983, Sandra Hockenedel found a pregnant short-legged cat and used it as the foundation for today's Munchkins. A male from this female was kept and from these two, with the addition of domestic cats, the breed was established. It was developed within TICA from 1994 and, after years of breeding with observation by the TICA genetics committee, it eventually obtained championship status in 2003.

THE NEVA MASQUERADE

OTHER NAMES	SIBERIAN COLOURPOINT
GROOMING	+ + +
LIFESTYLE	INDOOR - OUTDOOR
SIZE	MEDIUM TO LARGE
WEIGHT MALE	6.5 - 7.5 KG
WEIGHT FEMALE	4 - 5 KG



Affectionate ● ● ● ● ● ● ● ● ● Independant

Calm ● ● ● ● ● ● ● ● ● Hyperactive

Social ● ● ● ● ● ● ● ● ● Exclusive

Quiet ● ● ● ● ● ● ● ● ● Talkative

CHARACTER

The Neva Masquerade is a lively, intelligent cat that enjoys playing and is also very affectionate. They get on well with other cats, dogs and children. Despite their size, they are quite agile and like to jump high.

AN AFFECTIONATE AND
INTELLIGENT CAT.

BREEDERS' TIPS

Neva Masquerade cats need the attention of their owners, but don't like to be cuddled and stroked by unknown people.

MORPHOLOGY

The Neva Masquerade is a medium to large cat with a powerful, athletic body. The body is of medium-length, with a deep chest and strong-boned legs. The head is a modified wedge with gentle rounded lines and open, almost round, blue eyes. The ears are medium in size and have longer hair at the base. It has a unique, 'weather-proof' coat with a very dense undercoat. This cat is distinguished by its colourpoint pattern. The tail is of medium-length and resembles a Fox's brush.

COLOURS

All pointed colours.

THE NEVA MASQUERADE

tapering and bushy tail

ORIGINS

The Neva Masquerade is the colourpoint variety of the Siberian, which is a very old, natural breed of cat known in Russia for many centuries. There are early references to Siberians, but the colourpoint variety did not appear until the 1980s, when it is believed that Siamese and possibly colourpoint Persian cats were crossed into the breed to achieve the colourpoint gene. In the late 1980s, Siberian cats were exported to other European countries and also to the USA. Whilst the Siberian was generally recognised in the late 1990s, some registries chose not to accept the colourpoint varieties. The Neva Masquerade was recognised in its own right in FIFe and WCF in 2009.

THE NORWEGIAN FOREST CAT

OTHER NAMES	SKOGKATT
GROOMING	+ + +
LIFESTYLE	INDOOR/OUTDOOR
SIZE	LARGE
WEIGHT MALE	4 - 9 KG
WEIGHT FEMALE	3 - 7 KG

Affectionate ● ● ● ● ● ● ● ● ● Independant

Calm ● ● ● ● ● ● ● ● ● Hyperactive

Social ● ● ● ● ● ● ● ● ● Exclusive

Quiet ● ● ● ● ● ● ● ● ● Talkative

CHARACTER

The Norwegian Forest cat has a very sociable character and makes a great pet for children. They also get on well with other pets. This is a hardy, robust and athletic cat but, despite its size, it is incredibly supple and a remarkably good climber. It is also one of the few cats that enjoys water. The Norwegian has an even temperament, is self-assured, friendly and easy-going. It is a laid back, calm cat, but can be very playful too. Cat owners describe them as loving and affectionate cats.

LAID BACK, CALM CAT
WHO CAN ALSO BE PLAYFUL.

BREEDERS' TIPS

Provide them with plenty of physical and mental stimulation: a cat tree is an essential, as is a supply of toys.

almond-shaped eyes

MORPHOLOGY

The Norwegian Forest Cat is a natural breed, with a strong body set on fairly high strong-boned legs. It is well covered with a soft under coat and medium-long, fairly coarse guard hairs, which protects it from extreme weather. Its distinctive head is wedge-shaped, with a straight profile and well-pricked ears, which are tufted and with long hair coming from within. It has almond-shaped eyes and a thickly plumed tail which it holds high.

COLOURS

All colours and patterns except the pointed pattern and the colours Seal, Chocolate, Lilac, Cinnamon or Fawn.

THE NORWEGIAN FOREST CAT

thickly plumed tail

ORIGINS

It is likely that the ancestors of these cats were Southern European short-haired cats that migrated to Norway in prehistoric times. They developed through natural selection, as only those cats which were able to adapt to the harsh Norwegian winters would have survived. It is claimed that the ancestors of this cat were the household pets of the Norwegian Vikings, who took their cats with them on their ships that sailed to many countries of the then known world. From roaming the forests, they are believed to have migrated to the farms where they were prized for their ability to control the rodent population.

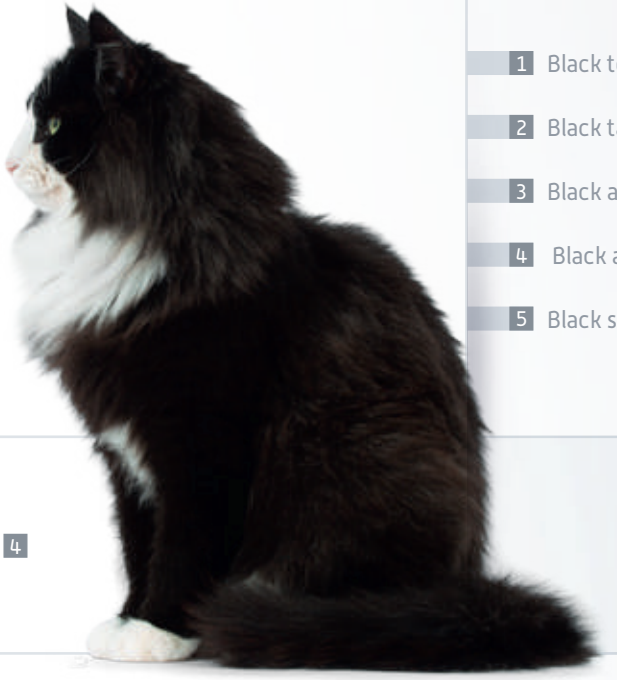
THE NORWEGIAN FOREST CAT

THE NORSE CAT OF VIKING LEGENDS

2

1

3



4

1 Black tortie and white

2 Black tabby and white

3 Black and white

4 Black and white

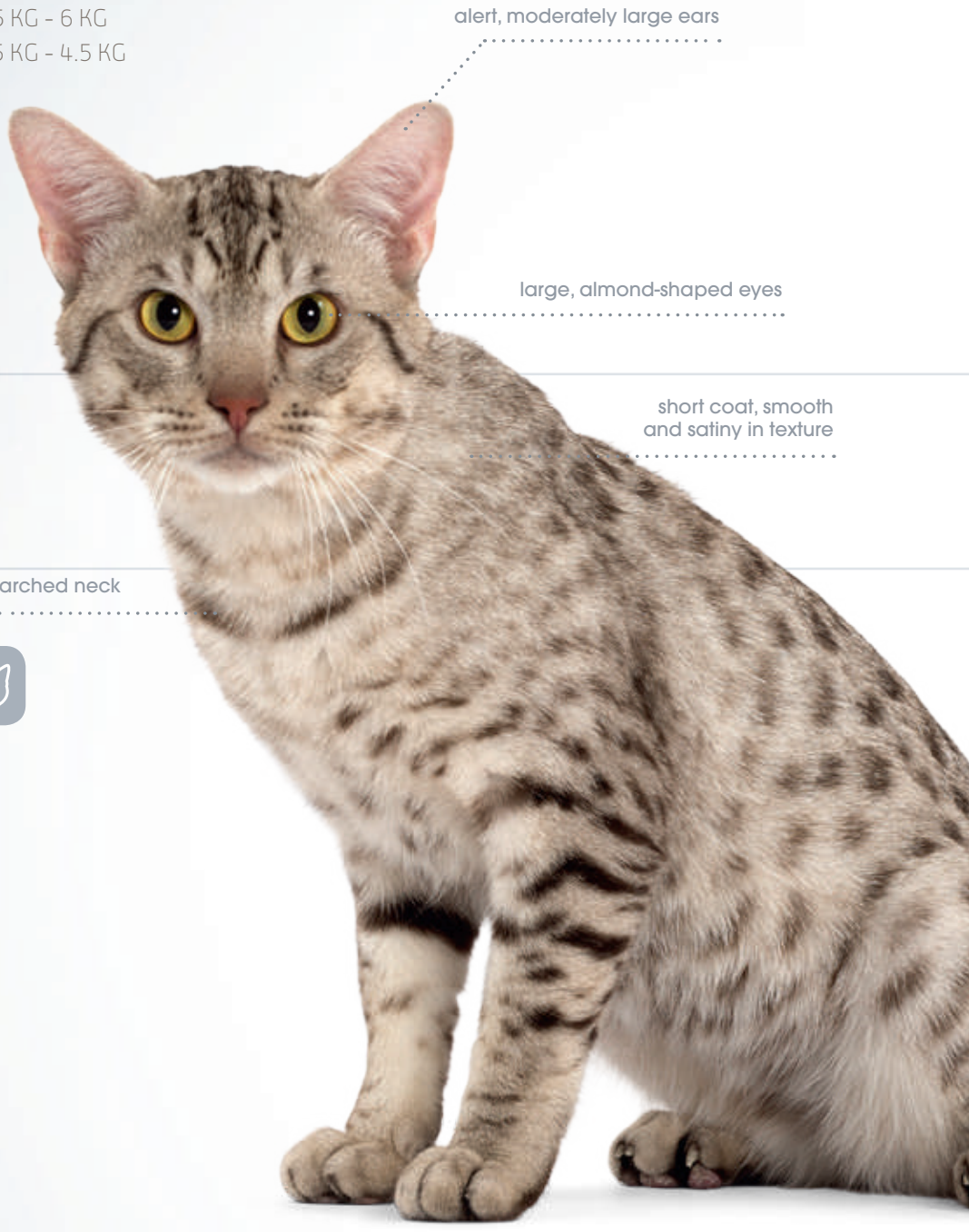
5 Black silver tabby and white

THE NORWEGIAN FOREST CAT

5

THE OCICAT

OTHER NAMES	CLASSICAT (FOR THE CLASSIC PATTERNED OCICAT)
GROOMING	+ + +
LIFESTYLE	INDOOR - OUTDOOR
SIZE	MEDIUM TO LARGE
WEIGHT MALE	4.5 KG - 6 KG
WEIGHT FEMALE	2.5 KG - 4.5 KG



Affectionate	Independant
Calm	Hyperactive
Social	Exclusive
Quiet	Talkative

CHARACTER

The Ocicat may look wild, but it is actually a devoted family cat. They are confident cats and are outgoing with visitors, eagerly checking out the chance for a game or a lap to curl up on. They are bright cats and will quickly learn to play fetch. They are full of energy and their powerful grace easily lets them leap to high places. They are adaptable cats who easily learn the household rules, however their sociable nature means they are unhappy if left alone for long periods.

A SOCIABLE AND ACTIVE CAT.

BREEDERS' TIPS

The Ocicat is not a "loner" and is not happy without company. They are people-orientated and get on well with other pets. They are well suited to a busy household.

MORPHOLOGY

The Ocicat is a medium to large cat with a strong, muscular body which, whilst looking powerful, is also graceful from its wedge-shaped head, set on an arched neck down to its fairly long tail. Its short, glossy coat is covered with distinctive spots, which give it the appearance of a wild cat.

COLOURS

Spotted pattern only in the following colours: Tawny, Blue, Chocolate, Lilac, Cinnamon, Fawn and also Silver Spotted in all the recognised colours.

THE OCICAT

fairly long tail with a dark tip

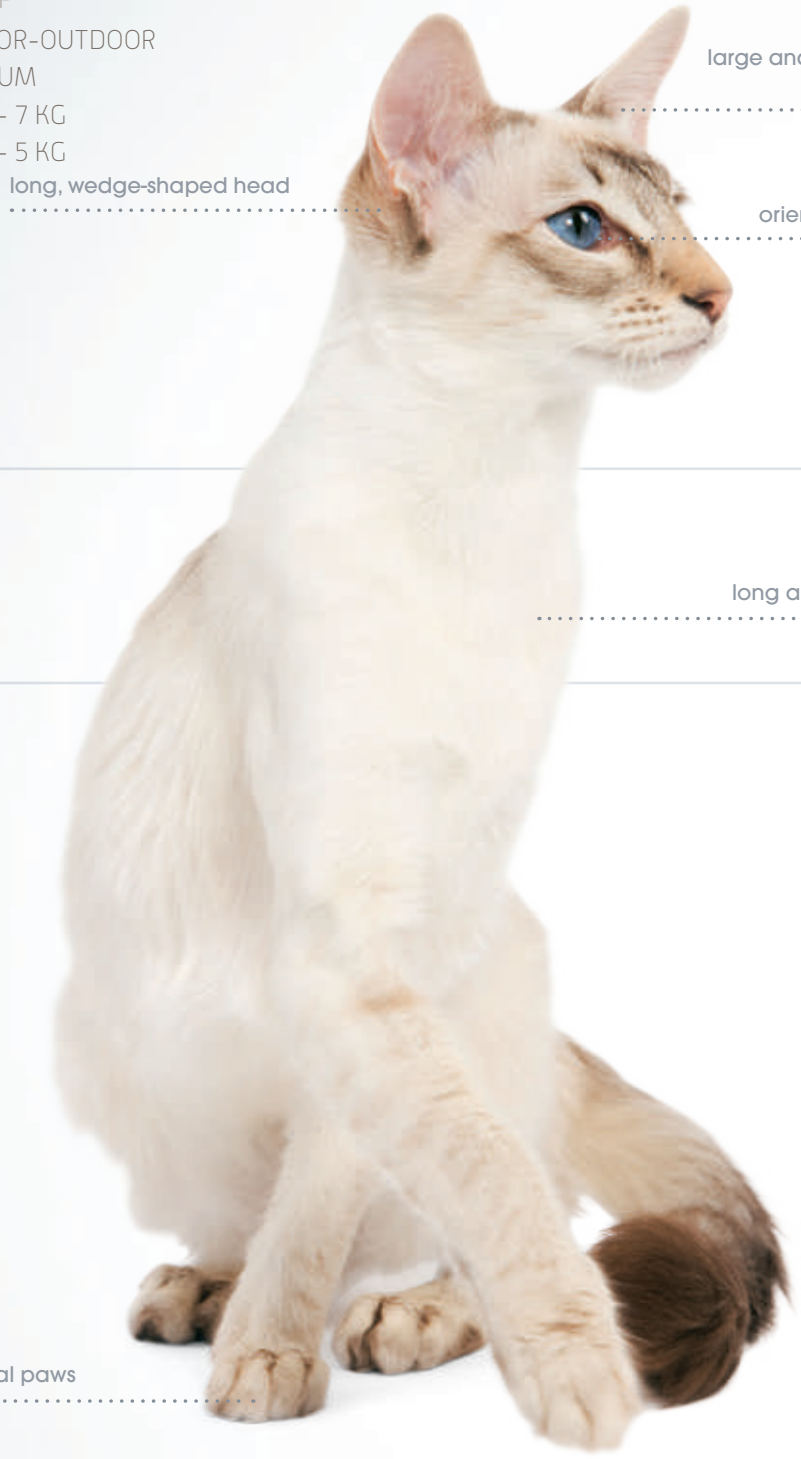
ORIGINS

The Ocicat came about by accident when, in the mid-1960s, Michigan breeder Virginia Daly, crossed an Abyssinian with a Siamese in an attempt to produce a Siamese with Abyssinian coloured points. In the course of breeding further, an ivory coloured kitten with golden spots was born. This kitten's resemblance to a baby Ocelot gave rise to the name of the breed.

Working with geneticist Dr. Clyde Keeler, who was trying to produce a domestic cat similar to the extinct Egyptian Spotted Fishing Cat, the American Shorthair was also used, thus introducing bone and substance to the breed. Over the next twenty years, other breeders also developed new lines and the breed was eventually fully recognised in the mid-1980s.

THE ORIENTAL

OTHER NAMES	ORIENTAL SHORTHAIR, ORIENTAL LONGHAIR, ORIENTAL BICOLOUR, JAVANESE (ORIENTAL LONGHAIR)
GROOMING	+ + +
LIFESTYLE	INDOOR-OUTDOOR
SIZE	MEDIUM
WEIGHT MALE	4 KG - 7 KG
WEIGHT FEMALE	3 KG - 5 KG



Affectionate	Independant
Calm	Hyperactive
Social	Exclusive
Quiet	Talkative

CHARACTER

Oriental cats are very intelligent, lively, entertaining cats. They can be very demanding and become totally involved in their owner's life. Oriental cats do not like to be ignored and always have to be the centre of attention. Oriental cats have a strong personality and are usually very talkative, often with a loud voice that they use to communicate with humans. They enjoy being with people and have a great need for human companionship. Often they bond strongly to a single person.
They are very loyal and loving. These cats are typically active and playful, even as adults.

A LIVELY, INTELLIGENT AND SOCIABLE CAT.

BREEDERS' TIPS

Orientals are at their best when there is a person to give them the love and attention they demand, who enjoys their loud meow and their intelligence.

MORPHOLOGY

The Oriental has the same long, elegant body as the Siamese. Its triangular head, with large ears and almond-shaped eyes, is set on a slender neck. The svelte lines of the body lead to a long, tapering tail. In the short-haired version, the coat is short and close-lying with a glossy sheen, whilst in the semi-longhaired variety, it is fine and silky with a plumed tail.

COLOURS

All colours and patterns, with or without white, but without points.

THE ORIENTAL

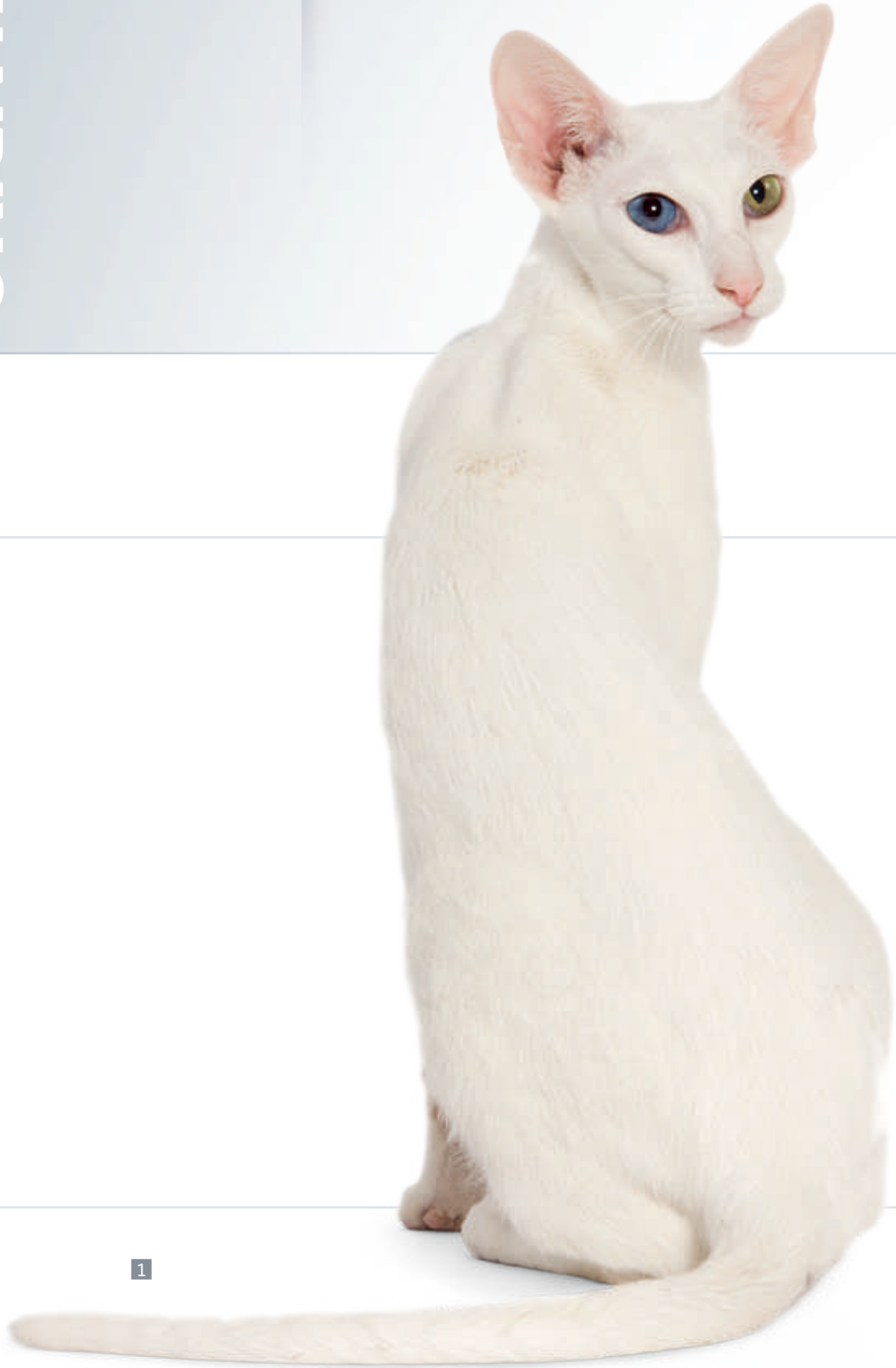
ORIGINS

Orientals originated in the UK after the second World War, when the pedigree cat population had been sadly decimated. In order to increase the Siamese numbers, some breeders crossed in other breeds and the outcome was not only some pointed cats, but others which were not pointed. Those cats became the ancestors of today's Oriental. Some cats were exported to the USA, where further experimental breeding continued. In the beginning the colours were developed separately. In time, it became apparent that there were many colour possibilities, and this led to the ultimate recognition of the Oriental as an independent group.

THE

ORIENTAL

INTELLIGENCE AND AFFECTION
IN AN ELEGANT AND GRACEFUL FORM



1

2

3

1 White

2 Seal tabby

3 Tortie and white

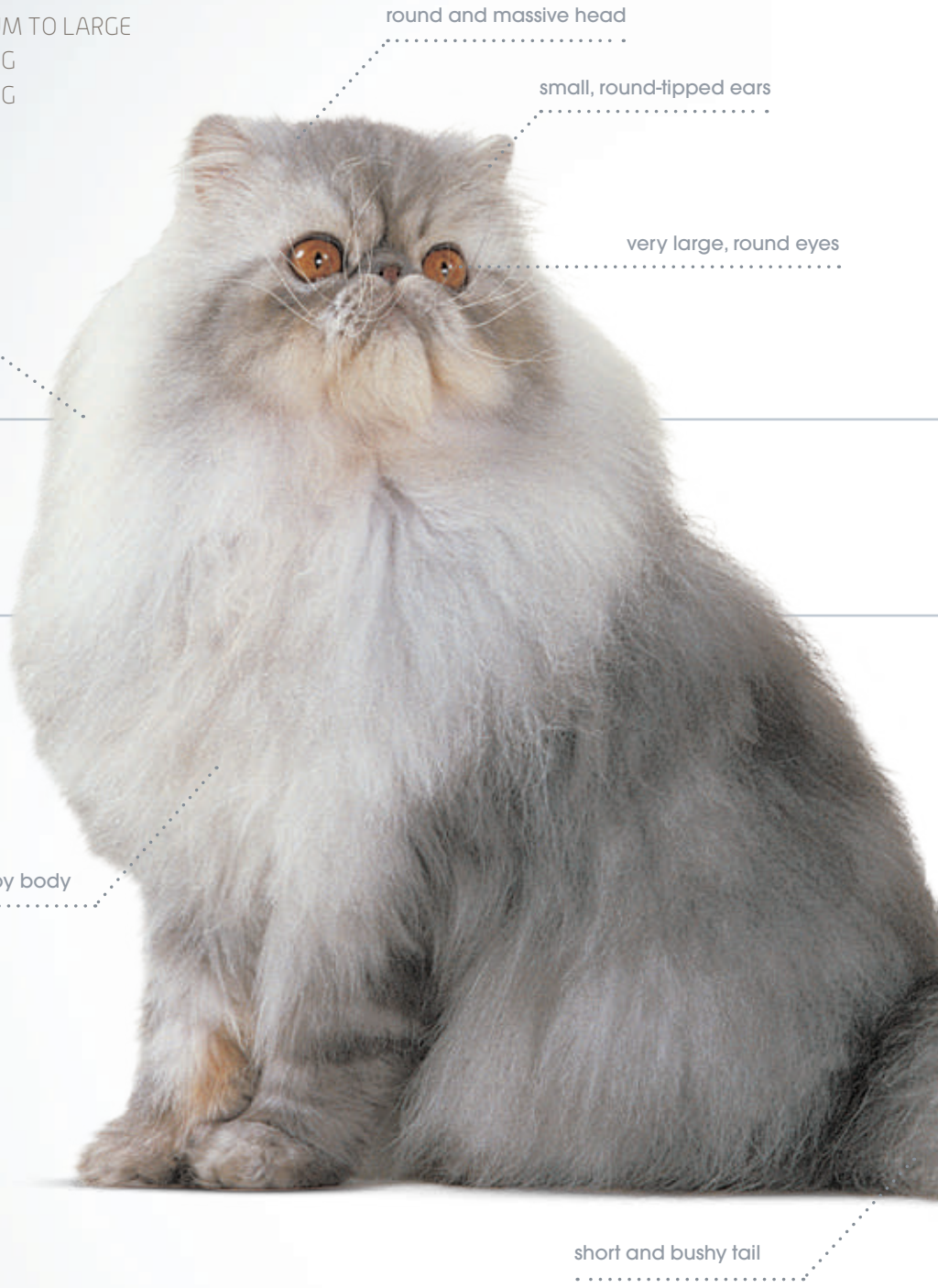
4 Black smoke

THE ORIENTAL

4

THE PERSIAN

OTHER NAMES	LONGHAIR, HIMALAYAN (FOR THE COLOUR POINT VARIETY), CHINCHILLA (FOR THE SILVER TIPPED VARIETY)
GROOMING	+++
LIFESTYLE	INDOOR
SIZE	MEDIUM TO LARGE
WEIGHT MALE	5 - 7 KG
WEIGHT FEMALE	3 - 5 KG



Affectionate	Independant
Calm	Hyperactive
Social	Exclusive
Quiet	Talkative

CHARACTER

The Persian has a sweet, gentle nature and is quiet and easy to live with. They are creatures of habit and prefer a calm atmosphere and gentle handling. They are happy to be combed and petted by children, but are unlikely to join in boisterous games with them. They have quiet, musical voices, but communicate mainly with their large expressive eyes. They like the security of being on the ground. They eagerly play with a toy or a teaser, but are equally happy to lie quietly in a favourite spot.

A CAT THAT BLENDS EASILY
IN TO MOST HOUSEHOLDS.

BREEDERS' TIPS

A daily combing is recommended to avoid tangles and mats.

MORPHOLOGY

The Persian cat is a medium to large cat with a strong, cobby body set on short, thick legs. It has a massive, round head with small ears and very large, round eyes, which give it a sweet, open expression. When it is in full coat, it has long, flowing hair with extra length around the neck and a short tail, which is also covered with long hair.

COLOURS

All colours and patterns.

THE PERSIAN

ORIGINS

It is not possible to be exact about the origins of the Persian cat. Most experts agree that long-haired cats are a result of a genetic mutation and the longhair variety of cat could be the result of mating between the European Wild Cat and Pallas's Cat (the Steppe Cat). The wild Pallas cat was discovered around the area of the Caspian Sea and is also known in the steppes of Central Asia. Today's Persians are probably descended from a mixture of different breeds and are the result of the work of dedicated breeders over a very long period of time.

THE PERSIAN

SOVEREIGN BEAUTY

2

1

1 White

2 Black classic tabby

3 Cream

4 Black classic silver tabby

5 Black tortoiseshell

THE PERSIAN

THE PETERBALD

GROOMING	+ + +
LIFESTYLE	INDOOR
SIZE	MEDIUM
WEIGHT MALE	4.5 - 7.0 KG
WEIGHT FEMALE	3.5 - 5.5 KG

Affectionate	Independant
Calm	Hyperactive
Social	Exclusive
Quiet	Talkative

CHARACTER

The Peterbalds are very intelligent, lively and playful. These cats remain playful and lively throughout their life. They are very attached to humans and love to be cuddled. The Peterbalds hate to be alone at home. They are highly sociable and will "talk" readily when spoken to. They get on very well with other cats (mainly with other oriental breeds), dogs and children. They are well-suited to a family home with older children, as they have a tendency to play hard and fast. The Peterbald will often choose one member of the family as their special friend.

A DEEPLY AFFECTIONATE CAT.

BREEDERS' TIPS

Peterbalds will require a bath at least every two months or so, as they can get a little greasy.

MORPHOLOGY

The Peterbald is an elegant cat with a unique coat, which comes in three types: the cat may be totally hairless, it may have a coat with a peach-like texture, it may have a longer coat which may feel like plush short velvet or like a man's bristly beard, or a combination of all three types. The Peterbald is a medium-sized cat, with the body shape of the Siamese, having long and graceful lines.

COLOURS

All colours and patterns are recognised. Any amount of white is permitted.

THE PETERBALD

ORIGINS

The Peterbald originated in Russia in the St. Petersburg cat club "Kotofey", where Mrs. Olga Mironova started a breeding programme and was registered in Selection Feline Federation (SFF). The breed was created by adding the dominant mutation of hairlessness into the genotype of Siamese and Oriental cats. The Peterbald resulted from the crossbreeding of Afinogen Myth, a Don Sphinx male, with Radma vom Jagerhof, an Oriental female. The resulting litter was born in 1994. The breed was given recognition as the "Peterbald or Petersburg's Sphinx" by SFF in 1995. Some kittens also went to the USA where the breed was recognised by TICA in 2005, with some modification to the standard.

THE PIXIE BOB

OTHER NAMES	PIXIEBOB LONGHAIR, PIXIEBOB SHORTHAIR
GROOMING	+ + +
LIFESTYLE	INDOOR - OUTDOOR
SIZE	MEDIUM TO LARGE
WEIGHT MALE	5.5 - 7.75 KG
WEIGHT FEMALE	3.5 - 5.5 KG

Affectionate	Independant
Calm	Hyperactive
Social	Exclusive
Quiet	Talkative

CHARACTER

Pixiebobs are highly intelligent, sociable, active (but not hyperactive), bold, and enjoy playing with other animals.
They are an inquisitive, companionable cat, that wants to be with you and to communicate with you in their own language of chirps, chitters and the occasional growl.

AN ACTIVE AND SOCIABLE CAT.

BREEDERS' TIPS

If your Pixiebob is polydactyl, then you should always ensure that all the claws are clipped regularly. Also tails should be handled carefully.

substantial and rangy body with a belly pouch

MORPHOLOGY

The Pixiebob is a spotted tabby cat, medium to large in size, with substantial bone and muscle. It has long, heavy legs and a slightly rolling gait. Its tail can be as short as two inches or long enough to reach down the leg; it is kinked or knotted, but always flexible. The Pixiebob is polydactyl and can have up to seven toes. They have a thick double coat that comes in long or short-haired versions.

COLOURS

Brown Spotted Tabby.

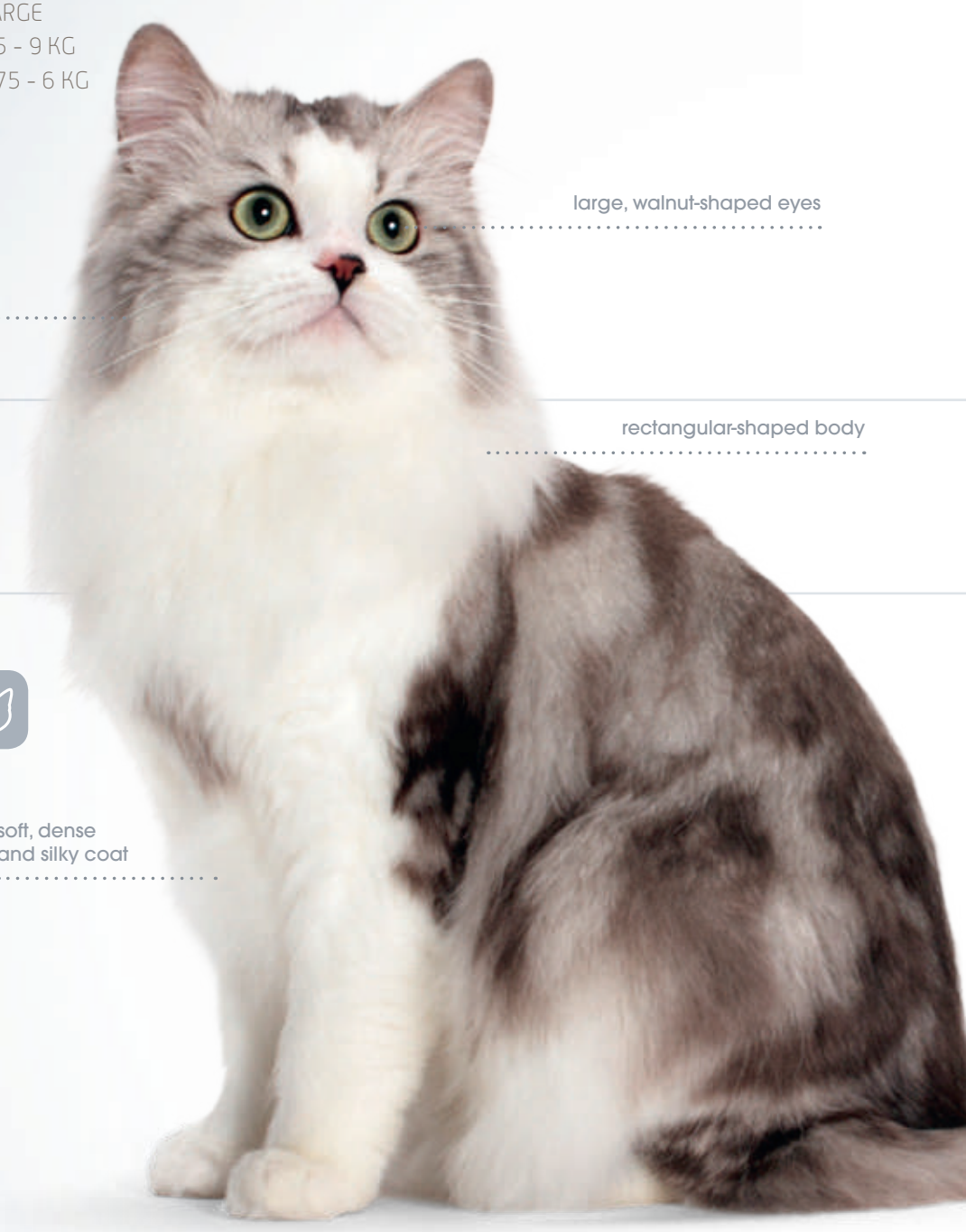
THE PIXIE BOB

ORIGINS

The breed originated with a breeder in the US State of Washington who, in 1985, purchased a domestic cat, which was both polydactyl and had a bobbed tail. She set up a breeding programme and introduced other cats with the same characteristics from the same area. Although the breeder believed them to be the result of mating with Bobcats, this is not substantiated by DNA testing and they would appear to be pure domestic cats with these distinctive characteristics. TICA accepted these cats for championship status in 1998.

THE RAGAMUFFIN

GROOMING	+ + +
LIFESTYLE	INDOOR
SIZE	LARGE
WEIGHT MALE	6.5 - 9 KG
WEIGHT FEMALE	3.75 - 6 KG



Affectionate	Independant
Calm	Hyperactive
Social	Exclusive
Quiet	Talkative

CHARACTER

Loving, affectionate, playful, good with children and other animals, RagaMuffins make perfect family pets. They have a docile nature and are very cuddly and sweet. They like to play in spite of their unathletic body. RagaMuffins are calm and patient and make wonderful companions.

A DOCILE AND AFFECTIONATE CAT.

BREEDERS' TIPS

Because they are very trusting animals, they must be kept indoors only. There are far too many dangers for them beyond the front door.

MORPHOLOGY

The RagaMuffin is a medium to large cat, which is substantially built with heavy bones. The head is rounded and the large expressive eyes give it a sweet expression. The coat is soft, dense and silky, and of medium-length.

COLOURS

Every colour and pattern is allowable.

THE RAGAMUFFIN

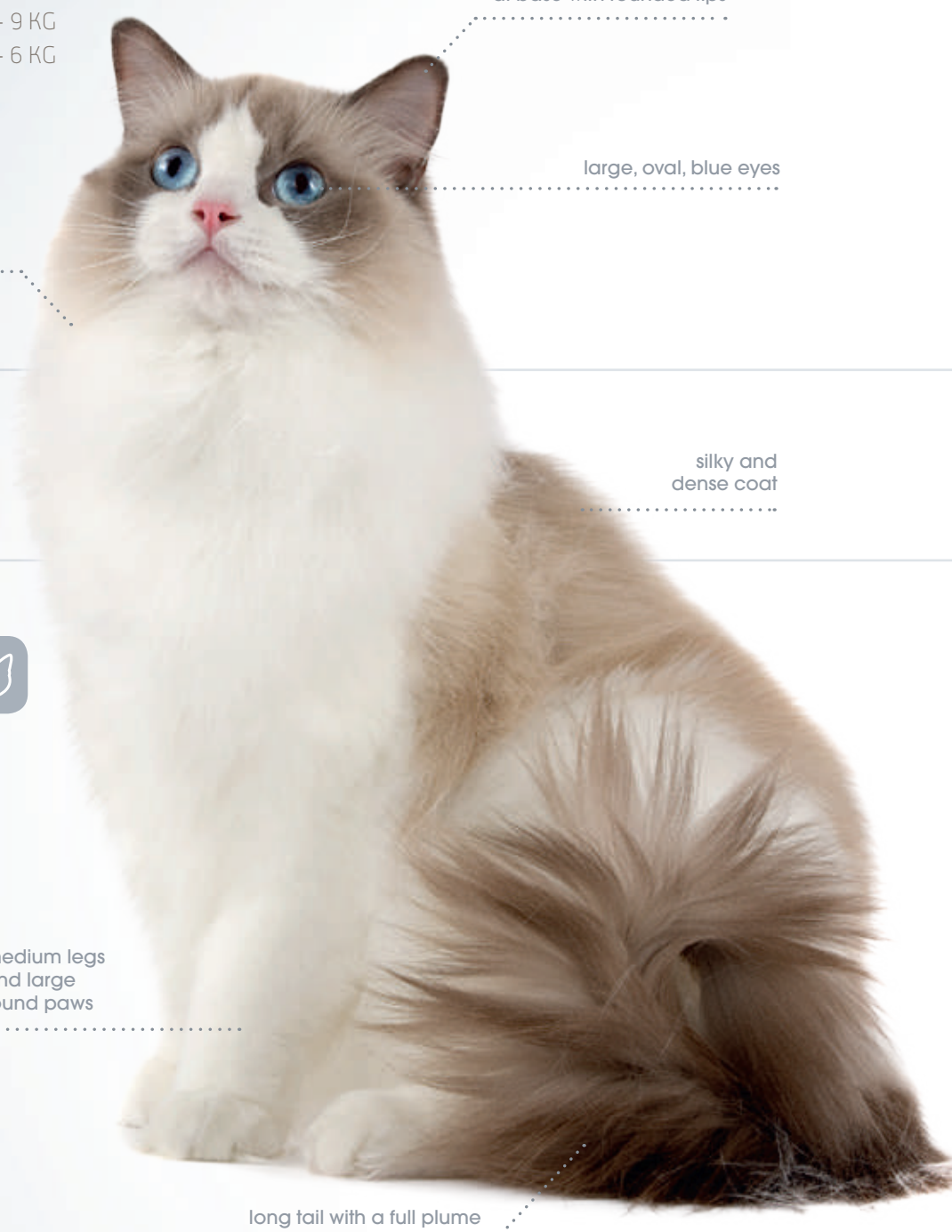
ORIGINS

Whilst the exact origin of these cats is not known, it is believed to have been developed in 1994 from Ann Baker's "Cherubim" breed, which began in California in the early 1960s and used feral cats, which were bred to be sociable and affectionate companions.

It has close links with the Ragdoll, which was also created by Ann Baker, but the RagaMuffin differs in that it comes in all colours and patterns. It was granted championship status in CFA in 2011.

THE RAGDOLL

GROOMING	+ + +
LIFESTYLE	INDOOR
SIZE	LARGE
WEIGHT MALE	5 - 9 KG
WEIGHT FEMALE	4 - 6 KG



Affectionate	Independant
Calm	Hyperactive
Social	Exclusive
Quiet	Talkative

CHARACTER

The Ragdoll is a relaxed, happy cat. Generally, it is a loving, quiet cat with a very laid back disposition. They are very sociable and love to be with their humans or their guests. Ragdolls are known for their tolerant attitudes towards other animals and are especially good with children. They are often compared to dogs because of their friendliness and intelligence.
Activity level is moderate and limited to a few minutes of 'crazies' a day. By far they prefer to play while lying on their backs!

A LAID BACK AND EASY-GOING CAT.

BREEDERS' TIPS

Ragdolls are not extremely agile, so in order to avoid injury, cat trees should have wide steps and not be too high.

MORPHOLOGY

The Ragdoll is one of the largest breeds in the Cat Fancy, with a fairly long body and strong bones. Their fur is semi-long with a silky texture. They have a fairly long well-furred tail. The Ragdoll is a colour-pointed cat, which comes in three coat patterns. The Ragdoll head is all soft lines with a sweet expression and deep blue eyes.

COLOURS

All pointed colours.

THE RAGDOLL

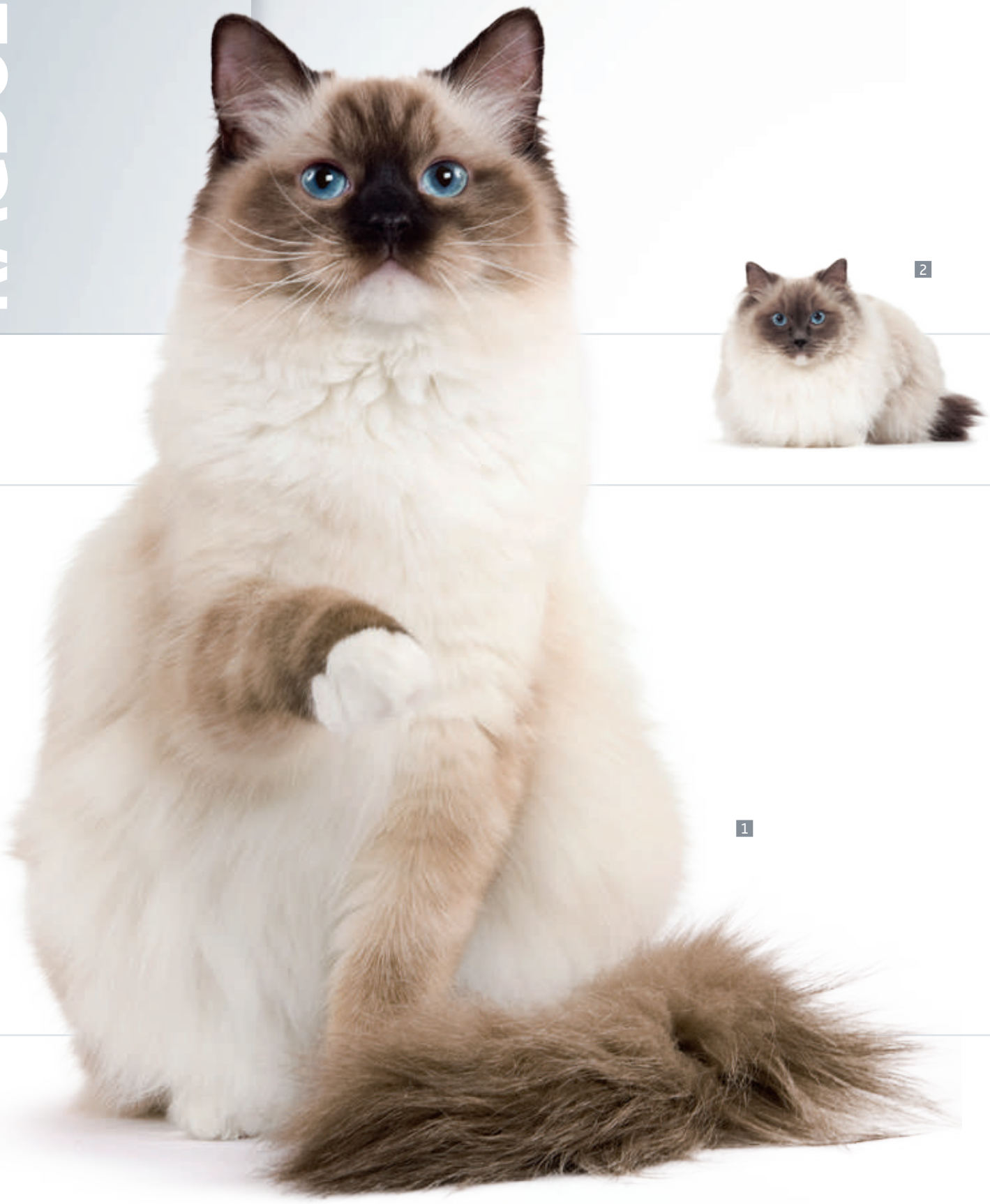
ORIGINS

The Ragdoll was developed in the early 1960's by Ann Baker. One of the cats she bred was a white, long-haired domestic called Josephine. Other cats used in the breeding programme were a seal point male, possibly a Birman cross and a solid black cat. Because of their docile temperament and the way the cats would go limp in the arms of anybody who picked them up, Ms Baker decided to develop a breed which she called "Ragdoll".
In 1975, other breeders, notably Denny and Laura Dayton, developed the breed further, with the aim of getting it recognised by the major cat fancies in the USA.

THE

RAGDOLL

PURE SWEETNESS



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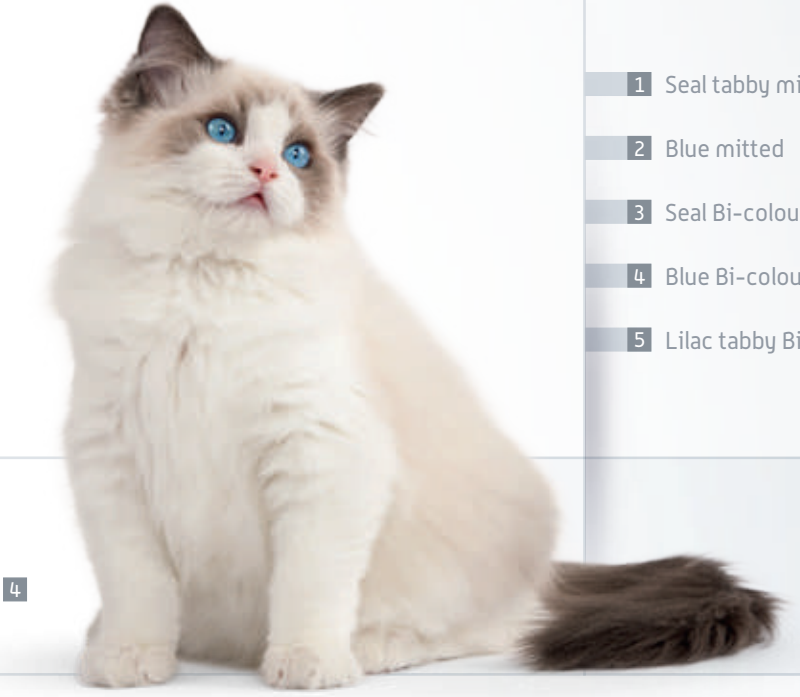


1 Seal tabby mitted

2 Blue mitted

3 Seal Bi-colour

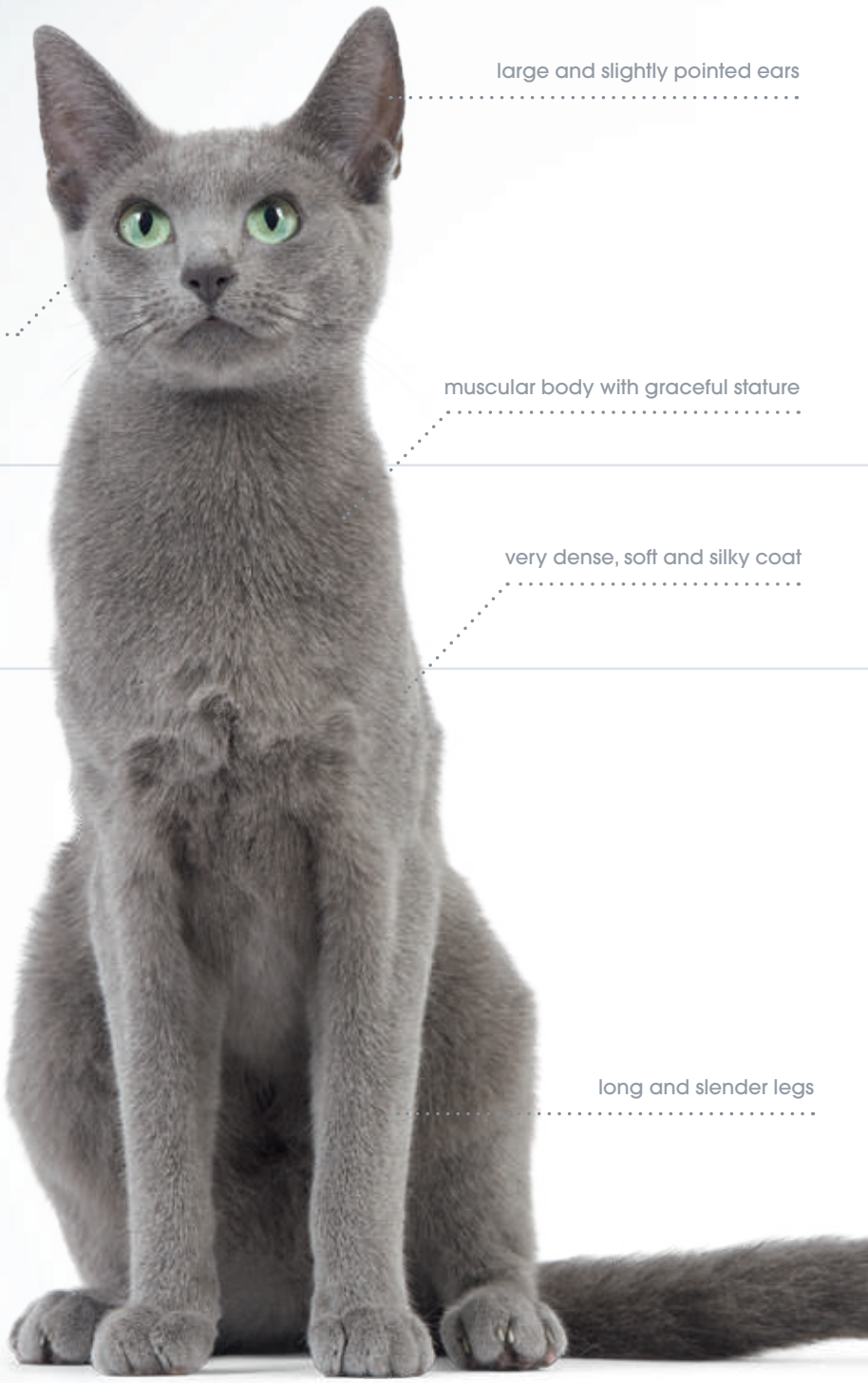
4 Blue Bi-colour

5 Lilac tabby Bi-colour

THE RAGDOLL

THE RUSSIAN

OTHER NAMES	RUSSIAN BLUE, RUSSIAN WHITE, RUSSIAN BLACK
GROOMING	+ + +
LIFESTYLE	INDOOR
SIZE	MEDIUM
WEIGHT MALE	4.5 KG - 6 KG
WEIGHT FEMALE	3.5 KG - 4.5 KG



Affectionate	Independant
Calm	Hyperactive
Social	Exclusive
Quiet	Talkative

CHARACTER

A cuddly, sociable, intelligent cat. They are friendly and playful, adapt readily to any family situation and have no difficulty accepting other animals within the household. In the family, they are more fixated on one person and are always present, but not pushy. Russians are very reserved towards visitors. These cats are easy to handle at home and have no special demands. They are a great choice for the modern family, because they are content with their own company while you are out and about, but delighted to spend time playing or curled in your lap when you get home.

A RESERVED AND INTELLIGENT CAT.

BREEDERS' TIPS

Russians have a low sense of natural self-preservation. They are best suited to being kept as an indoor cat, with possible access to outdoors in a safe enclosed area.

MORPHOLOGY

The Russian is a medium to large cat, with a long, graceful body, standing fairly high on its legs. Its head is a short wedge with quite a long, flat skull and the profile shows a convex angle at the eyebrow level. Its fairly large ears are high on its head and its large, almond-shaped eyes are a vivid green. The coat is special in that it is very short and plushy, standing up from the body. A long, tapering tail completes the picture.

COLOURS

Blue, White and Black.

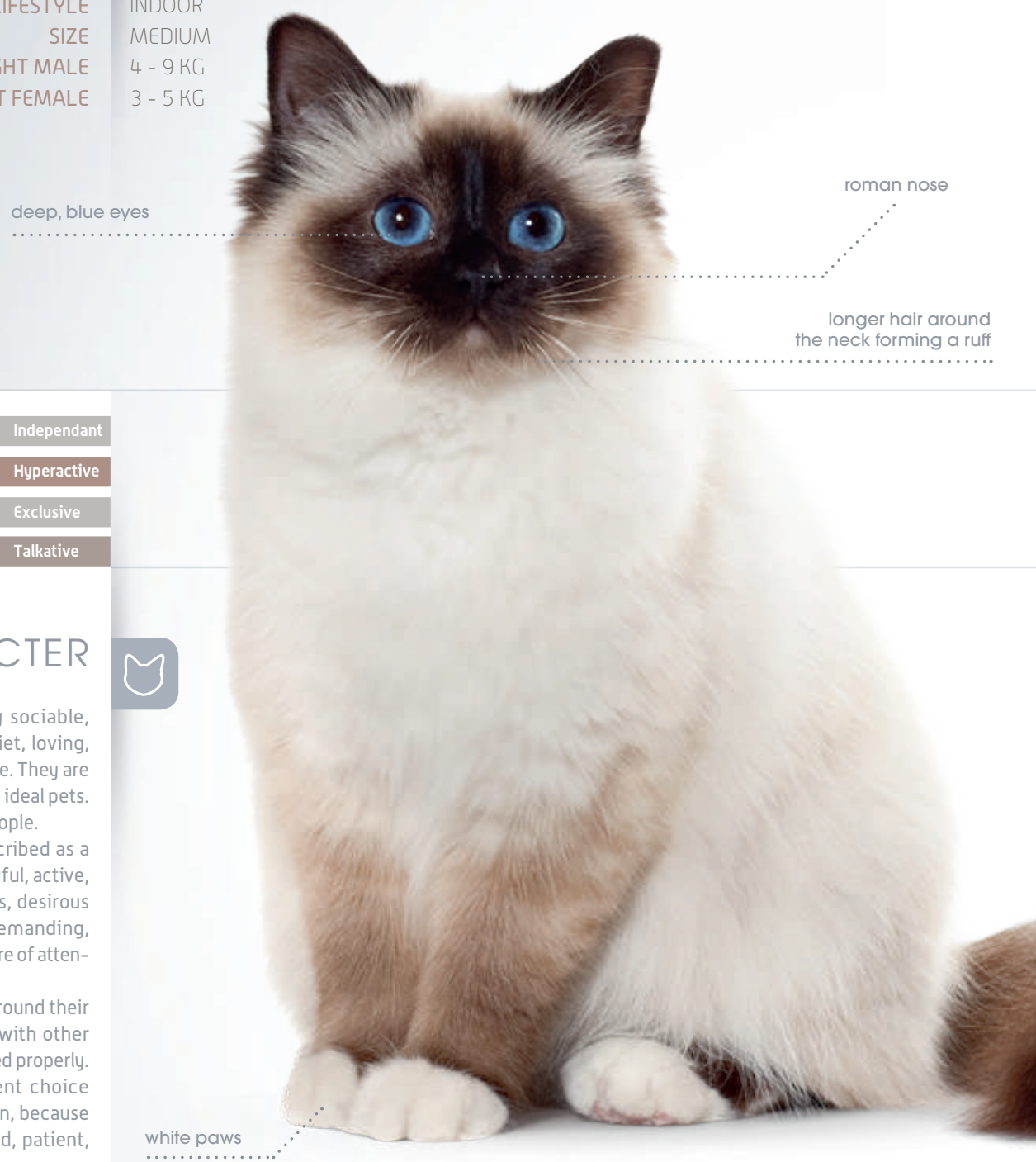
THE RUSSIAN

ORIGINS

It is believed that the Russian is a natural breed, brought to Europe in the 1860s. The first recorded instance of these cats outside of Russia, was at a show in London's Crystal Palace, in 1875, when they were described as the Archangel Cat, believed to have originated in the Arkhangelsk region of Russia. They have also been known as the Spanish Cat. The original cats were blue and had a very thick, plushy coat – possibly because of the cold climate.
In Australia, New Zealand, South Africa and England, white and black versions of the Russian have been developed. However, the major cat fancies still only recognise the original blue colour.

THE SACRED BIRMAN

OTHER NAMES	HEILIGE BIRMA, BIRMAN, SACRED CAT OF BURMA
GROOMING	+ + +
LIFESTYLE	INDOOR
SIZE	MEDIUM
WEIGHT MALE	4 - 9 KG
WEIGHT FEMALE	3 - 5 KG



Affectionate	Independant
Calm	Hyperactive
Social	Exclusive
Quiet	Talkative

CHARACTER

Birmans are extremely sociable, trustworthy, gentle, quiet, loving, loyal, and companionable. They are easy to handle and make ideal pets. They love being with people.
The Birman can be described as a "moderate" cat. It is playful, active, but not too mischievous, desirous of attention, but not demanding, sociable, but not the centre of attention.
All of them want to be around their people. They are good with other pets if they are introduced properly. Birmans are an excellent choice for families with children, because they are even-tempered, patient, and kind.

AN EVEN TEMPERED
AND EXTREMELY SOCIABLE CAT.

BREEDERS' TIPS

A Birman is an ideal family member that dispels the cat stereotype of aloof independence.

MORPHOLOGY

The Birman is a medium-sized cat, with a substantial body and strong bones. It has a medium-long coat with longer hair around the neck forming a ruff. Whilst it is basically a colour-pointed cat, its major characteristic is the white paws on all four feet. Its deep blue eyes are fairly large. Its tail is medium long and covered with long hair to form a plume, which it proudly displays.

COLOURS

Points in Seal, Blue, Chocolate, Lilac, Red, Cream, Caramel and Apricot and the tortie and tabby varieties of those colours.

THE SACRED BIRMAN

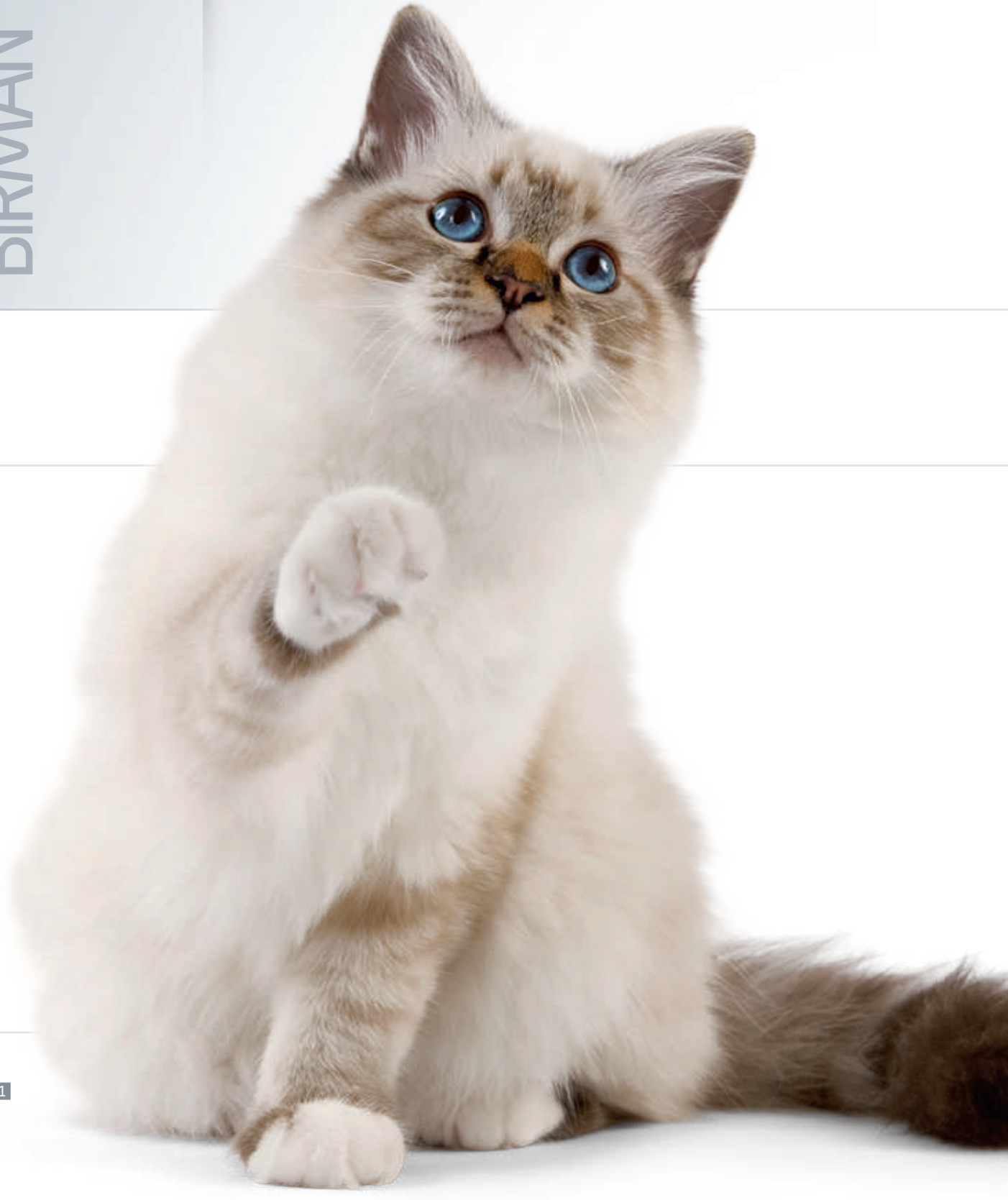
medium-long tail, with long hair to form a plume

ORIGINS

The true origin of the Birman is almost impossible to establish, as there are many legends surrounding it. It was thought to be a cat kept in the Buddhist temples of Burma. It is reported that monks in Burma gave a pair of breeding cats to a British army officer, Major Gordon Russell and his French friend, August Pavie at the beginning of the 20th century. This story is unsubstantiated, but from the early breeding record, it can be seen that in 1919, a pair of cats were sent to France. Birmans were registered in France in 1925.

THE SACRED BIRMAN

SOULFUL BLUE EYES
AND PURE WHITE FEET



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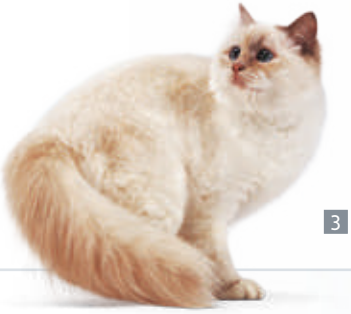


3

1 Chocolate tabby point

2 Blue point

3 Red point

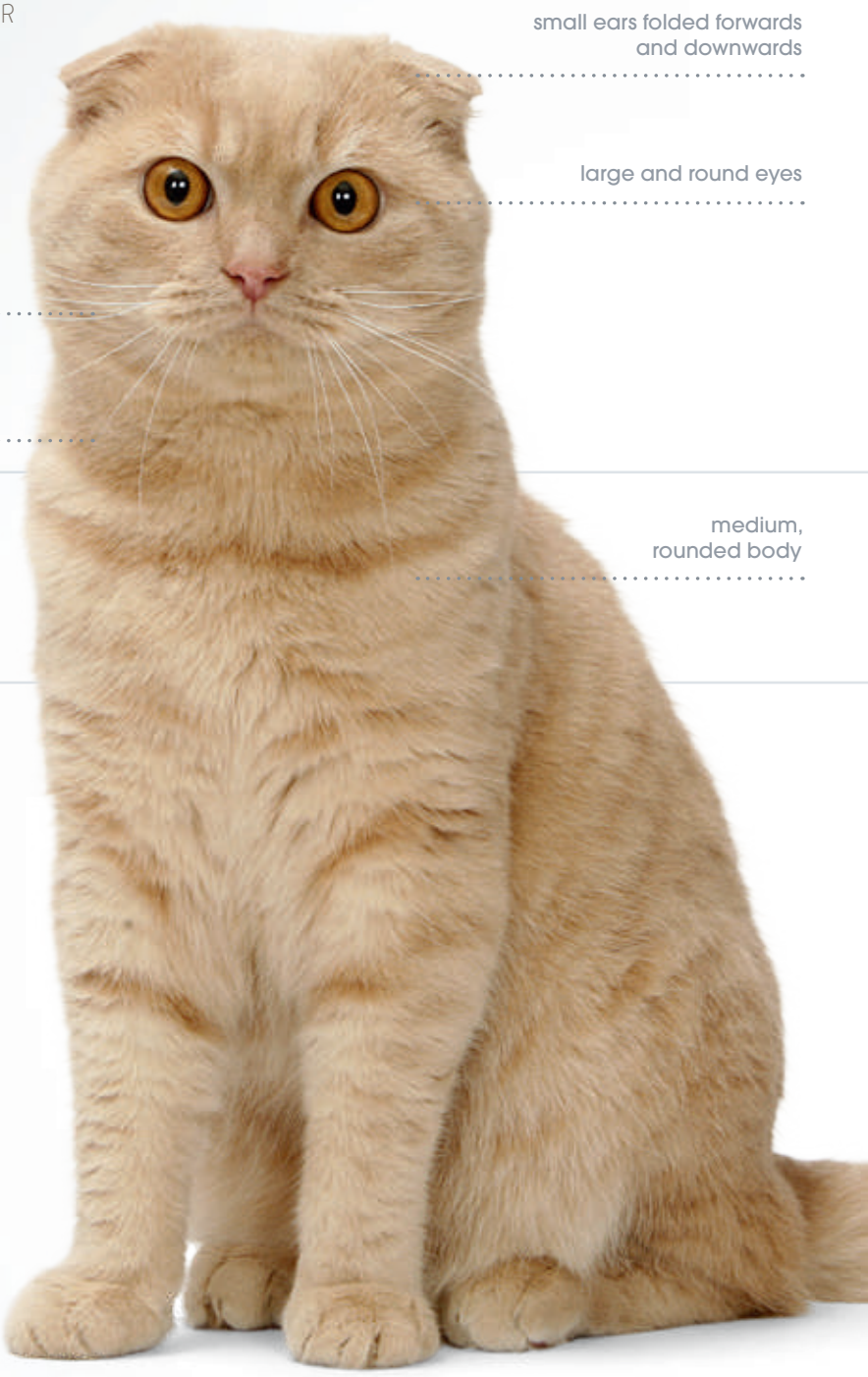
4 Blue point

THE SACRED BIRMAN

4

THE SCOTTISH FOLD

OTHER NAMES	SCOTTISH FOLD SHORTHAIR, SCOTTISH FOLD LONGHAIR
GROOMING	+ + +
LIFESTYLE	INDOOR - OUTDOOR
SIZE	MEDIUM
WEIGHT MALE	5 - 6 KG
WEIGHT FEMALE	3 - 5 KG



Affectionate	Independant
Calm	Hyperactive
Social	Exclusive
Quiet	Talkative

CHARACTER

Scottish Folds are intelligent, inquisitive, and are loyal to their family. These cats have a sociable and quiet character. They like to play as well as sleep. Their disposition matches their sweet expression. They have tiny voices and are not extremely vocal. This breed gets along well with both children and, once properly introduced, other family pets as well.

A SOCIABLE AND CALM CAT.

BREEDERS' TIPS

Ensure that you clean their ears once a week and do not be afraid to lift their ears up; this will not harm them in any way.

MORPHOLOGY

The Scottish Fold is a medium-sized, well-muscled cat with a well-rounded body and head. Its distinctive feature is its ears, which are folded down, giving the impression of a cap on the top of the head. The eyes are wide open and give a sweet expression. It comes in both short-haired and long-haired varieties and in a large selection of colours.

COLOURS

All colours and patterns.

THE SCOTTISH FOLD

tapering and flexible tail

ORIGINS

All Scottish Folds are descended from a white farm cat called Susie, who was discovered by a shepherd, named William Ross, in the Perthshire district of Scotland. The Ross family decided to develop the breed using Susie as the foundation. The British Shorthair was used in this development process. As certain health defects arose, the GCCF in Britain withdrew registration of the breed but, in the United States, work proceeded with the cats that had been exported there in the 1970s. Various other breeds were used in this process and the Folds gradually developed a unique look of their own. They were recognised by CFA in 1978.

THE SCOTTISH STRAIGHT

OTHER NAMES	SCOTTISH STRAIGHT LONGHAIR, SCOTTISH STRAIGHT SHORTHAIR
GROOMING	+ + +
LIFESTYLE	INDOOR - OUTDOOR
SIZE	MEDIUM
WEIGHT MALE	5 - 6 KG
WEIGHT FEMALE	3 - 5 KG

Affectionate	Independant
Calm	Hyperactive
Social	Exclusive
Quiet	Talkative

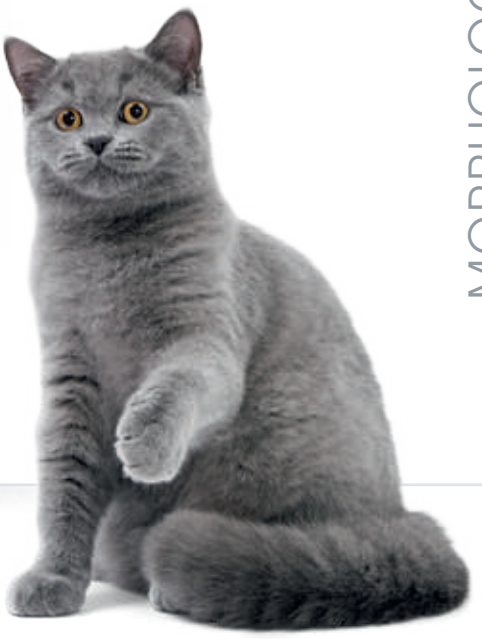
CHARACTER

Scottish Straight are intelligent, inquisitive, and are loyal to their family. These cats have a sociable and quiet character. They like to play as well as sleep. Their disposition matches their sweet expression. They have tiny voices and are not extremely vocal. This breed gets along well with both children and, once properly introduced, other family pets as well.

A SOCIABLE AND CALM CAT.

BREEDERS' TIPS

The Longhaired Scottish Straight should be combed occasionally to eliminate matting.



MORPHOLOGY

The two varieties of the Scottish Straight are a medium-sized cat, with a well-balanced and slightly rounded body. The head is also rounded, with prominent cheeks and large, rounded eyes. The ears are fairly high set and of medium size. They have a dense, plush coat with a silky texture.

COLOURS

All colours and patterns.

THE SCOTTISH STRAIGHT

ORIGINS

The Scottish Straight is basically the straight-eared version of the Scottish Fold, which came about because of the fact that the mutation which produces the folded ears, can also produce other skeletal deformities. This meant that the Folds could not be mated together and British were used as an outcross. The straight-eared progeny have become known as Scottish Straights, whereas the progeny with folded ears are known as Scottish Folds.

THE SELKIRK REX

OTHER NAMES	SELKIRK REX SHORTHAIR, SELKIRK REX LONGHAIR
GROOMING	+ + +
LIFESTYLE	INDOOR - OUTDOOR
SIZE	MEDIUM
WEIGHT MALE	5.4 - 7.2 KG
WEIGHT FEMALE	4.5 - 5.5 KG

Affectionate	Independant
Calm	Hyperactive
Social	Exclusive
Quiet	Talkative

CHARACTER

The Selkirk Rex cats are very quiet, tolerant, lively, balanced and intelligent. They are loving, patient cats, reflecting the temperaments of the breeds used in their development. The British Shorthair contributed the laid back personality, the Persian added the cuddly nature, while the Exotic brought an impish playfulness to the package. They get on well with other cats, dogs and children. They make ideal companions.

A PATIENT AND INTELLIGENT CAT.

BREEDERS' TIPS

The coat, especially on the longhairs, should be combed occasionally. Bathing also helps maintain the coat, with no need for a dryer.

MORPHOLOGY

The Selkirk Rex, in both long and short-haired varieties, is defined by its unique, curly coat. The plush coat may vary from rather tousled, loose curls, to being soft, full and curly. It is a medium-sized cat of robust type, with round, broad head, medium-sized ears and large, round eyes. It has a full-chested, semi-cobby body with a thick, medium-length tail.

COLOURS

All colours and patterns allowed.

THE SELKIRK REX

curly coat pronounced on the neck, the belly and on the tail

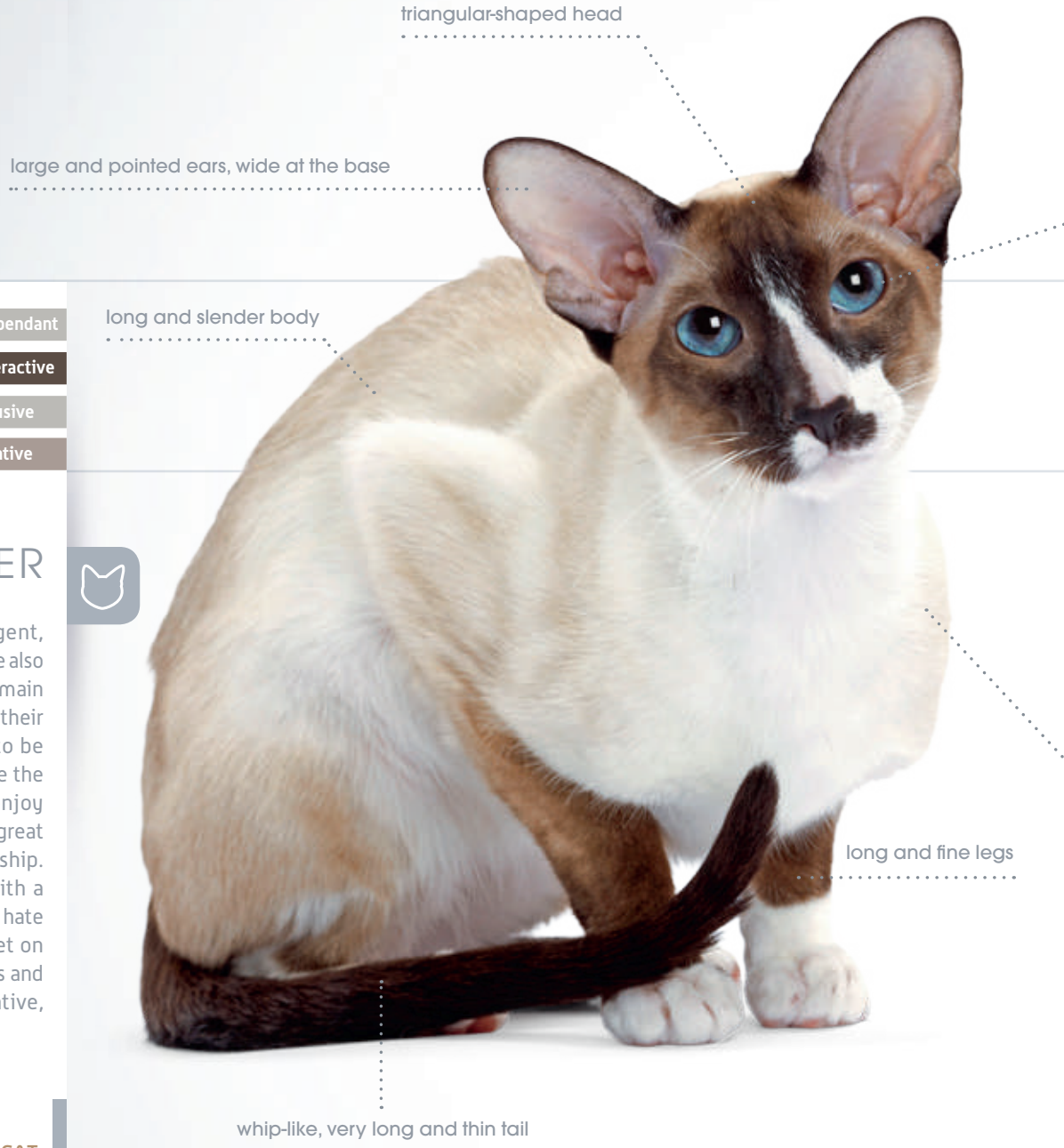
ORIGINS

All Selkirk Rex are descended from a kitten named Miss DePesto, which in 1987 in Montana, was born to a blue and white feral cat also reputed to have "abnormal" fur. This kitten had curly whiskers, crinkly hair in her ears and the appearance of a body wave on the fur of her back.

Jeri Newman, a breeder of Persians, suspecting that this might be a new mutant rex gene, took the kitten and mated her to her black Persian male. In the resulting litter, 3 kittens had curly coats. TICA recognised The Selkirk Rex in February 1994 and this was followed by recognition in ACFA and CFA.

THE SEYCHELLOIS

OTHER NAMES	SEYCHELLOIS SHORTHAIR, SEYCHELLOIS LONGHAIR, BI-COLOUR ORIENTAL, BI-COLOUR SIAMESE
GROOMING	+ + +
LIFESTYLE	INDOOR - OUTDOOR
SIZE	MEDIUM
WEIGHT MALE	3.25 - 4.5 KG
WEIGHT FEMALE	2.25 - 3.75 KG



Affectionate	Independant
Calm	Hyperactive
Social	Exclusive
Quiet	Talkative

CHARACTER

Seychellois are very intelligent, lively and entertaining. They are also loyal and loving. These cats remain playful and active throughout their life. Seychellois do not like to be ignored and always have to be the centre of attention. They enjoy being with people and have a great need for human companionship. They often bond strongly with a single person. The Seychellois hate to be alone at home. They get on very well with other cats, dogs and children. They are very talkative, often with a loud voice.

AN AFFECTIONATE AND LIVELY CAT.

BREEDERS' TIPS

Seychellois are very sociable animals. Do not consider getting one if you cannot give it the attention it deserves.

deep-blue, almond-shaped eyes

MORPHOLOGY

The Seychellois is a name given in some registries to a bi-coloured Oriental or Siamese. It has the same elegant, svelte body and long legs. Its long neck supports a triangular-shaped head, with large ears set to continue the line of the wedge of the face. It has almond-shaped eyes of a deep blue. The tail is long and whip-like.

COLOURS

All recognised pointed colours with white.

THE SEYCHELLOIS

fine and silky coat

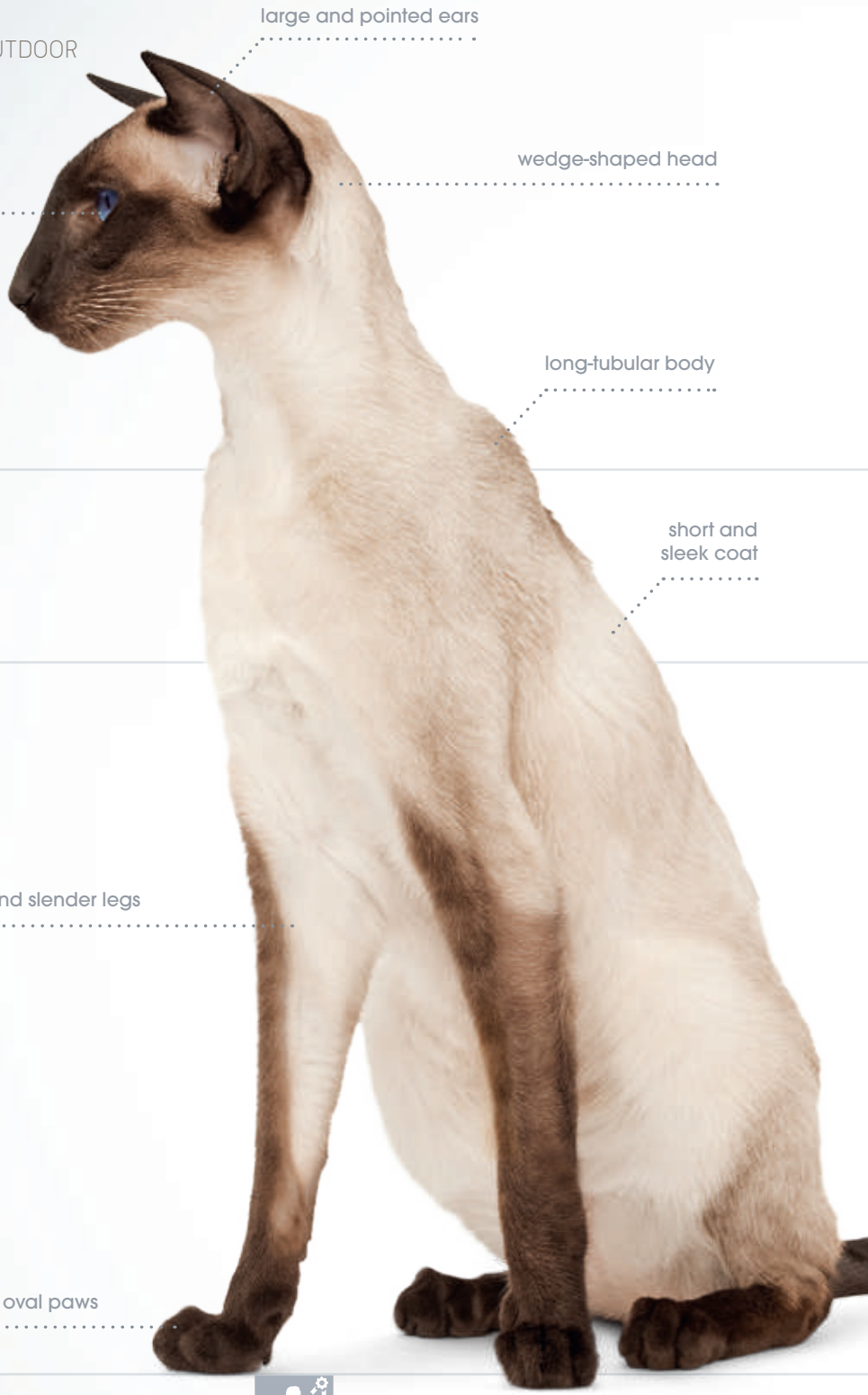
ORIGINS

The Seychellois was originally developed as a semi-longhaired cat, by a UK breeder who was attempting to reproduce the pattern of cats in the Seychelle Islands. She used bi-coloured Persians with Siamese and Orientals, to get pointed cats with white. This original breeding programme was, however, not continued.

Today's Seychellois is known and registered in some other registries as, either a Siamese with white or a Pointed Oriental and White. It was developed over a period of time by dedicated breeders in the United States and Europe, using Orientals and bi-coloured short-haired cats.

THE SIAMESE

OTHER NAMES	ROYAL CAT OF SIAM
GROOMING	+ + +
LIFESTYLE	INDOOR / OUTDOOR
SIZE	MEDIUM
WEIGHT MALE	4 - 7 KG
WEIGHT FEMALE	3 - 5 KG



Affectionate	Independant
Calm	Hyperactive
Social	Exclusive
Quiet	Talkative

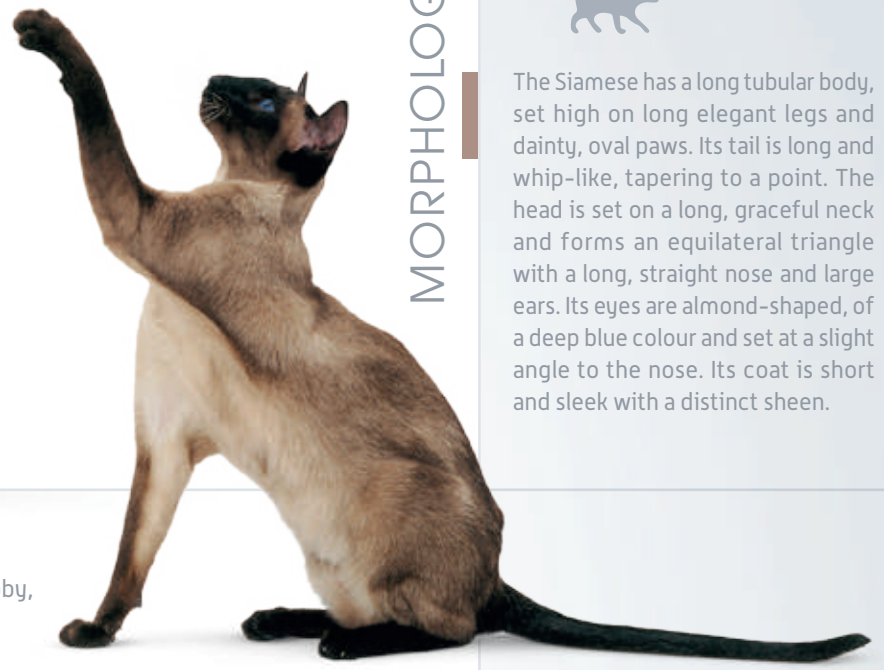
CHARACTER

The Siamese is the perfect pet for someone who wants lots of interaction and activity. They are wonderful with children and other pets. They are very loving, loyal, intuitive, demanding and sociable. They THRIVE on attention! Siamese are very intelligent and have a lot to say. They are very playful, entertaining themselves for hours. They have their favourite toys and never tire of playing throughout their lives. They are natural fetchers and will fetch as long as someone is there to toss! They are very amusing pets. They LOVE warm places; in fact, the warmer the better!

AFFECTIONATE CATS
WHO ARE DEVOTED TO THEIR OWNERS.

BREEDERS' TIPS

Siamese are very sociable and don't do well alone. If there is no one home during the day, consider adopting a second cat.



MORPHOLOGY

The Siamese has a long tubular body, set high on long elegant legs and dainty, oval paws. Its tail is long and whip-like, tapering to a point. The head is set on a long, graceful neck and forms an equilateral triangle with a long, straight nose and large ears. Its eyes are almond-shaped, of a deep blue colour and set at a slight angle to the nose. Its coat is short and sleek with a distinct sheen.

COLOURS

All pointed colours in Self, Tabby, Tortie, Smoke and Silver.

THE SIAMESE

ORIGINS

The exact origins of the Siamese are not known, but there are a number of legends and stories about them. Once known as the Royal Cat of Siam, these cats were already recorded in manuscripts of the 14th century. In the 19th century, the German naturalist, Pallas, also described white cats with dark extremities that he had seen in central Asia. Siamese were exported to England and were first seen there at London's Crystal Palace show, in 1871.

They were totally unlike any other breed that had been seen at that time and got a mixed reception. The first standard was established in the UK in 1892.

THE SIBERIAN

OTHER NAMES	NEVA MASQUERADE (POINTED VARIETY), SIBERIAN FOREST CAT
GROOMING	+ + +
LIFESTYLE	INDOOR - OUTDOOR
SIZE	MEDIUM TO LARGE
WEIGHT MALE	7 - 8 KG
WEIGHT FEMALE	5.5 - 6 KG

Affectionate	Independant
Calm	Hyperactive
Social	Exclusive
Quiet	Talkative

CHARACTER

The Siberian is a lively, intelligent cat, that enjoys playing and is also very affectionate. They get on well with other cats, dogs and children and like to participate in the activity of the family. Despite their size, they are quite agile and like to jump high. They need the attention of their humans, but don't like to be cuddled and stroked by unknown people. This cat doesn't feel happy as an only cat.

A LIVELY AND INTELLIGENT CAT.

BREEDERS' TIPS

Grooming with this breed is important to keep their coat in good condition and prevent mats. Plan to groom more frequently when coat is shedding.

well furnished ears

large and slightly oval eyes

MORPHOLOGY

The Siberian is a medium to large cat, with a powerful, athletic body. The body is of medium-length with a deep chest and the legs are of medium-length with strong bones. The head is a modified wedge with gentle rounded lines and open, almost round eyes. The ears are medium in size and have longer hair at the base. It has a unique, 'weather-proof' coat with a very dense undercoat. The tail is of medium-length and resembles a Fox's brush.

COLOURS

All colours. The colour pointed variety is also known as Neva Masquerade.

THE SIBERIAN

ORIGINS

The Siberian is a very old, natural breed of cat, which has been known in Russia for many centuries. It is probably related to the Norwegian Forest Cat, with which it has much in common in that it is a cat well-equipped to withstand the harsh climate of northern Europe. They appeared at the first cat shows in the 1870s. In the late 1980s, some cats were exported to other European countries and also to the USA. They were fully recognised by FIFe and TICA in 1996. In some registries, the colourpoint variety is known as the Neva Masquerade.

THE SINGAPURA

GROOMING	+ + +
LIFESTYLE	INDOOR
SIZE	SMALL
WEIGHT MALE	2.75 - 3.75 KG
WEIGHT FEMALE	2.25 - 2.75 KG

Affectionate	Independant
Calm	Hyperactive
Social	Exclusive
Quiet	Talkative

CHARACTER

The Singapura is a curious, extroverted, playful, but non-destructive little cat, that insists on helping you with everything you do. They are very intelligent and interactive with people and remain so even into old age. Lively and active, the Singapura is a gentle playful cat with a soft, gentle voice. It also gets on well with other cats.

A CURIOUS,
EXTROVERTED LITTLE CAT.

BREEDERS' TIPS

The Singapura does best with plenty of company and thrives on attention.

MORPHOLOGY

The Singapura is a smaller than average cat. Its short coat has a pale base colour with sepia ticking and the body is muscular with fine legs and very small feet. The other distinctive features are the large, expressive eyes and the relatively large ears.

COLOURS

Sepia ticked.

THE SINGAPURA

ORIGINS

In the early 1970s, some cats were brought back to the US when Hal and Tommy Meadow returned home from South East Asia; the couple eventually brought in some further examples and a breeding programme was started. In 1980, breeder, Barbara Gilbertson, imported another pair of brown-ticked cats from Singapore. Later, more cats were brought back from Singapore and added to the gene pool. The early breeders were devoted in establishing the breed, which was eventually fully recognised, first in the United States and now worldwide.

In 1991, as a result of the work done by American breeders, the Singapore government declared the Singapura cat to be a 'living national monument."

THE SNOWSHOE

GROOMING	+ + +
LIFESTYLE	INDOOR - OUTDOOR
SIZE	MEDIUM
WEIGHT MALE	4 - 6 KG
WEIGHT FEMALE	3 - 5 KG

Affectionate	Independant
Calm	Hyperactive
Social	Exclusive
Quiet	Talkative

CHARACTER

The Snowshoe is as unique as its appearance: you won't find two Snowshoes the same. They are sociable and friendly. The Snowshoe cat gets on well with other animals and children. They are very playful and require the attention of their owner. They are very intelligent, inquisitive and active with gentle melodic voices.

A SOCIABLE AND FRIENDLY CAT.

BREEDERS' TIPS

The Snowshoe is a 'no fuss' breed, well suited to the family environment. Interaction is important to keep them happy.

MORPHOLOGY

The Snowshoe is a medium-sized, well-balanced cat with a firm, muscular body. It is a pointed cat with a light-coloured body and contrasting colour on its ears, face, legs and tail. Its distinctive characteristic is that, in addition to being a pointed cat, it has white on its face and on all four feet. It also has a white bib around the neck. The head is a modified wedge with medium-sized ears and the walnut-shaped eyes are blue.

COLOURS

Seal, Blue, Chocolate, Lilac, Red, Cream, Cinnamon, Fawn. Tortie and Tabby varieties of those colours.

THE SNOWSHOE

ORIGINS

The breed was first developed in the early 1960s by a breeder in Philadelphia, USA, when she found three kittens with white feet in a Siamese litter. Finding this an attractive colour combination, she began to establish the breed by using an American Shorthair cat with the 'tuxedo' coat pattern, that is having a solid colour on the body, but with white feet, belly and chest. She eventually also achieved the white marking on the face. However, interest in the breed declined until the 1980s, when more breeders became involved and they were eventually fully recognised by TICA in 1994.

THE SOKOKE

GROOMING	+ + +
LIFESTYLE	INDOOR-OUTDOOR
SIZE	MEDIUM
WEIGHT MALE	4 - 6 KG
WEIGHT FEMALE	3 - 4.5 KG

Affectionate	Independant
Calm	Hyperactive
Social	Exclusive
Quiet	Talkative

CHARACTER

An active, intelligent cat, which is also affectionate, but not too demanding of its owner. Strong and muscular, they enjoy playing and just being with their owner.

AN AFFECTIONATE
AND INTELLIGENT CAT.

BREEDERS' TIPS

Sokoke are family orientated and devoted to their owner.

THE SOKOKE

large, slightly oriental shaped eyes

MORPHOLOGY

The Sokoke is a medium-sized, short-haired cat with a distinctive coat pattern, which is that of a blotched tabby, but as it has agouti hairs in the solid parts, it presents a very special appearance. The head is a wedge shape with fairly large, tufted ears and slightly oriental-shaped eyes, giving them a special expression. The elegant body is completed with a medium-length tapering tail.

COLOURS

Any shade of Black Tabby.

ORIGINS

The Sokoke originated in the east coast region of Kenya and were found in the area of the Arabuko Sokoke forest, from which they were given their name. Jeni Slater, who lived near the forest, found a litter and raised two of the kittens.
A Danish friend of hers, Gloria Moeldrup, imported two into Denmark where she continued breeding them. They were first introduced to the Cat Fancy in 1992 when they were presented to the FIFe, and gained recognition in 1993. Genetic research has established that they are a natural breed belonging generally to the wide family of Asian cats and found exclusively in the eastern region of Kenya.

THE SOMALI

OTHER NAMES	LONGHAIRED ABYSSINIAN, SOMALI LONGHAIR/SOMALI SHORTHAIR (GCCF)
GROOMING	+ + +
LIFESTYLE	INDOOR-OUTDOOR IN A RUN
SIZE	MEDIUM
WEIGHT MALE	4 - 5 KG
WEIGHT FEMALE	2.5 - 4 KG

Affectionate	Independant
Calm	Hyperactive
Social	Exclusive
Quiet	Talkative

CHARACTER

The Somali is a combination of beauty and personality. It is a very intelligent cat that loves to play: many will fetch toys, open cupboards, and play with water. The Somali is the epitome of everything most people want in a companion animal: lively, alert, and actively engaged in everything that piques their curiosity, but when playtime is over, they will seek all the attention and affection their caretakers are willing to give.

AN AFFECTIONATE
AND PLAYFUL CAT.

BREEDERS' TIPS

The Somali is an active breed: they will need stimulation in the form of toys, scratching posts, etc. An enclosed outdoor area is also recommended.

MORPHOLOGY

The Somali is a long-haired version of the Abyssinian. This medium to large-sized cat has the same lithe graceful body and expressive face of the Abyssinian, but with the addition of a longer ticked coat, ideally displaying a ruff and a well-covered long tail, which gives the impression of a Fox's brush. In full coat and at its best, it is a very noble-looking cat.

COLOURS

Tawny (Ruddy), Blue, Cinnamon (Sorrel), Fawn, Chocolate, Lilac and Silver in all recognised colours.

THE SOMALI

ORIGINS

It is not known where the long-haired gene came from, but it appeared from time to time in Abyssinian litters in several countries. These kittens were largely ignored, until breeders in Canada and the United States, in the 1960s, decided to develop them as a separate breed. As a result of dedicated breeding, these cats were recognised by CFA in 1978 and now have world-wide recognition. The breed gained its name from Somalia, which is a neighbour country of Ethiopia, that is the supposed country of origin of the Abyssinian.

THE SPHYNX

OTHER NAMES	THE HAIRLESS CAT, CANADIAN SPHYNX
GROOMING	+ + +
LIFESTYLE	INDOOR
SIZE	MEDIUM
WEIGHT MALE	4 - 7 KG
WEIGHT FEMALE	3 KG

Affectionate	Independant
Calm	Hyperactive
Social	Exclusive
Quiet	Talkative

CHARACTER

The Sphynx is sweet-tempered, lively, intelligent and above all amenable to handling. The term "Velcro lap cat" has been used to describe the desire of the Sphynx to be on you all the time. Sphynx love to greet every new person visiting the home, and get along well with dogs and other pets. Sphynx are highly active and will entertain themselves for hours and many Sphynx will fetch toys. Sphynx are intelligent, loyal and dedicated to their owners.

AN INTELLIGENT,
LOYAL AND DEVOTED CAT.

BREEDERS' TIPS

Regular grooming is required.

MORPHOLOGY

The Sphynx is a hairless, medium-sized cat. They have sturdy bone and good muscular development. Their loose skin gives rise to a number of wrinkles on the body, face and legs. Their skin is very warm to the touch. They have large ears set fairly high on their heads which, together with their lemon-shaped eyes, gives a unique expression. A long, whip-like tails completes the body.

COLOURS

All colours and patterns accepted.

THE SPHYNX

a long, whip-like tail

ORIGINS

Hairless cats have appeared from time to time and in different parts of the world. The most notable is probably the Mexican Hairless, which is believed to date back to pre-Columbian times and which was recorded at the beginning of the 20th century in Frances Simposon's well-known book. **Other examples have also been found in different areas, particularly in Russia which has developed the Don Sphynx and the Peterbald.** The Sphynx, as we know it, dates back to the 1960s, when a hairless kitten was born to a domestic cat in Ontario, Canada. Attempts to breed more hairless cats from this kitten were partially successful.

THE SPHYNX

INTRIGUING AND ENIGMATIC

1

THE SPHYNX

3

2

1 Red and white

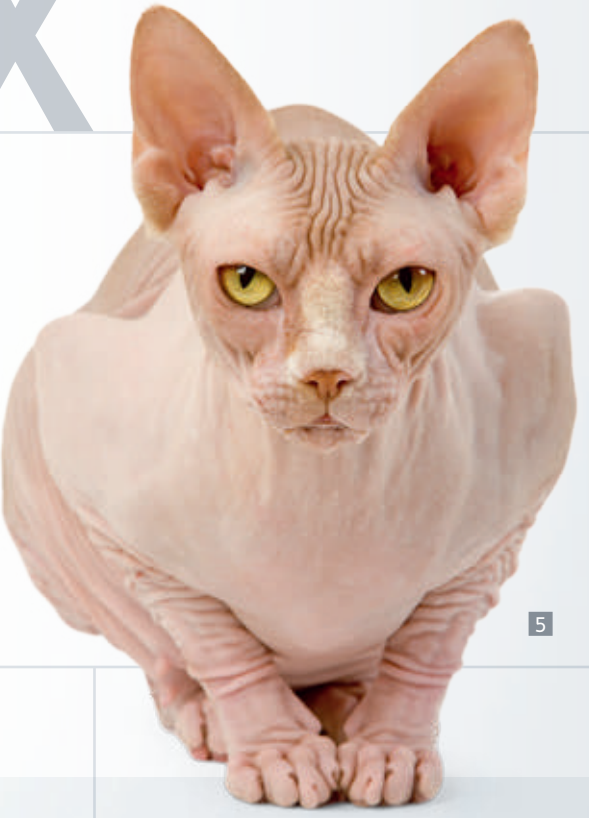
2 Black tortie and white

3 Blue

4 Black

5 Red and white

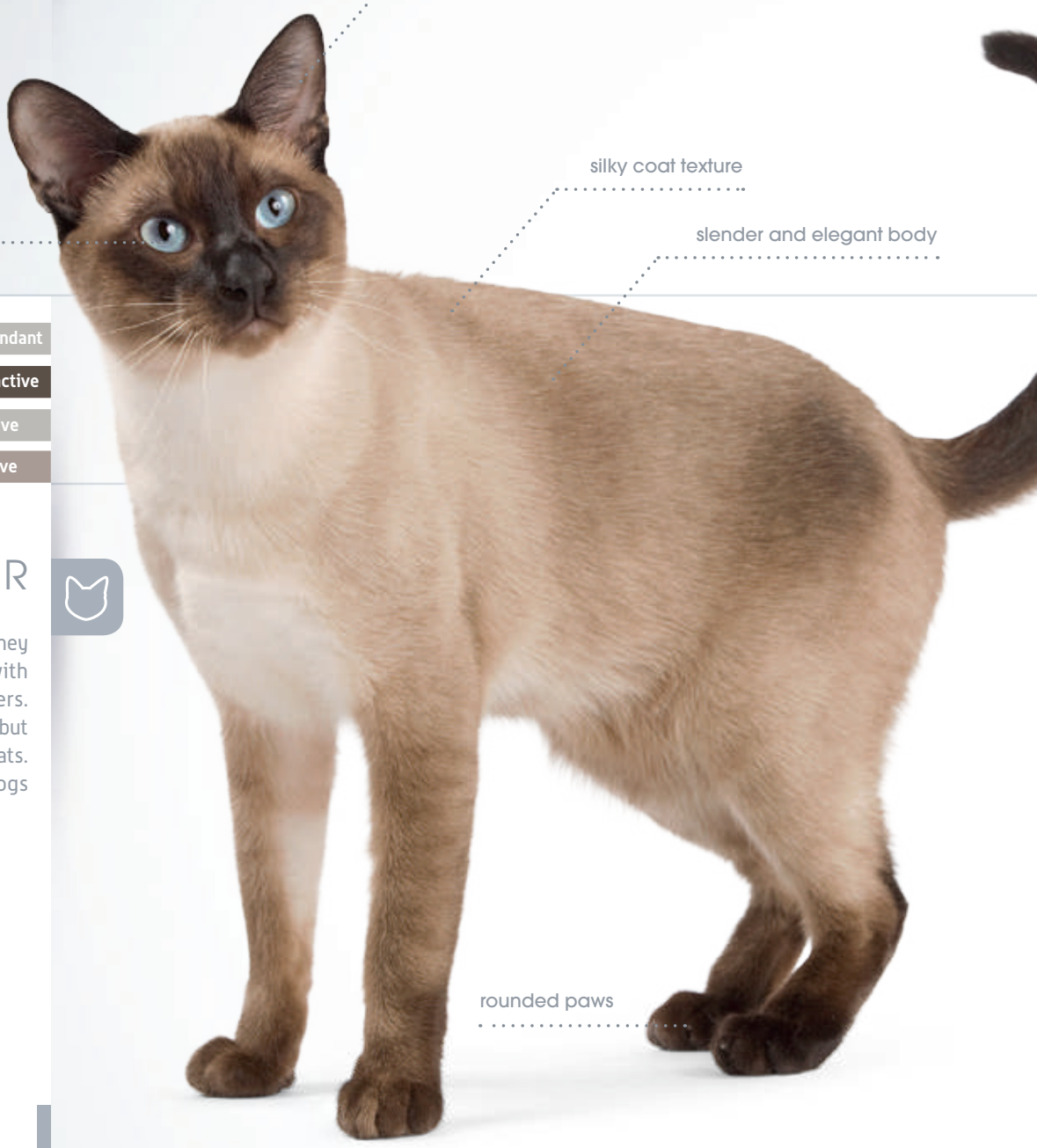
4



5

THE THAI

GROOMING	+ + +
LIFESTYLE	INDOOR
SIZE	MEDIUM
WEIGHT MALE	4.5 - 6.8 KG
WEIGHT FEMALE	3.6 - 5.4 KG



Affectionate	Independant
Calm	Hyperactive
Social	Exclusive
Quiet	Talkative

CHARACTER

Thai cats are very sociable and they are happy when they can be with people, mainly with their owners. They are very active and playful, but they are calmer than Siamese cats. They can make friends with dogs and other cats.

AN ACTIVE AND CURIOUS CAT.

BREEDERS' TIPS

The Thai needs daily interaction with its owner. For those who want a close companion, this is your breed.

MORPHOLOGY

The Thai is a graceful cat of medium size, with well-toned muscles. Its short, glossy coat is distinguished by its pattern of a light body colour with points, of a contrasting colour on head, paws and tail. Its head is a moderate wedge with rounded contours and medium-sized ears. Its eyes are large, oval and of an intense blue colour. A medium-length, slightly tapering tail completes the picture.

COLOURS

All pointed colours without white.

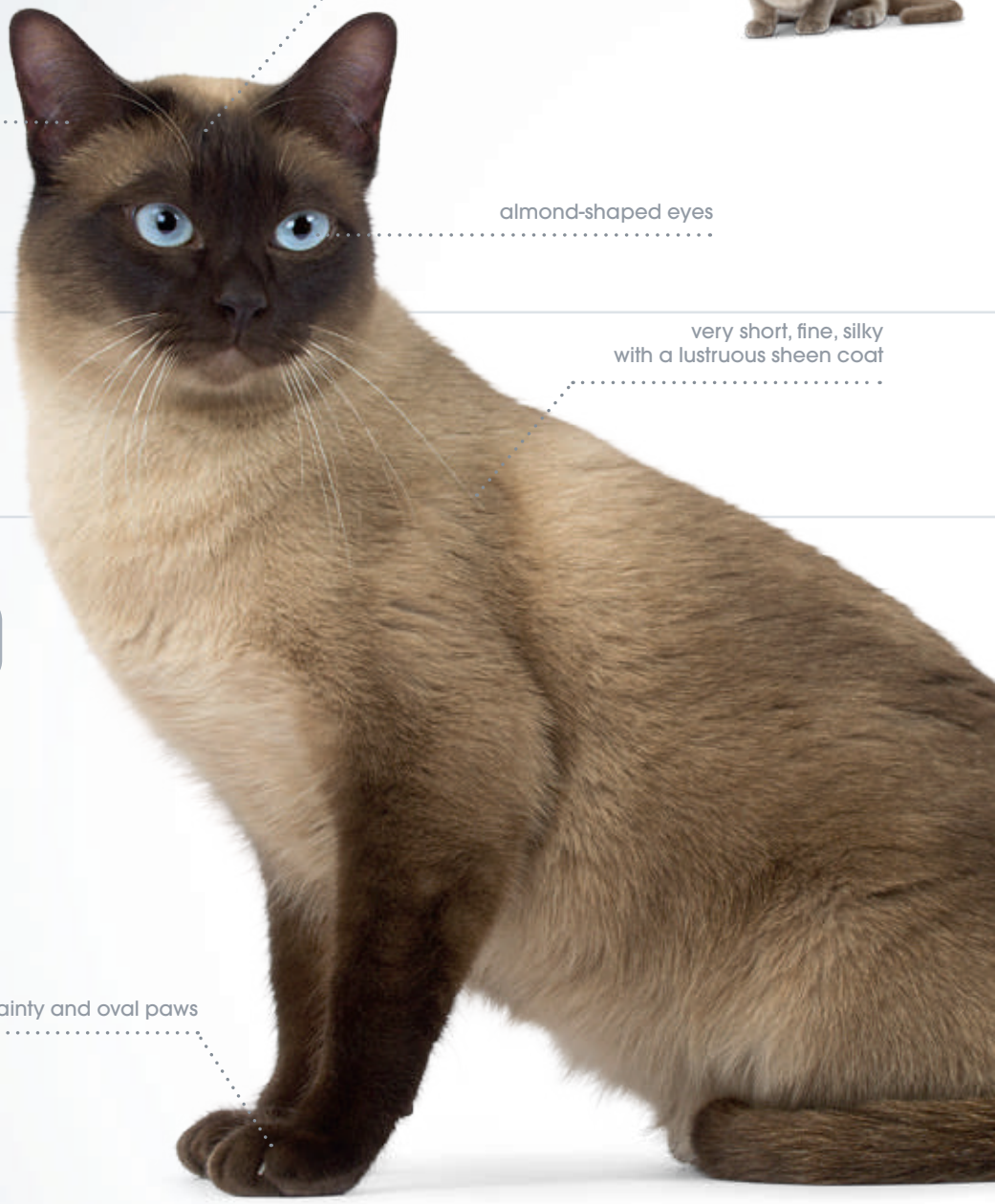
THE THAI

ORIGINS

Since ancient times, a pointed cat has been bred in the country of Thailand. In the 19th century, British citizens in Thailand (then called Siam) discovered unusual cats, which were found nowhere else in the world. Subsequently, some of these cats were imported to Europe and the USA, where they were known as Siamese because of their country of origin. However, many cat breeders in Europe and the USA strove to maintain the original conformation of the breed and preserve the lines of those early cats. In 1990, the WCF in Germany, using a standard based on the original imports, recognised the breed as Thai, followed in 2010 by TICA.

THE TONKINESE

GROOMING	+ + +
LIFESTYLE	INDOOR - OUTDOOR
SIZE	MEDIUM
WEIGHT MALE	4.5 - 5.5 KG
WEIGHT FEMALE	3.5 - 4.5 KG



Affectionate	Independant
Calm	Hyperactive
Social	Exclusive
Quiet	Talkative

CHARACTER

Tonkinese cats like the company of people and they also like to be the centre of attention. The Tonkinese gets on well with other cats, dogs and children. They need a lot of love and attention to be happy. Intelligent and generous with their affection, a Tonkinese will supervise all activities with curiosity. It is alert, active and quite athletic. It seeks and returns affection. While they are not as vocal as a Siamese, Tonkinese will hold chatty conversations with you and expect your full attention when they talk to you.

AN AFFECTIONATE AND ACTIVE CAT.

BREEDERS' TIPS

The Tonkinese thrives on attention and enjoys company and activity. Tonkinese are very sociable cats and would prefer to live with other cats for company.

MORPHOLOGY

The Tonkinese is a medium-sized, muscular cat with a surprisingly heavy weight for its size. The fur is short, soft, and silky. Their sparkling eyes, have an almond-shaped top and rounded bottom, and are set into a modified wedge with a blunt muzzle. The medium-sized ears are pricked slightly forward, emphasising the cat's alertness.

COLOURS

Mink, solid and pointed patterns in Blue, Brown, Chocolate, Red, Cream, Tortie and Lilac.

THE TONKINESE

ORIGINS

Wong Mau, a brown female cat and originator of the Burmese Breed, was brought from Burma to San Francisco, USA, by Dr. Joseph Thompson in 1930. Wong Mau proved to be a Tonkinese, the same breed depicted in The Cat-Book Poems of Siam during the Ayudha Period (1358–1767) and imported into England in the early 1800s as "Chocolate Siamese".

In the 1960s, Jane Barletta decided she wanted to create a cat that was in between the two extremes and set about developing such a breed, that would actually recreate the Tonkinese. At about the same time, Margaret Conroy in Canada also bred a Burmese to a Siamese. These ladies worked together to develop the Tonkinese.

THE TURKISH ANGORA

OTHER NAMES	TURKS
GROOMING	+ + +
LIFESTYLE	INDOOR
SIZE	MEDIUM
WEIGHT MALE	4 - 6 KG
WEIGHT FEMALE	3 - 5 KG

Affectionate	Independant
Calm	Hyperactive
Social	Exclusive
Quiet	Talkative

CHARACTER

Turkish Angoras are not only intelligent, but extremely adaptable, loving and playful, which make them an excellent choice for families with young children, and lively companions for senior adults. Turkish Angoras don't like to be cuddled by everybody, only by their owner. They will choose one of the members of the family as their owner. They have a strong and self-confident character and need their owners' attention. This cat doesn't like to be alone. They get on well with other cats and dogs.

A LIVELY AND
AFFECTIONATE CAT.

BREEDERS' TIPS

They readily accept dogs and other animals, but their assertive natures often make them the "alpha" pet in the household.

MORPHOLOGY

The Turkish Angora is a medium-sized cat with an elegant carriage. It has a soft, silky coat, which comes in a variety of colours and patterns. The head is a pointed wedge shape with large, intelligent eyes and the ears are fairly large and carried erect on the head. Its long, plume-like tail streams after it when it is running about, giving a fluid and graceful impression.

COLOURS

All colours and patterns accepted.

THE TURKISH ANGORA

long and tapering tail with a full brush

ORIGINS

The Turkish Angoras were first seen in Europe, when they were imported in the early 1900s. At that time, they were used in Persian breeding programmes and disappeared as a separate breed. However, Turkey placed great value on the breed and the Ankara zoo established a breeding programme to preserve it. In 1961, the Ankara Zoo allowed a breeding pair to be exported to the United States and this pair became the foundation of a new breeding programme. Over the next few years, other cats were imported from the Ankara zoo and, by the 1970s, the breed was established in North America, where it gained full recognition in 1972.

THE TURKISH VAN

OTHER NAMES	VAN KEDISI (FOR THE SOLID WHITE), VAN CAT (IN TURKEY)
GROOMING	+ + +
LIFESTYLE	INDOOR - OUTDOOR
SIZE	MEDIUM - LARGE
WEIGHT MALE	UP - 7KG
WEIGHT FEMALE	5 - 6KG

Affectionate	Independant
Calm	Hyperactive
Social	Exclusive
Quiet	Talkative

CHARACTER

While loyal, loving and affectionate, the Turkish Van is highly intelligent and highly active. They need exercise and enjoy interactive toys. This breed needs a large area to live in. While they love to be with you and will choose to curl up in your lap to enjoy a stroking session, they are not a breed that wants to be picked up and held or cuddled for long periods. They are very talkative cats, but their voice isn't loud. They like playing with water and are the only cat known to swim of its own free will.

AN ACTIVE AND INTELLIGENT CAT.

BREEDERS' TIPS

Turkish Vans are not recommended for families with very young children, as they are muscular, often stand on their back feet when challenged and tend to play quite roughly.

MORPHOLOGY

The Turkish Van is a medium to large cat, with a strong, powerfully built body. Its semi-longhaired coat is distinctive, in that it is primarily a white cat with patches of colour only on the head and tail. The coat is also waterproof with a special feel to it, allowing them to enjoy swimming. The head is dominated by the walnut-shaped, large eyes, which may be amber, blue or of odd-colours. The ears are set fairly high on the wedge-shaped head, which has rounded planes.

COLOURS

Black, Blue, Auburn, Cream, Black tortoiseshell and Blue tortoiseshell and tabby in these colours. Pattern must be van pattern.

THE TURKISH VAN

medium-long tail with a full brush appearance

ORIGINS

White, longhaired cats were known to have existed for many centuries in the mountainous regions of Turkey, but it was first in the mid-1950s that two English ladies travelling in Turkey came across white cats with (auburn) red markings on the head and tail and with a stronger body than the all-white cats known as Angoras. Two cats were brought back to England and were carefully used to establish the breed in Europe. As they were originally found near Lake Van, they were given the name of Turkish Van. The Van is still quite rare, not only in its native land, but also throughout the cat world, where it has been recognised since the late 1960s.

THE VANKEDISI

OTHER NAMES	TURKISH VAN WHITE (TICA)
GROOMING	+ + +
LIFESTYLE	INDOOR - OUTDOOR
SIZE	LARGE
WEIGHT MALE	AROUND 7 KG
WEIGHT FEMALE	5 - 6 KGS

Affectionate	Independant
Calm	Hyperactive
Social	Exclusive
Quiet	Talkative

CHARACTER

Vankedis is like to interact with their owners and are very inquisitive. They generally choose one person as their owner, with whom they form a close relationship. They are very playful, active and talkative cats. They need exercise and enjoy interactive toys.

A PLAYFUL AND AFFECTIONATE CAT.

BREEDERS' TIPS

It is generally known that white cats are more prone to deafness. Turkish Vankedisi are no exception.

MORPHOLOGY

The Turkish Vankedisi is a fairly large, muscular cat with strong bones. The body is long with a deep chest. The head is a broad wedge with large, oval eyes, which may be amber or blue or odd in colour, with one eye being amber and the other blue. The coat is semi-long, water-resistant and chalk white.

COLOURS

Chalk white.

THE VANKEDISI

full brush tail

ORIGINS

The Vankedisi is one of the oldest natural breeds originating in the Van region of Turkey, where it has been known for many centuries. Historically, this area has been occupied by several different cultures and there is some controversy over these cats as, apart from Turkey, both the Armenian and the Kurdish population of the Van region have claimed them as cultural symbols. They are distinguished by being the only known cat that swims of its own free will. They are basically the all white version of the better-know Turkish Van, which displays colour markings on head and tail.

CAT FANCY GLOSSARY

A

ADULT

A cat is regarded as an adult for show purposes at a specific age. This varies according to the organisation, but is usually from eight to ten months.

AFFIX

A cattery name appearing either at the end or the beginning of the individual name of the cat; it may indicate the cattery name of the breeder or the owner, depending on the organisation.

AGOUTI

Description of a coat where each hair has a band of two or more colours; this banding is the result of the agouti gene.

ALBINO

Having little or no coloured pigment in the skin, coat and eyes.

ALTER

A cat that has been de-sexed, i.e. spayed or neutered.

ALL-BREED

Applied to judges who are able to judge all breeds of cat and to cat shows rings in which all breeds can be entered and judged against each other.

ALMOND SHAPED

Description of shape of eye.

ANY OTHER VARIETY (AOV)

A term used in some organisations for a class that is open to purebred and registered cats, which are a variety of a recognised breed but have not yet been granted recognition.

AWN HAIR

See "Hair".

B

BARRING

A term used to describe faint stripes on an otherwise non-tabby cat.

BASIC COLOURS

Black, Chocolate, Cinnamon, Red.

BIB

The area of the lower chin and chest of the cat.

BI-COLOUR

A cat with a coat showing white and one or two other colours. There are four patterns for cats with white that are recognised in some different registries; these are the "Van" which got its name from the original Turkish Van cats which showed this pattern, see figures opposite:

BLAZE

A mark, often white in colour, running from the forehead to the nose.

BLOTCHED

A term applied for a classic or marbled tabby pattern.

1. *Van*

2. *The Harlequin, which has a little more colour on the body than the "Van"*

3. *The usual bi-colour pattern with much larger patches of colour*

4. *And the 'mitted' seen only in specific breeds*

BI-COLOUR

B

BLOODLINE

A group of related cats are said to be of the same bloodline.

BLUE

Term used for the colour grey in a cat.

BLUE –CREAM

Another term for a blue tortie. The coat has a mixture of blue and cream hair.

BREAK

A break is an indentation, seen in profile, where the base of the nose meets the forehead. It is also referred to as a stop, which is usually a more defined break as seen in Persians and Exotics.

BREED

A sub-division of the species made up of individual cats with common hereditary characteristics. There are relatively few breeds of cat but a large number of varieties.

BREED STANDARD

A document which describes the ideal characteristics for a breed and which has been agreed and accepted by the organisation concerned.

BREEDING PROGRAMME

An on-going programme of breeding cats together in order to select specific traits.

BREEDER

Normally, the breeder is the person who owns the female at the time of the birth of her kittens.

BREEDING TRUE

To produce kittens that closely resemble their parents.

BREEDING QUALITY

A cat that meets the standard of her breed sufficiently to be useful for breeding, but might not be of show quality.

BRINDLING

The effect caused by lighter coloured or de-pigmented hairs being interspersed with dark ones.

BRITCHES

In long and semi-longhaired cats, this is the longer denser hair on the back of the thighs.

BRONZE

Colour description specific to the Egyptian Mau; the base coat is a rich, warm red with dark spotting and ticking.

BRUSH

or Plume. A thick covering of long hair found on the tails of long and semi-longhaired cats.

BULLS EYE

Term used to describe the mark found on the sides of the body of a cat displaying the classic (blotched) tabby pattern. Characterised by a solid circular spot of dark colour, surrounded by a ring of darker colouring.

BUTTERFLY

Description of the pattern found on the shoulders of a classic (blotched) tabby cat that resembles the wings of a butterfly.

BUTTONS

The term given to the regular dark spots appearing on the belly of a tabby cat.

C

CALICO

An American term applied to the tri-colour pattern, i.e. white with two other colours, for example a black tortie and white.

CALL NAME

The name by which the cat is known at home, not necessarily the same as the registered name.

CALLING

The term given to the special cries or screams made by a female cat when in heat.

CAMEO

A term used to describe a silver cat with red or cream tips to her fur.

CATTERY

Term referring to the breeding cats of a breeder. It normally implies physical buildings in which the cats are housed.

CATTERY NAME

Also known as a 'Prefix' is a name registered with an organisation and identifies the cats bred by a particular breeder. It may be used as either a prefix or a suffix to the cat's name. In some organisations it can be used as a suffix, indicating that the cat is owned by that breeder but was bred by a different breeder.

CERTIFICATES

In European and some Southern hemisphere organisations, a winning cat is usually issued with a Certificate. A number of these certificates are required to gain a title. In North American and some other organisations, points are gained instead of certificates, but accumulated in the same way to gain a title.

C

CERTIFIED PEDIGREE
An official pedigree issued by the organisation concerned.

CHAMPAGNE
An American term for the colour of a chocolate Burmese.

CHINCHILLA
A cat with a silvery white coat, the tips of her hair being of another colour, more commonly black, but also other colours.

CHOCOLATE
A brown colour which varies in intensity according to the breed.

CINNAMON
A bright reddish brown coat colour.

COAT
The term used for the fur of a cat.

COBBY
A body which is fairly short and muscular, with a deep chest and low on the legs.

COLOURPOINT
A light coloured coat pattern showing contrasting colour on the 'points', i.e. the mask, ears, legs and tail. Also known as "Himalayan pattern".

CONDITION
The overall state of the cat, including muscle tone, grooming and evidence of good health.

CONFORMATION
The overall structure of the cat's body, including head, legs and tail.

CONGENITAL
A trait or a condition that exists from birth. It may, or may not, be hereditary.

CREAM
Colour description for a dilute of red, which appears as a pale buff colour.

CURLY COAT
Used to describe rexing in specific breeds.

CROSS-BREED
The result of a mating between two different breeds of cat, also known as a hybrid.

CRYPTORCHID
An adult male cat whose testicles have not descended into the scrotal sac. This is a disqualification in all organisations.

D

DAM
Also known as "queen". The female parent of the cat.

DECLAWED
Condition where the claws have been surgically removed. Declawing is banned in most countries.

DEW CLAW
The first digit found above the paws, on the inside of the front leg of a cat.

DILUTE COLOURS
A pale version of the basic colours, e.g. Blue, Lilac, Fawn and Cream.

DISQUALIFICATION
A cat may be disqualified for exhibiting a certain specific fault. A list of such faults leading to disqualification is usually published by the organisation involved, and may appear in the individual breed standard.

DOME
The normally rounded area of the head between the ears.

DOMESTIC CAT
A cat of unknown parentage, it may be longhaired, semi-longhaired or shorthaired. here are usually classes for these cats at shows.

DOWN (HAIR)
The short, soft hair close to the body. See also"Hair."

E

EAR SET
The position of the ears on the head, also described as ear placement.

EAR FURNISHINGS
Tufts of hair growing from inside the ear and in some breeds extending outwards.

EAR TUFTS
The long hair at the tip of the ear, particularly desirable in the Maine Coon and Norwegian Forest Cat breeds.

EBONY
Used by some organisations to describe a black Oriental.

ENTIRE
A cat which has not been desexed.

EYE SET
The position of the eyes on the head, also described as eye placement.

EXHIBITOR
The person showing a cat. Not necessarily the breeder.

FAULT

A physical defect in relation to a specific feature of the accepted standard for the breed.

FAWN

A pale buff colour that is the dilute of Cinnamon.

FERAL

A domestic cat that has reverted to living in a wild state.

FOREIGN

A term used to describe the body of a cat that is not Oriental in type but is still elegant, e.g. Burmese, Abyssinian, Russian Blue.

FRILL

Also called the 'Ruff.' The long dense hair around the neck.

FULL CHEEKS

A term used to describe noticeably rounded cheeks, particularly in the standard of the Chartreux.

FUR

See "Hair".

GENE POOL

Describing the total of all the genes that exist within a breed.

GENES

The individual hereditary units that influence the growth, development and physical characteristics of a cat.

GENETICS

The study of heredity.

GENOTYPE

The total of the genes that are inherited from a cat's parents.

GHOST MARKINGS

Tabby markings, particularly visible in young cats that are genetically self-coloured. Such marking may fade in adulthood.

GLOVES

The white areas on the front feet of a cat, as seen in the Birman, Ragdoll and Snowshoe.

GOLD OR GOLDEN

Colour description. It appears as a clear apricot colour.

GUARD HAIR

One of the three types of hair normally seen in a cat, see "Hair".

HAIR

The cat's fur is made up of three types of hair:
1- The outer coat, known as the 'guard' hair, which is long. This is the protective layer of the coat.
2- The 'awn' hair, which is also for protection and is coarser than the guard hair.
3- The 'undercoat' which is soft and dense and acts as insulation.

There is also 'tactile' hair that is coarser and can be seen in the whiskers, which are sensitive and used by the cat to gauge widths.

HAIRLESS

A term given to cats that are without a normal coat, such as the Sphynx.

HAW

The third eyelid or nictitating membrane.

HEAT

A term more commonly used for female dogs when they are at the point of being receptive to mating. In cats it is referred to as 'calling.'

HETEROCHROMATIC

A term applied to a cat with eyes of two different colours, but usually referred to as "odd-eyed," e.g. one eye blue and the other may be yellow, green or a brownish colour. This usually occurs in cats which are either white or carry the white spotting gene.

HIMALAYAN

The American term for a colourpoint Persian. It is also used to describe the colourpoint pattern.

H

HOCK

Correct term for the joint on a cat's hind leg, equivalent to the human ankle.

HOUSEHOLD PET

Another term for the Domestic cat, in some registries it may be a pedigree cat that is not eligible for breed classes or a Domestic cat of unknown parentage.

HYBRID

A cat produced by cross-breeding of two different breeds.

I

INBREEDING

The mating together of cats that are closely related, e.g. brother and sister, father and daughter.

INHERITANCE

Characteristics which are the result of the genetic influence of the cat's forbears.

J

JOWLS

Prominent cheek folds, which may be seen in an entire male cat.

K

KITTEN

A young cat.

L

LACES

A white area running from the back of the foot to the hock, usually described in the standard of a Birman.

LAVENDER

Another term for"lilac".

LILAC

A colour description for a dilute chocolate. The colour is a pale dove grey with pinkish overtones.

LINE-BREEDING

Mating together cats with some ancestors in common.

LITTER

The collective term for kittens produced by a female at the same time.

LONGHAIR

Describing a cat with relatively long fur on her body.

LYNX POINT

An American term for a tabby pointed cat.

LYNX TUFTS

See "Ear Tufts".

M

MACKEREL

A term describing one of the tabby patterns. Also described as 'tiger' pattern.

MALOCCLUSION

A deviation from the normal "scissor" bite.

MARBLE

A description of the tabby pattern as seen in the Bengal and Australian Mist cats.

MARKING

A term given to the action of spraying as opposed to urinating.

MARKINGS

General description of broken stripes or partial tabby pattern seen on the coat of a solid coloured cat.

MASCARA LINES

Dark lines outlining the eyes referred to in tabby and silver cats.

MASK

The dark area of the face commencing on the forehead and below the ears, which encompasses the eyes, nose, whisker pads and chin. Referred to in pointed cats such as the Siamese.

MI-KE

Japanese term for a cat that is predominantly white with patches of red and black. Normally associated with the Japanese Bobtail breed.

MINK

Colour description given to the brown colour seen in cats which are hybridised from Siamese and Burmese, e.g. Tonkinese.

MITTENS

Term given to the white on the front paws.

MIXED BREED

A cat of unknown or mixed parentage.

MODIFIED WEDGE

Description of a head which, although basically triangular-shaped, is not as extreme as a true wedge.

MOGGY

Affectionate term used in the United Kingdom to describe a household pet, usually of unknown parentage.

MONORCHID

A male cat that has only one testicle descended into the scrotal sac.

MORPHOLOGY

The type of the cat.

MUTATION

A naturally occurring permanent genetic variation. This has resulted in many of the present breeds such as the Rex.

N

NATURAL BREED

Description of a breed that has developed naturally without selective breeding.

NECKLACE

The continuous or broken stripe encircling the neck, which can be seen in the tabby patterns.

NEUTER

A term used to indicate a cat, which has been desexed; it can apply to a male cat that has been castrated or to a female cat that has been spayed.

NICTITATING MEMBRANE

Also known as the third eyelid or haw. It is a thin membrane in the inner corner of the cat's eye and is flicked diagonally across the eye under the eyelid. It acts as a lubricant and also added protection to the eye. It may also be seen in the inner corner of the eye when a cat is unwell.

NON-AGOUTI

Description of a cat with a uniform solid colour.

NOSE BREAK

A distinct indentation at the point where the nose meets the forehead. It is more pronounced in breeds such as the Persian or the Burmese.

NOSE LEATHER

The hairless tip of the nose and nostrils.

O

ODD-EYED
Description of a cat having different eye colours, e.g. one blue and one green, gold, yellow or copper.

OPEN CLASS
A show class in which entire adult cats may be shown.

ORIENTAL
A breed with the elegant, long body of the Siamese but without being pointed in Coat pattern. Also used as a description of body type.

OUTCROSS
The mating of cats that have no common ancestry within several generations.

OVERSHOT
Description of mouth where the upper jaw extends beyond the lower jaw.

P

PAPERS
General term for the pedigree and registration certificates of a cat.

PARTI-COLOURED
Description of a coat consisting of two or more colours.

PATCHED TABBY
Term describing a tabby cat which is also a tortoiseshell or a "Torbie"

PATTERN
A description of the markings on a coat.

PEDIGREE
A document recording the ancestry of a cat.

PET QUALITY
A purebred cat that does not meet her breed standard sufficiently to be valuable in a breeding programme.

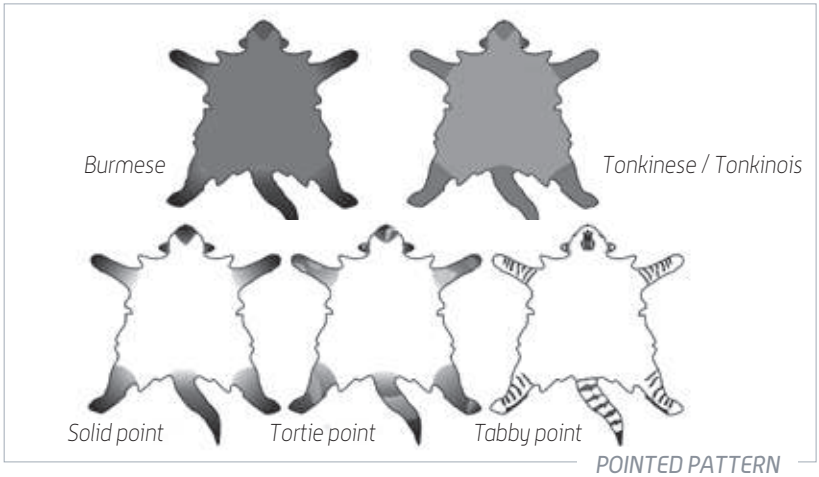
PEWTER
Color description of a silver-shaded cat with orange or copper-coloured eyes.

PINCH
A distinct indentation between the cheeks and the muzzle.

PHENOTYPE
The physical conformation of a cat.

PLATINUM
American term for the lilac colour in Burmese.

POINTED PATTERN
Description of the pattern deriving from the Siamese cat. The body shows a uniform pale colour, mask, ears, legs and tail are of a contrasting colour. The eyes are always blue. This pattern is also referred to as "himalayan".
The Burmese has a modified version of the pointed pattern, whereby the points are only slightly darker than the body colour and the eye colour is not blue but yellow.
The Tonkinese, which is an intermediate between the Burmese and the Siamese, also shows less pronounced contrast on the points. The eye colour varies.



POINTED PATTERN

POINTS
Referring to the head markings, ears, tail and feet on a pointed cat.

POINTS IN STANDARD
The number of points allotted to a particular part of the cat's body. The total score is 100 and the different parts of the body are assigned a number of points based on their importance in the particular breed.

POLYDACTYL
Condition where a cat has too many toes. The correct number of toes on a cat is five toes on the front paws and four toes on the hind paws.

PREFIX
The registered cattery name at the beginning of the cat's individual name, that indicates the cattery name of her breeder.

PRE-POTENT
Description of a cat with a strong genetic influence, such that her progeny consistently resemble the parent.

PUREBRED
A cat whose ancestors are of the same breed or of a breed that has been allowed in the breed standard.

Q

QUEEN

Term describing an entire female cat.

R

RANGY

Description of a cat with a long body.

RED

The genetic colour for cats variously described as "ginger", "orange' or "marmalade."

REGISTRATION

The official recording of a cat's name and ancestry with a recognised organisation.

REX CAT

A term describing a cat with a wavy or curly coat.

RING

An area at a show where a judge assesses cats in competition.

ROMAN NOSE

Description of a nose that curves slightly downward.

RUDDY

Colour description of the original black ticked Abyssinian pattern, also known as "usual" and "Tawny".

RUFF

The long, thick hair surrounding the neck, also called a "Frill".

RUMPY

Term used to describe the Manx cat with no tail; when there are two or three vertebrae covered with hair, the term used is "Rumpy Riser."

RUFISM

The presence of reddish pigmentation in the coat of a cat.

RUSTINESS

Traces of red hairs in the coat of a black cat.

S

SABLE

Colour description used in the United States for the "brown" or "Seal" Burmese.

SCARAB MARKING

A marking in the form of an "M" on the forehead of many foreign-type spotted tabbies.

SEAL

Colour description for the dark brown seen in Siamese patterned cats.

SELF COLOURED

Description of a coat of a single, solid colour.

SELECTIVE BREEDING

Intentional mating of cats in order to either achieve a desired trait or to eliminate an undesired one.

SEMI-LONGHAIR

A cat with a coat that is not uniformly long all over her body but only around the neck, on the legs and on the tail. Cats such as the Maine Coon or the Turkish Angora are examples.

SEPIA

A colour description sometimes applied to the brown Burmese, as the brown resembles the colour of a sepia photo.

SHADED

Colour description for a silver cat with colour on the tips of the hair shaft, this extends to about one third of the length of the hair.

SHELL

Colour description of a silver cat with colour on the tips of her hair extending about 1/8 of the length. This is also referred to as "tipped" and most clearly seen in a Chinchilla Persian.

SHORTHAIR

A cat with a relatively short coat. It may be close-lying, as in the Burmese or dense and plushy, as in the British Shorthair.

S

SILVER

Colour description of a coat, which appears to be white, but which has coloured tips to each hair. It is believed to be the effect of the Inhibitor gene and can be seen also in the golden varieties.
In Silver Tabbies, the white areas are confined to lighter areas around the coloured pattern.
In the Smoke variety, the cat appears to be a solid colour with only the base of the coat showing white. The diagram shows the different degrees of the tipping.

SILVER

SHOW

An exhibition of cats in which they are evaluated by licensed judges and given awards according to their quality as described in the breed standards.

SHOW QUALITY

A cat which meets the breed standard sufficiently to compete at a show.

SIRE

The male parent of a cat.

SMOKE

See "Silver".

SORREL

Colour description of the Cinnamon Abyssinian.

SPAY

Female cat that has been desexed.

SPECTACLES

Term used for a lighter area resembling spectacles around the eyes of a colour pointed cat.

SPINE LINE

The darker shading of the ticking along the line of the cat's spine, particularly seen in a ticked tabby.

SPOTTED

A variety of tabby pattern.

SPRAYING

Commonly seen in a male cat, but also in females when calling, whereby they spray indiscriminatingly in order to mark to inform the opposite sex of their availability for mating.

STANDARD

A breed standard describing the perfect example of a breed.

STERNUM

Correct name for the breastbone.

STOCKY

A term describing a compact body shape.

STOP

The indentation between the forehead and the nose. The depth of the stop depends on the breed.

STUD CAT

An entire male that is used for breeding.

SUFFIX

A cattery name placed after the individual name of the cat.

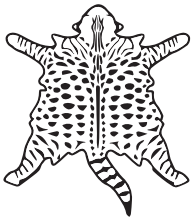
T

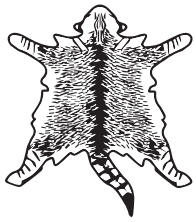
TABBY

Colour description of agouti cats with specific patterns. There are four varieties:


1. *Blotched or Classic*


2. *Mackerel*


3. *Spotted*


4. *Ticked*

T

TAILLESS
Being without a tail as in the Manx breed.

TAWNY
See "Ruddy".

THIRD EYELID
See "Nictitating Membrane".

TICKED
Term used to describe a coat containing hairs that are each banded with two or more colours. It is one of the tabby patterns shown in the Diagram.

TIGER PATTERN
Another term for a mackerel tabby – see Diagram.

TIPPING
Only the tips of the hair are coloured. See "Silver".

TITLE
An award gained by a cat according to the rules of an organisation. The title may be added to the name of the cat on the official registration papers.

TORBIE
A cat with both tortoiseshell and tabby markings, normally a female.

TORTOISESHELL
Also referred to as "Tortie." A cat with a combination of colours, e.g. black and red, blue and cream etc. The colours being uniformly intermingled. These cats are normally female.

TORTOISESHELL AND WHITE
Also called a "Calico" in the United States. A female cat having a combination of patches of red and black (also the dilutes) on a white background.

TOM
A colloquial name for an entire male cat.

U

UMBILICAL HERNIA
Fatty lump in the naval area of the belly.

UNDERCOAT
The soft fur close to the body.

UNDERSHOT
Description of a mouth where the lower jaw extends beyond the upper jaw.

V

VAN PATTERN
Describing a colour pattern which is restricted to the head and the tail, leaving the rest of the body and most of the extremities white. The term derives from the Turkish Van breed which always exhibits this pattern.

VARIETY
A sub-group of cats of the same breed, e.g. coat colours

W

WEDGE-SHAPED
Description of the head, where the outline is that of a wedge with the broad part in the top line from the ears, going down to the muzzle.

WHIP TAIL
Description of a long, thin, flexible tail, tapering from the base to the tip.

WHISKER PAD
The fleshy area of the upper lip on which the whiskers grow.

WHOLE
Another term for "Entire", meaning a cat that has not been desexed.

WRY JAW
Description of a crooked jaw formation.

X

XIPHISTERNUM
The lower end of the Sternum or Breastbone. If this is protruding or hooked, it is a disqualification.

BREEDS AND GENETICS

THE GENETIC BASIS:

GENETIC DETERMINISM OF THE CAT'S COAT COLOUR

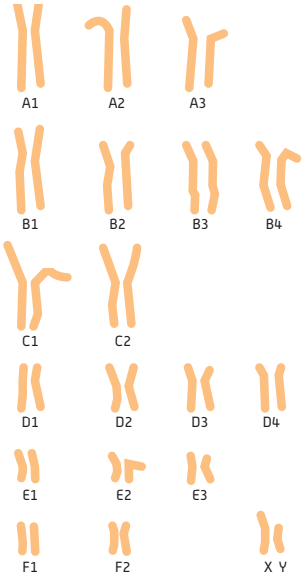
Genetics is the study of DNA. DNA is present in every cell of the body and contains all the information which defines what we look like (our phenotype*), how our body functions, our health and even how we act - our behaviour.
If you study your cat, you will also be studying genetics, because "Everything you need to know about genetics, you can learn from your cat!"

DNA DOUBLE HELIX

IT'S ALL ABOUT DNA!

DNA (deoxyribonucleic acid) is a very long string, made up of four chemical elements known as the bases: adenine (A), **cytosine** (C), **guanine** (G) **and thymine** (T).
Two strings of DNA bind together, forming a long strand that has a natural twist called a **DNA double helix. A chromosome* is a single strand of the DNA double helix. Cats have 38 chromosomes** and therefore have **38 DNA double helixes**, each of different lengths.

CHROMOSOMES IN CATS



19 pairs of chromosomes in cats

38 chromosomes in cats

With the exception of certain fish, most animals have chromosomes that are assembled in pairs.

> The 38 chromosomes in cats are actually 19 pairs, 2 copies of each type of chromosome.

One pair is inherited from the mother and one pair is inherited from the father. Therefore, each individual has one set of maternal chromosomes and one set of paternal chromosomes.
When the eggs form within the female, unlike other cells of the body, only one pair of the chromosome is present in the egg and the chromosomes are a completely random mix of her inherited maternal and paternal chromosomes. Thus, the maternal or paternal chromosomes do not all get passed on as a group, but as a mixed group, like a shuffled deck of cards.
In females, eggs are formed before birth and only become **available for fertilisation by a sperm between puberty and menopause. In males, puberty marks the beginning of sperm production, which continues throughout the male's life**. Like an egg, each sperm has only one chromosome of each pair.

II Sexual chromosomes and autosomes

Out of the set of 19 chromosomes, one pair determines the sex.
In mammals, the sex chromosomes are called the X and Y chromosomes. Females are defined by having two X chromosomes, while males have one X chromosome and one Y chromosome.
As females have only X chromosomes, their eggs can only contain X chromosomes. But when males produce sperm, each sperm will have either an X or a Y chromosome.

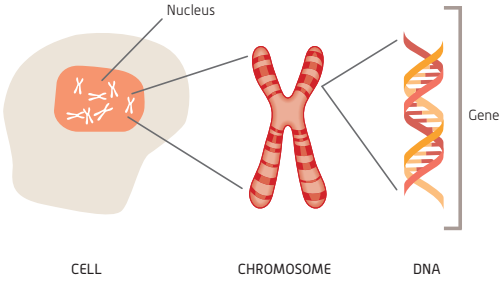
> Thus, it is the male who determines the sex of the offspring!

The other 18 pairs of chromosomes are called autosomes*. Altogether, **approximately 20,000 genes* are coded by the DNA strands**, the longer chromosomes having more genes than the shorter chromosomes, and the X and Y chromosomes having important genes that help determine our gender.

The Localisation and role of genes

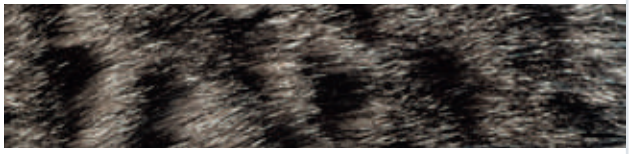
We can **think of chromosomes like a street in a town. Some streets are short and some are long**.
The genes correspond to specific segments of the DNA, and can be seen as the houses on the street.
Each string of the DNA double helix is a spiral of two strands, representing a different side of the street. Some genes/houses are located on one side of the street (the top sense strand of DNA) and others (the bottom antisense strand of DNA) on the other side of the street. The intergenic regions between the genes have no coding function, but they can influence whether genes are expressed or not. The intergenic region resembles the gardens around the houses. Some are very big, while others are much smaller. Some intergenic regions are so small, that they can overlap with their neighbours.

A GENE



WHAT COLOUR IS MY CAT? THE GENETICS OF CORATION

If you know the Roman alphabet, then you can remember the major genes that control the colorations, fur types and morphologies of cats.
The names of **each of the characteristic colours were originally defined by scientists working with mice**, but this terminology has continued to be used by feline geneticists. **Mammals have many genes in common, so the terminology was easily transposed to cats, dogs, horses and even humans. The different colorations of cats can be used to understand how genetics and the inheritance of gene variation are important**. Via coat colours, we can "see" what the genes are doing, what proteins they are producing, and how they are inherited from the parents.



The laws of heredity

Scientists, such as **Charles Darwin and Gregor Mendel**, recognised that **certain traits were inherited, such as whether a cat was black or not, but they did not know anything about chromosomes, genes or DNA**. All they knew was that colour-related characteristics, transmitted by the parents to their descendants, were stable. **Gregor Mendel used a mathematical formula to discover that some characteristics were transmitted by the gametes and the laws of heredity**. Mendel used different varieties of pea plants for his work, but we prefer cats!
Mendel's laws of heredity describe several types of hereditary transmission:
- Dominant and recessive autosomal transmission,
- X linked dominance and recessiveness.

Autosomal transmission means that the gene dictating a particular characteristic is located on a non-sexual chromosome. When transmission is linked to the X chromosome, the dissemination of the gene will vary depending on the sex of the individual. There are some genes located on the Y chromosome, but good examples have not been identified in cats.

Each cell in the body also contains a mitochondrial* DNA (mtDNA), which is separate from the DNA that is in the nucleus - the chromosomal DNA. **Mitochondrial DNA is only inherited from the mother**, from her egg, because the sperm is very compact and the mtDNA is in the sperm's tail, which helps the sperm move. During fertilisation, the tail of the sperm disintegrates and no mtDNA from the male enters the egg. Many health problems are caused by genetic defects in the mtDNA, but none are known yet in the cat.

II A letter for a specific location

Table 1 (*over the page*) lists the main coat colour and fur types of the cat. ***Agouti**** is the first coloration and is the normal coloration of many mammals, even the animal called the Common Agouti (*Dasyprocta*) and the common house mouse (*Musculus domesticus*).

Agouti means that the **hair is banded with different colours of pigmentation**.

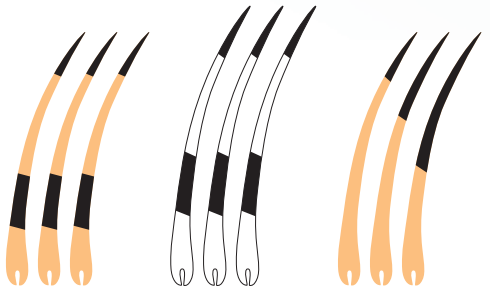
The two main pigmentations in all mammals are eumelain (black) and **pheomelanin** (yellow/red). When a hair has black and yellow bands of coloration, the human eye "sees" this as brown.

> Normal brown tabby cats are not really brown at all – it's an optical illusion of how we perceive the colour of the fur.

To understand how the cat's coloration traits build on one another, let's start with the brown-ticked Oriental Shorthair. The genotype of a brown ticked Oriental coloration is ***(A-, B-, C-, D-, E-, ii, oo, ss, Ti-, ww)***. **Each of the 10 coloration traits is controlled by a different gene. Each gene is represented by a letter of the alphabet**.

These letters were assigned by the mouse geneticists over 100 years ago, before knowing what protein the genes of the traits produced! At that time, each letter represented a **"locus*"**.

WILD-TYPE CAT HAIR OF A BROWN TABBY CAT



(Left) The banding pattern consists of alternating black and yellow pigment bands.
(Middle) For silver cat hairs, the banding pattern consists of alternating dark and non-pigmented bands.
(Right) The degree to which the pheomelanin band is extended or absent can vary, causing the appearance of very different colorations for the cat.

Brown ticked Oriental Shorthair

THE PHENOTYPIC TRAITS OF THE DOMESTIC CAT (TABLE 1)

DISEASE / TRAIT (ALLELES) *OMIA ENTRY*	MOI	PHENOTYPE	GENE	GENE NAME	MUTATION
Agouti (A^+, a, A^{Pbe})[1, 2] ***000201-9685***	AR	Banded fur to solid	ASIP	Agouti-signaling protein	c.122_123delCA; Pbe haplotype
Brown (B^+, b, b^l)[3, 4] ***001249-9685***	AR	Brown, light brown colour variants	TYRP1	Tyrosinase related protein	b = -5IVS6, bl = c.298C>T
Colour (C^+, C^b, C^s, c)[4-6] ***000202-9685***	AR	Burmese, Siamese colour pattern, full albino	TYR	Tyrosinase	cb = c.715G>T, cs = c.940G>A, c = c.975delC
Dilution (D^+, d)[7] ***000206-9685***	AR	Black to grey / blue, orange to cream	MLPH	Melanophilin	c.83delT
Dwarfism ***000299-9685***	AD	Shortening of long bones	unknown	unknown	unknown
Extension (E^+, e, e^r) - Amber[8] ***001199-9685***	AR	Brown/red color variant	MC1R	Melanocortin receptor 1	c.250G>A; c.439TCT
Fold (Fd, fd^+)[9] ***000319-9685***	AD	Ventral ear fold	TRPV4	Transient Receptor Potential cation channel, subfamily V, member 4	c.1024G>T
Gloves (G^+, g)[10] ***001580-9685***	AR	White feet	KIT	KIT	c.1035_1036delinsCA
Hairless (Hr^+, hr)	AR	Atrichia	KRT71	Keratin 71	c.816+1G>A
Inhibitor (I, i^+) ***001583-9685***	AD	Absence of phaeomelanin	unknown	unknown	unknown
Japanase Bobtail (J, j^+)[11]	AD	Kinked tail	HES7	Hairy and Enhancer of Split family, transcription factor 7	c.5A>G
Kurl (K, k^+) ***000244-9685***	AD	Rostral curled pinnea	unknown	unknown	unknown
LaPerm ***000245-9685***	AD	Curly hair coat	unknown	unknown	unknown
Longhair (L^+, l)[12, 13] ***000439-9685***	AR	Long fur	FGF5	Fibroblast growth factor 5	c.356_367insT, c.406C>T, c.474delT, c.475A>C
Lykoi	AR	Absent undercoat	unpublished	unpublished	unpublished
Manx (M, m^+)[14] ***000975-9685***	AD	Absence/short tail	TBOX	T – box	c.998delT, c.1169delC, and c.1199delC, c.998_1014dup17delGCC
Orange (O, o^+)	X linked	Change in pigment hue	unknown	unknown	unknown
Peterbald ***001201-9685***	AD	Hairless, brush coat	unknown	unknown	unknown

DISEASE / TRAIT (ALLELES) *OMIA ENTRY*	MOI	PHENOTYPE	GENE	GENE NAME	MUTATION
Polydactyla (Pd, pd^{+})[15] ***000810-9685***	AD	Extra toes	SHH	Sonic hedgehog	c.479A>G, c.257G>C, c.481A>T
Rexing (R^{+}, r)16 ***001684-9685***	AR	Curly hair coat	LPAR6	Lysophosphatidic acid receptor 6	c.250_253delTTTG
Rexing (Re^{+}, re)[17] ***001581-9685***	AR	Curly hair coat	KRT71	Keratin 71	c.1108-4_1184del, c.1184_1185insAGTTGGAG, c.1196insT
Rexing (R^{S}, rs^{+})[18] ***001712-9685***	AD	Curly hair coat	KRT71	Keratin 71	c.445-1G>C
Spotting (S, s^{+})[19] ***000214-9685***	Co-D	Bicolour / Van white	KIT	KIT	7125ins FERV1 element
Tabby(T^{M}, t^{b})[20] ***001429-9685***	AR	Blotched/classic pattern	TAQPEP	Transmembrane amino-peptidase Q	S59X, T139N, D228N, W841X
Ticked (Ti^{a}, ti) ***001484-9685***	AD	No Tabby pattern	unknown	unknown	unknown
White (W, w^{+})[1] ***000209-9685***	AD	Loss of pigmentation	KIT	KIT	FERV1 LTR ins
Wide-band	AR?	Length of pheomelanin band in hair	unknown	unknown	unknown

MOI: *Mode of inheritance of the non-wild-type variant. A "+" implies the wild-type allele when known.*
In reference to the mutant allele: AD implies autosomal dominant, AR implies autosomal recessive, co-D implies co-dominant.
OMIA: Online Mendelian Inheritance in Animals (http://omia.angis.org.au/home/) entries provide links to citations and clinical descriptions of the phenotypes and the diseases. Presented citations are for the causative variant discovery.

About 50 years after Mendel, chromosomes were discovered and were thought to carry the material of inheritance, although genes and DNA had not yet been discovered.
Scientists knew there were some location (a locus) on a chromosome, that caused the coloration trait and gave a letter of the alphabet to each one: ***A*** for ***Agouti***, ***B*** for ***Brown***, ***C*** for ***Chinchilla*** (and also ***Colour***), ***D*** for ***Dense***, etc. (*Table 1*).
Several years later, when genes were discovered, scientists established that there was a link with protein synthesis and a protein name was attributed to the locus - along with an acronym because protein names are often long and complex.
Thus, the locus name ***A*** represents the ***Agouti*** trait, this trait is produced by the protein called ***agouti-signaling protein***, which has the gene acronym ***ASIP***.

For some traits, such as tabby markings, **scientists still do not know why some cats have tabby markings and others do not**, thus, only the locus name (***Ti***) can be used, until the protein that controls the expression of tabby patterns is discovered. Currently, the locus ***Ti*** is on cat chromosome B1, but we do not know what protein controls the expression of tabby patterns.

Solid black coat

Brown tabby Bengal

II One gene, several alleles

Each coat characteristic can be expressed in several ways. **Generally, cats have an agouti coat, but they can also have a solid (self) coat**. These expression changes are due to a change in the DNA sequence of the gene coding for this characteristic. For example, by suppressing two nucleotide bases in the *Agouti* gene (*ASIP*), the protein works differently and **the signal to move from a black to a yellow pigment is not given**.

The hairs no longer have bands of black and yellow, because black pigment is the only one present - **so a brown tabby cat can actually appear black**. In theory, the cat still has black stripes, but because the hair between the stripes is also black, the cat appears to be solid black.

The most common DNA sequence for a gene is the **wild-type allele*, designated by a superscript plus sign, "+". If only one copy of an allele is required to express a condition, the allele is termed dominant* and is represented by a capital letter**.

If a cat needs to have **two copies of the mutant DNA sequence**, the **alternative allele**, then **that allele is considered recessive* and is represented by a lower case letter**.

The most common wild-type allele for a trait can be either dominant or recessive.

In the case of *Agouti*, normal brown coloration is dominant and is represented by the allele A^+, and its genotype written as ***"A^+A^+"***. The mutant allele is recessive and written as ***"a"***. Solid coloration cats must have two copies of the recessive allele and their genotype is written as ***"aa"***.

	A	**a**
A	AA agouti	Aa agouti
a	Aa agouti	aa non-agouti (solid, self)

A cat can carry a recessive allele, but the effects of that recessive allele are not seen.

A cat that "carries" the mutated alleles has the genotype ***"A^+a"***.

When carrying two different alleles on the same gene the cat is described as **heterozygous***, while one with two identical alleles on one gene is **homozygous***.

Often, the wild-type symbol, ***"+"***, is not written.

A dash sign (***"-"***) is associated with the dominant allele when it is not known, whether the cat is homozygous for the dominant allele or where it also carries the recessive allele.

Therefore, a genotype written as ***"A-"*** implies the cat could be ***"AA"*** or ***"Aa"***, either way it looks the same, having the **same phenotype***.

Many coloration traits have several alternative alleles, not just the wild-type and a single mutant allele.
The trait ***Brown (B)*** is one highly specific example. The normal wild-type allele produces black pigmentation. **A DNA sequence variant causes the recessive allele, *brown (b)***, also called **Chocolate**, **that causes less pigment to be in the hair shaft or a change in the tone of the black pigment, resulting in the optical allusion of a brown-coloured cat**.
A solid brown (chocolate) Oriental Shorthair is a brown cat with the genotype ***"bb"***.
This cat is also solid, thus its genotype is ***"aa"*** or ***"bb"***. The third allele for brown, termed light brown ***(b^l)*** (a.k.a. red or cinnamon) causes an even lighter coloration. This allele is common to the Oriental breed and produces the cinnamon Oriental ***(A-, b^{l}b^l, C-, D-, E-, ii, oo, ss, Ti-, ww)***.
In **Abyssinians, the only difference between a ruddy (sorrel) and red (cinnamon) Abyssinian is the allele at the *Brown* locus**. Since more than two alleles are known for ***Brown***, the locus is said to have an **"allelic series"**. The series is written as ***B$^+$>b>b^l***, implying that the wild-type black allele is dominant to the brown ***(b)*** allele and both ***B*** and ***b*** are dominant to the recessive light brown ***(b^l)*** allele.

II Epistatis and codominance

The ***Chinchilla*** (a.k.a. ***Colour***) trait provides the opportunity to discuss the genetic terms **epistasis*** and **co-dominance***.
The wild-type allele is dominant to all other alleles in this allelic series of the ***Colour*** locus, which has four alleles: ***C$^+$> C^b = C^s> c***.
Pigment production is caused by the gene that produces the protein called **tyrosinase.This protein is an enzyme that is needed to make pigmentation**.
The fully recessive allele, ***"c"***, causes the enzyme to fully fail and no pigment is produced in cats with two copies of the ***"c"*** allele.
These cats are albinos, having no pigmentation and have the genotype *"cc"* allele. Because the cat cannot produce any pigmentation, the effects of the other alleles at the other colour genes cannot be expressed or seen. If a cat is an albino, we cannot see the effects of variants at the ***Brown*** locus, or ***Dense***, or any other coloration genes, because no pigment is produced. Since this gene and the ***"c"*** allele overrides the other effects of the other alleles, this gene and allele are termed **epistatic***.

Ruddy Abyssinian

Co-dominance means that two alleles are expressed together, and their association generates an intermediate phenotype – the result is somewhere between the two extremes of homozygous characteristics.
Two intermediate alleles for the ***Colour*** locus are the alleles that produce the sepia coloration typical of Burmese cats and the allele that produces the "points" coloration that is typical of Siamese cats.
Each allele has changes in the DNA sequence that cause a temperative-sensitivity in the tyrosinase protein. The enzyme does not function to full capacity at the warmer sites of the cat's body. The Burmese allele ***(c^b)*** functions better than the Siamese allele ***(c^s)***.
The c^b and the c^s alleles only function at full capacity where the cat's body is the coolest, giving the normal colour at the points (ears, nose, tails and paws).
The ***c^b*** is less abnormal, thus producing some coloration on the warmer parts of the cat's body, while the ***c^s*** allele is more abnormal and cannot produce colour on the warmer parts of the body. **As cats get older, their skin gets thinner and circulation is poorer, so the body gets cooler, this is why older Siamese are darker**.

> Changing the temperature of the environment can change the coloration of the cat!

A Tonkinese cat is heterozygous for the two temperatures-sensitive alleles ***(c^bc^s)*** and has an intermediate coloration termed ***"mink"***. The Siamese and Burmese alleles have equal effects and are considered to be co-dominant.
The ***White*** locus controls another coloration trait that has an epistatic effect and co-dominant (a.k.a. additive) alleles. The gene for ***White*** affects the production and migration of melanocytes in the body. Melanocytes* are the cells (-cytes) that make melanin (melano-), which is pigment. The mutant allele, ***W***, is dominant, thus, melanocytes are absent and no pigment is produced, no matter what other coloration alleles are present. The ***W*** allele is epistatic and overrides all other colour genes and alleles.

Colourpoint Siamese

"The cat is a dilettante in fur."
Théophile Gautier

II The white colour: a complex case

Spotting is a second coloration that was originally considered a different locus than ***White***. The Spotting trait **causes cats to be bicolour, where the cat is white on the underside belly** (ventral side) **but has colour on her back side** (dorsal side).
The mutant ***Spotting*** allele ***(S)*** is dominant and one copy produces a cat with a **tuxedo**, like Sylvester the cat.

Two copies of ***S*** cause cats to have the high white pattern, commonly seen in a Turkish Van, where only the ears and tail have coloration, with maybe a few spots of coloration on the sides or back.

The amount of coloration can vary, thus, these alleles are examples of variable expression and two copies ***(SS)*** produce more white than one, thus the allele is considered to have an additive effect.

Other unknown genes, the environment or just sporadic luck, probably also influences the effect of the ***Spotting*** allele. Thus, cats with the same genotypes ***(Ss*** or ***SS)*** can have different amounts of white.

White and ***Spotting*** are now known to be caused by different alleles for the same gene called ***KIT***. The independent alleles ***S***, ***s^+*** and ***W***, ***w^+*** for what was thought to be two different loci, now need to be combined to make the allelic series: ***W> S> s^+ (w^+)***.

To make white coloration even more complicated, the white gloves of the Birman breed are caused by another allele for the gene called ***KIT***. The traits ***Gloves***, ***White*** and ***Spotting*** are all controlled by one gene, ***KIT***.
The Birman's gloves are recessive ***(gg),*** but it is unknown whether the interplay between the ***Spotting*** alleles is recessive or additive.

Many other white patterns are known in cats and their phenotypes may be caused by yet unknown alleles of the gene called ***KIT*** or by alleles in completely different genes.

A final interesting aspect of the ***White*** locus is its **plieotrophic* affect, meaning it affects** (-trophic) **many** (plieo-) **tissues**.
Actually, all genes affect many tissues, but with the ***White*** locus, the effect can be readily demonstrated as it is easily seen and recognised.

Melanocytes produce pigment and these cells are found in the iris of the eye, in the tapetal membrane in the back of the eye, which causes "eye shine", **and also in the inner ear**.
If melanocytes are absent, cats can have lighter colored eyes, such as blue and red, rather than a greenish eye shine in the blue eyes.

The white gloves of the Birman breed are caused by another allele for the gene called KIT

> “In ancient times cats were worshipped as gods; they have not forgotten this.”
>
> **Terry Pratchett**

Because melanocytes are also needed in the inner ear, if absent, the cat can be deaf in one or both ears. Thus, many all-white cats have blue or odd eye colours and the blue-eyed cats are also more likely to be deaf.

Melanocytes are present in albino cats, thus, the recessive albino allele *(c)* can cause blue eyes, but not deafness.
All the coloration traits are on different chromosomes, or are very far apart on the same chromosome and assort independently.
The inheritance of one chromosome is completely independent of another chromosome, they segregate randomly.
The random segregation of chromosomes and independent assortment of the traits are known as Mendal’s Laws of Genetics. Mendel’s third law says that the dominant trait is expressed and that other variants are recessive and hidden.

Thus, cats are perfect examples to demonstrate the basic laws of Mendelian genetics.

II Tortoise shell and calico coats

Cats are one of the few species that allow us to understand sex-linked traits as well.
Unlike most other mammals, **cats have a locus on the X chromosome that changes the hue of black and yellow pigment to an orange-ish color**.
The normal allele produces normal pigmentation, but the mutant allele causes the orange.

The gene for the ***Orange*** locus is not yet known. **Because male cats have only one X chromosome, if their X chromosome has the mutant *O* allele, the male cat will be all orange** (a.k.a. ginger, red).
Female cats must have both X chromosomes with the *Orange* allele to be an all orange cat, which is rarer.
But, when a female cat is heterozygous, having one X with the wild-type allele and one with the mutant orange allele, an interesting phenomenon happens: X-inactivation. **Heterozygous female cats are tortoiseshell. The effects of the two alleles do not add together, but are seen in their full coloration in different parts of the cat**.

During the development of females, to balance the protein production of the X chromosome genes to that of males, which have only one X chromosome, females inactivate one of the two X chromosomes in each body cell.
The genes on the inactivated X do not produce proteins and are non-functional.

The X-inactivation happens sporadically in each cell of the body. For tortoiseshell females, if the X with the mutant DNA sequence that causes the orange coloration is inactivated (turned off), then only normal black coloration is produced.

The neighboring cell may have turned off the X with the normal allele, by chance, and produces orange color. Because of sporadic X inactivation in all females, the heterozygous female has the interesting brindle coloration of black and orange. By chance, sometimes, more of one allele versus the other is inactivated and a tortoiseshell cat can be more black or more orange, really to any range of the extremes. All females have this process of X inactivation, but we can see it in the cat because of the coloration gene.

Calico cats are always tortoiseshell, but also have at least one copy of the mutant ***Spotting*** allele ***(S)***. The gene controlling the ***Spotting*** trait affects the number of melanocytes produced in the skin. Since the cat has fewer melanocytes in her skin, there are fewer opportunities for X inactivation in the colour-producing cells. Thus, calico cats have big splotches of orange and black, and then areas of no pigmentation, because of the complete absence of melanocytes, which is usually on the belly.

To find a male calico or tortoiseshell cat is very rare and generally means the cat is either a chimera, with some cells being XX or XY, or the cat has too many chromosomes and is XXY. Because of the chromosome imbalance of the sex chromosomes, calico or tortoiseshell males are usually sterile.

*DEFINITIONS

Agouti: *the co-existence of two colour zones (one light, one dark) on the same hair.*

Allele: *a specific version of a gene (an animal has one allele of maternal origin and one of paternal origin for each gene.*

Autosome: *non-sex-related chromosomes.*

Chromosome: *a cell nucleus structure carrying hereditary characteristics (there are 37 pairs of chromosomes and 1 pair of sex chromosomes in a cat).*

Co-dominance: *when two different variants of a gene, alleles, work together to determine a particular trait (phenotype).*

Dominant (gene): *a genetic characteristic expressed as a priority over a recessive allele.*

Epistatic (gene): *when the effect of a gene masks that of one on another locus, it is not dominant but epistatic. The masked gene is hypostatic.*

Gamete: *male or female reproductive cell.*

Gene: *portion of the DNA filament which forms the chromosome.*

Heterozygous: *co-existence of two different alleles on the same gene.*

Homozygous: *co-existence of two identical alleles on the same gene.*

Locus: *a specific segment of a chromosome.*

Melanocyte: *cell responsible for hair pigmentation.*

Mitochondria: *a microscopic element, constituent of the cell of most living organisms, it provides energy to the cell and is essential for its survival.*

Phenotype: *all the observable traits of an individual.*

Pleiotropic: *the ability of a gene to determine several characteristics.*

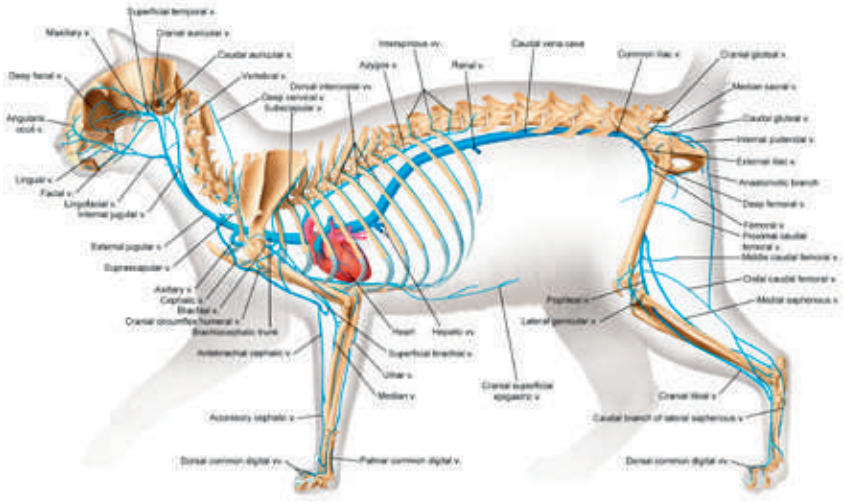
Recessive (gene): *a genetic character which is not expressed unless a cat is homozygous for it.*

CHAPTER 04

KNOWING THE CAT

ANATOMY AND PHYSIOLOGY

WHAT MAKES
A CAT A CAT



The domestic cat – *felis catus* – is one of the most recently evolved feline species. **It remains almost identical in many respects to its ancestors, the African Wildcat**, and also to other wild cats, large or small. All cat species have a very similar anatomy and physiology, and **principally vary in their size**. Even a trained expert would find it very hard to differentiate the skull of a lion from that of a tiger!

> All cats have developed
> as predatory hunting animals, with particularly
> keen senses of hearing, sight and smell.
> They are regarded as the most highly evolved
> mammalian hunters.

With the exception of lions (where males have a distinctive mane), the **appearance of male and female cats is very similar**, although males tend to be slightly larger. They have normally **five digits on the front feet – four on the ground and one higher up – and four on the hind feet**. The **digits are protected by pads**, which also help reduce sound when they are hunting. **Other than the cheetah, all cats have retractable claws.**

Cats have developed a wide range of coat colours. In natural conditions their colouring enables them to camouflage themselves, an indispensable asset when hunting. In domestic cats, selective breeding has been used to enhance and develop specific coat colours.

THE HUNTER

Everything in feline evolution, from physical, behavioural and psychological viewpoints, has contributed to the perfection of these **highly skilled and very effective hunters.**

If the lion is the "king of the jungle", at the very top of the food chain, the same can be said – at their own level at least - for our domestic cats. **Having a cat is like having a wild animal in your house!** This analogy is a reality, because despite domestication and selection to produce different breeds with unique characteristics, most of our feline companions have retained the attributes, both physical and behavioural, of their wild ancestors.

FROM A GENETIC POINT OF VIEW, DOMESTIC CATS ARE VIRTUALLY IDENTICAL TO AFRICAN WILDCATS

II Food is a strong driving force in cats

Cats are **strongly driven by the sight and sound of their prey**. In the wild, small rodents typically represent around 70% of a cat's diet, the remainder being small birds and other small animals. Because their prey species are small, **wild cats will often need to eat 10 to 20 meals a day** to meet their nutritional requirements. This is replicated at home, where our domestic cats have a tendency to eat many small meals throughout the day.

Similarly, some of our cat's characteristics or behaviour are easier to understand when we look at them in terms of their use for hunting, which is an essential activity for cats:

- **The adult cat maintains a constant body temperature throughout the day or night** so they are ready to hunt at any time. In contrast, many animals (including man and dogs) have a lower body temperature at night which encourages rest and sleep.
- **Cats will hunt their prey by quietly stalking them, or by ambush** – waiting patiently for them to emerge from a hole.
- **Cats tend to increase their activity significantly at dawn and dusk** – because this is the time of day when most of their preys are active and therefore easier to detect. It is also often the time when domestic cats want to play and seek attention.

"When the cat's away, the mice will play."

Jean Antoine de Baïf

It is well known that a cheetah is the fastest mammal on earth and can reach speeds of more than 100km/h. It is probably less well known that the domestic cat is also capable of incredible acceleration, and from a standing start ***can reach 50km/h!*** *The cat is a sprinter, not a marathon runner.*

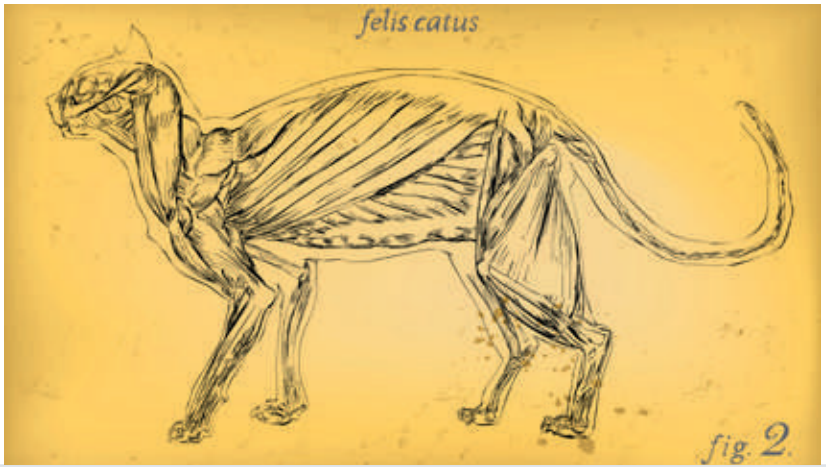
- **The cat's stomach is relatively small**, designed to handle small, frequent meals rather than larger meals spaced further apart. Mimicking this natural behaviour, **most domestic cats are "nibblers" if left on their own with food**. They will take multiple small meals rather than one or two large ones each day.
- **Cats are highly attuned to seeing the movements of their prey** – so if they spot movement and suspect it is a prey animal, they will usually interrupt what they are doing (even if she is eating) and chase the prey. This is the reason **cats enjoy playing chase games so much and catching feathers, balls or toys** when we play with them.
- **Hunting can expend a large amount of energy** , and cats are **designed for short bursts of high energy expenditure** (e.g. when they chase prey) and in **between spend time resting.**

> On average, in the wild, a cat will spend 13-14 hours a day resting and sleeping, and around two to four hours hunting.

A PHYSIQUE TAILOR-MADE FOR HUNTING

There is no doubt that cats are **extremely elegant** animals. Their natural beauty is the result of the way their morphology has adapted to their needs as predators.
The cat's skeleton has 240-250 bones (the exact number can vary from one individual to another, notably because the number of vertebra in the tail are not always the same), which is more than in man.

The cat's **body is extremely flexible**, and unlike man, **their forelimbs are attached in a unique way, by ligaments rather than bones** (no clavicle). Because of this extreme flexibility cats **can squeeze into the tiniest spaces: once their head is in, the rest of the body can follow.**



Cats are "digitigrades", which means **they walk on their toes** (like dogs). They walk very precisely (like all cat species) as **they place each hind paw almost directly in the corresponding print of the forepaw**, like a tightrope walker. This enables them **to move very quietly** and **limit trace of their movement**. As a result, they hunt almost silently, keeping themselves safe and sure-footed.
Thick spongy pads protect the toes, reducing noise and also transmitting vibrations which signal the smallest movement.

Very supple, cats are also **extremely agile**. They love exploring their whole environment, not just by gazing around from on high but also through **jumping and climbing**. In fact, cats often have a preference **for resting, sleeping or watching from a vantage point well above ground level** (a "perching" spot). This enables them to survey their territory, to easily spot hunting opportunities, but also allows them to rest in a relatively safe place, away from animals that might be a threat and in a position to anticipate danger.

Their agility is down to **powerful muscles, and a good sense of balance, assisted by their long tail, which acts as a stabiliser**. This highly developed balance is the reason why, if a **cat should fall, she can turn quickly and land on her feet (righting reflex)**. However, even if the cat will almost always land on her feet a major fall can have consequences. The righting reflex **only comes into force when the cat falls from a height of over 1m, and the cat will extend her legs before landing to help absorb the impact and minimise any potential damage**. (*see Myths or Realities of the Cat chapter*)

Because of their natural behaviour and activity of cats in exploring their territory both at ground level and from high up, in the home, cats also like to climb and perch above the ground. Consequently, **having chairs, shelves and other objects such as a cat tree to allow them to express their true nature** will help improve the home environment for the cat.

CATS CAN LEAP AROUND
FIVE OR SIX TIMES
THEIR BODY LENGTH,
AND JUMP VERTICAL HEIGHTS
OF AROUND 2 METERS

"Those who play with cats must expect to be scratched"

Miguel de Cervantès

HOW DO YOU CUT A CAT'S CLAWS?

Ideally, get your cat used to claw care from a young age, just like any other activity (brushing, cleaning eyes and ears…). Choose a time when the cat is calm. Using special nail clippers, cut the very tip of the claw, keeping clear of the pink part or "quick" which contains blood vessels and is very sensitive. If you do cut the blood vessel you can stop the bleeding by applying a cotton pad soaked in oxygenated water. If the experience is too stressful – for the cat and the owner – do not hesitate to ask your vet or vet nurse to do it.

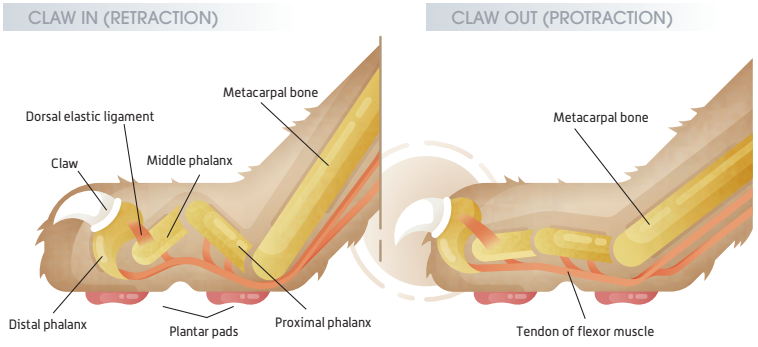
CLAWS AND TEETH

II Claws

Cats have **sharp claws** that are mainly used **for catching and holding prey**. These 'weapons' are also very useful **for self-defence** if the need arises, and **for gripping when climbing**.

Their claws are called **"protractable"** (although often described wrongly as "retractible"), meaning that they are **withdrawn into a protective sheath, surrounded by the skin and hair around the toes** when in their normal, relaxed position, and **are only extended when they are needed. Keeping them hidden most of the time prevents unnecessary wear and tear, reduced noise during hunting, and keeps them sharp for when they are needed.**

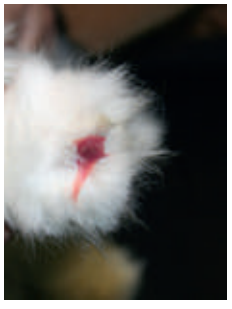
The claws on the front feet are usually sharper than those on the hind feet. Cats will use fences, posts and other items to keep them sharp.



Whether they are velvet paws (claws hidden) or fatal weapons (for their prey at least), claws grow continuously (like our nails). Most **cats who go outdoors will look after their claws** by scratching on wood. **Cats who live exclusively indoors may need a "manicure"** from time to time because few owners will tolerate their furniture being shredded and the damage can be considerable.

Indoor cats should ideally have access to a scratching place where they can look after their claws.

Older cats, who are generally less supple, will often need some assistance, and their claws should also be checked regularly to make sure they have not grown so long they pierce the pad, which can lead to abscesses.

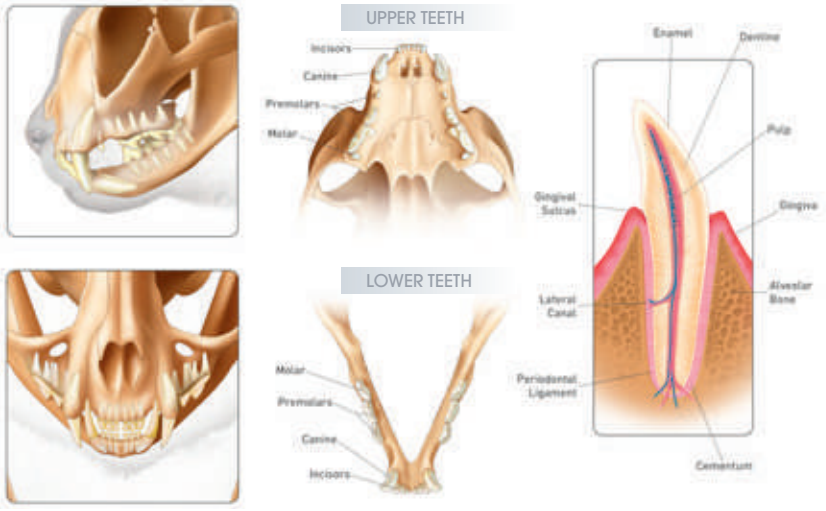


II Teeth

Adult cats have a total of **30 teeth**, which comprise:

- **12 incisors:** 6 on the top and 6 on the bottom – these are the small teeth at the front of the mouth,
- **4 canines:** 2 on the top and 2 on the bottom – these are the larger pointed "fangs",
- **10 premolars:** 6 on the top and 4 on the bottom,
- **4 molars:** 2 on the top and 2 on the bottom. The premolars and molars are the teeth towards the back of the mouth.

FELINE DENTAL ANATOMY



Kittens have 26 teeth which come through at around two weeks of age and are all replaced by the 30 adult teeth at around 5-7 months.

The cat's mouth and teeth are specially adapted to catch, hold and kill their prey, before tearing and cutting the food using the molars and premolars at the back of the mouth.

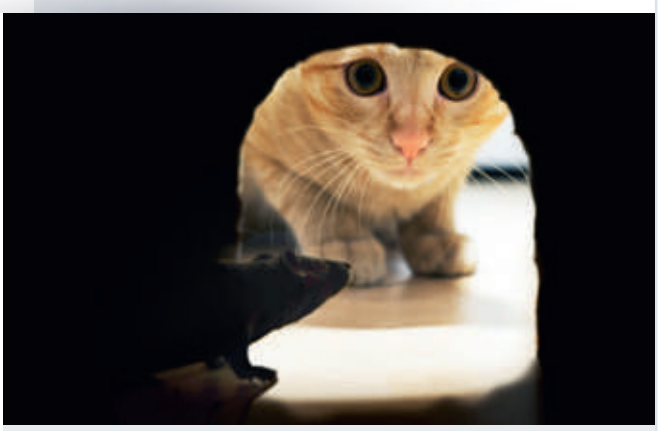
They do not grind their food, unlike animals which eat a lot of plant material.

The long canine teeth help catch prey, and also administer the lethal bite, often through the neck of the victim.

DID YOU KNOW?

Cats lack the ability to move their jaws laterally, from side to side.
This is because they don't need to grind their food like herbivores do.

> "The cat opened its eyes, and the sun got in. The cat closed its eyes, and the sun stayed in. That's why, when the cat wakes in the night I can see two pieces of the sun, shining in the dark."
>
> **Maurice Carême**



THE CAT CAN SEE IN THREE DIMENSIONS AND…

…can estimate distances very precisely. They also have a very good lateral vision and a wider field of vision compared with humans: ***200° compared to 180°****.*

LIKE DOGS, CATS HAVE A "THIRD EYELID",

An additional membrane that covers, protects and lubricates the surface of the eye when the cat closes her eyelids.

THE SENSES

II Vision

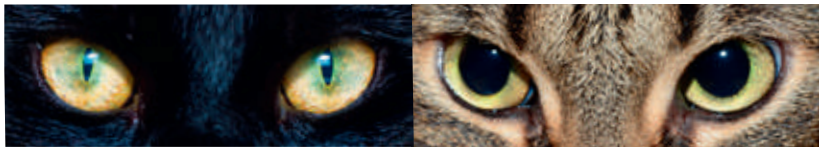
In relation to the size of their head and skull, **cats have the largest eyes of any mammals**, and have some important adaptations to help with their vision. The large eyes are both forward-facing and protrude a little from the eye sockets. This means there is a large overlap in the field of vision from both eyes, giving a large area of excellent "stereoscopic vision".

The retina is the light-sensitive layer that lines the back of the eye and passes visual signals to the brain. In cats, **there is a special layer behind the retina**, called the tapetum lucidum, **which acts like a mirror and reflects light back, thus allowing the light-sensitive cells of the retina to get increased exposure to light**. This special reflective layer is the reason that you can sometimes see **cats' eyes "glowing" in the dark: they reflect the light back out from the back of the eye**.

In addition to the tapetum, cats also have **a very high density of light-sensitive cells** within the retina, having **up to three times the density of cells compared with humans.**

The very large pupils seen in domestic cats are another adaptation to improve vision.

The **slit pupil** (unlike the round pupil seen in dogs and man) **can be narrowed to a very tiny slit in bright light, to avoid too much light coming in to the retina** and dazzling the cat.



The **pupil can also be almost completely dilated to a very wide circle** in low light **to allow the maximum amount of light to reach the retina**.

> Cats require only one-sixth of the light levels needed by humans to see!

Along with the ability to see well in low levels of light, **the high density of retinal cells helps the cat to detect motion**. These features are all adaptations to facilitate the predatory lifestyle of cats.

In contrast to humans, **cats have relatively few of the special cells** ("cone cells") that enable colour vision so their ability to see in colour is somewhat limited. Their view of the world can be described as diachromatic: they can **only see blue and yellow**, and do not distinguish green from red. The **cat's vision can be described as "pastel"**.

Taste

For cats, there is evidence that **the smell and odour of food are much more important than taste**, and are **key to food preferences**. Cats certainly have **fewer taste buds** on their tongues than many other animals.

Cats also have no ability to sense the taste of sweetness, because the gene responsible for the specific taste receptor has effectively been deactivated in cats. This may seem odd at first sight, but it is actually consistent with their strict carnivorous lifestyle and diet. As strict meat-eaters, they have no need to taste sweetness!

Despite the low numbers of taste receptors in cats, they are **still able to taste well and have a strong sense for certain flavours**. They **respond strongly to certain amino acids** (the building blocks of proteins) and **can taste bitter, acidic substances** and have **some sense of salt** as well.

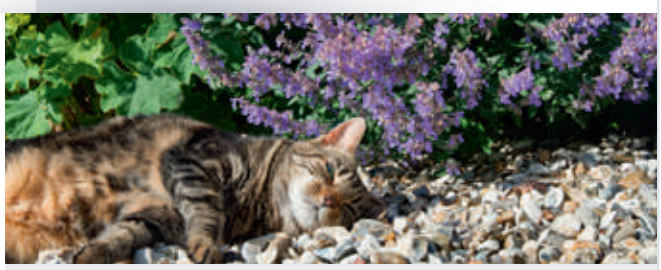
The sense of taste is still very important, and studies have shown that this sense has developed in kittens 5 days before they are born. Cats appear **to be particularly sensitive to bitter tastes**, and this is probably a mechanism designed to avoid the ingestion of toxins. The good responses to acidic tastes and to amino acids also probably reflect their natural diet (meat).

Along with taste buds, the **cat's tongue is covered in small "papillae" of approximately 0.5mm in length, which are backward-facing barbs**. Anyone who has been licked by a cat will know how rough these papillae make the tongue, but **they serve a very important purpose**.

Firstly, they are extremely valuable **for grooming**, where they **act like a comb**. Cats are extremely fastidious animals, and **spend a considerable amount of their time grooming** and keeping themselves clean. Studies have suggested that on average, **cats spend about 4% of their total time grooming** (in other words around 8% of the time they are not asleep or resting!). The abrasive tongue is also very effective at **removing the flesh from the bones when the cat eats her prey.**

TASTE BUDS

It is estimated that a cat has 475 taste buds, while the dog has 1,700 (4 times as many) and while man has 9,000 (20 times as many)!



WHAT IS IT ABOUT CATNIP?

Nepetalactone is a chemical found naturally in Catnip, which causes many, but not all cats, to have a strong reaction!
It has been shown that cats can detect levels of nepetalactone in the air at a concentration of less than one part per billion!
Catnip (nepeta cataria in Latin) belongs to the mint family of plants, and also known as catmint.
Around 50-60% of cats are susceptible to the hallucinogenic effect of nepetalactone, with no related predisposition due to sex or sexual status (sterilised or not), although kittens below the age of eight weeks seem to have an aversion to the plant.
Absorption of catnip is linked to the existence of a dominant gene. After sniffing the plant or chewing a few leaves, the cat will roll on the ground, run around madly, dribble, vocalise or play at hunting.
In a cat sensitive to catnip, neurons will transmit signals to the brain which trigger this ecstatic behaviour. Despite the dramatic effect, cats do not seem to develop dependence, and will stop when they want to.
Domestic cats are not the only members if the species who seem to enjoy the effects – tigers do too.

II The sense of smell

Cats are **extremely sensitive to odours.**

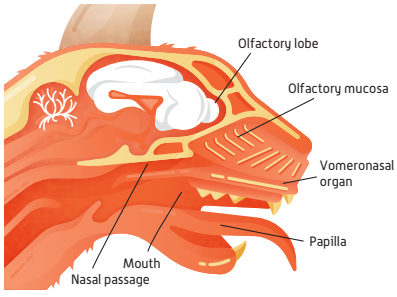
The sense of smell, combined with hearing and sight, enables cats to hunt and to communicate. Smell appears to be particularly important in our favourite species, especially in kittens who use smell to find their mother's teats from birth, before their eyes have opened.

The part of the nose where the smell receptors are, is known as the olfactory mucosa, and in cats **it measures approximately 6cm², which is about double the size found in humans.**

The part of the brain responsible for processing the sense of smell is called the olfactory lobe, and is **very well developed in the cat**. While cats are highly sensitive to scent in the air, they also **communicate through chemicals known as pheromones**. Different types of pheromones **are produced from glands in the skin** (around the head and tail), **from anal glands** (secretions are present on the faeces) and **in urine**.

These chemicals help to communicate messages about sexual status, territory, other cats and the environment, and are extremely important for cats.

Pheromones **may be detected by the nasal mucosa. Cats also have a special scent organ, located inside the roof of their mouths** (between the mouth and nose) **called the vomeronasal organ or Jacobson's organ** which contains special receptors for pheromones.



When a cat **lets her tongue hang out a little**, or **wrinkles her muzzle a little** (often called "gaping", "sneering" or "flehming"), this is usually when **she is specifically opening the passage to the vomeronasal organ to help her detect pheromones.**

Hearing

As with vision and smell, **hearing is highly developed in the cat**. She can hear sounds over an extremely broad range of frequencies, **from 55kHz to 79kHz**, while **in man the upper end of the hearing range is 18 kHz and 44kHz in dogs**.

This means that a cat can hear sounds around 1.6 octaves higher than a human. This adaptation is almost certainly used for hunting, as many rodents communicate at **very high (ultrasonic) frequencies which cats can hear but which we cannot.**

> The cat's hearing is among the most sensitive of all mammals.

Touch

As with humans, the cat is **sensitive to touch**, and **has touch receptors all over the skin. She also has around a dozen moveable whiskers (vibrissae)**, which are mostly on the head but can be found elsewhere on the body. Whiskers are extremely sensitive to touch and movement (air currents for example).

Cats use their whiskers extensively **for navigation and sensation, especially in the dark. Whiskers are deeply rooted** (3 times as deep as a normal hair follicle), and **each root is surrounded by sensitive nerves.**

> The length of the whiskers on the cheeks is roughly the width of the cat's body, allowing her to judge the width of an opening and whether she can easily "fit through".

The cheek whiskers (usually **12 on each cheek**) are **present in four rows**, and the **upper two rows can be moved independently of the lower two rows**.

During hunting, **if the prey is too close to the mouth** for the cat to be able to see it clearly, the **cat will move the whiskers forward** to form a kind of "basket" around its muzzle, encircling the prey **and helping the cat to precisely locate it**.

CATS HAVE 32 DIFFERENT MUSCLES IN EACH EAR,

while man only has 6.
Each feline ear can be rotated up to 180°, and moves independently of the other, so that they can focus on the source of the noise and help to determine its origin or direction.

THE VIBRISSAE

These tactile hairs are most obvious on the face and particularly the cheeks. They are 2-3 times thicker and longer than normal hairs.

FELINE PHYSIOLOGY: THE ULTIMATE CARNIVORE!

In keeping with their origin (as desert-living African Wildcats), domestic cats also have a **high heat tolerance** and can produce **very concentrated urine**, meaning that healthy **cats need relatively low levels of water to remain healthy.**
All cat species, including pet cats, have developed as obligate carnivores. This means that not only do they have the ability to eat meat (like some carnivores) but also that they are **completely adapted to this type of food.**

> Cats cannot survive on a meat-free diet

There are a number of different nutrients that are only available in a meat or animal diet and are not available from plants. While some animals can synthesise or make these nutrients from precursors that may be present in plants, because cats are completely adapted to a meat diet, they do not have this ability.

Some of the specific diet requirements for cats are as follows:

- A certain amount of **amino acids, including taurine, arginine, phenylalanine**, and to a lesser extent **tyrosine**
- **Vitamins A, D and niacin** (from the B vitamin family)
- **A number of essential fatty acids such as linoleic acid, alpha linolenic acid, arachidonic acid and eicosapentaenoic acid**.

In addition to requiring meat sources in their diet to supply these essential nutrients, the cat has also adapted her digestion and metabolism in other ways to exploit her dependence on meat:

- Because a meat diet contains a high level of protein, cats have an adapted metabolism which means that they actually **require higher levels of protein in their diet** compared with other animals that are not obligatory carnivores (like dogs and humans). **Their metabolism is designed so that they derive a considerable amount of their energy from breakdown of proteins in the liver**.
- Because a meat diet contains only relatively small amounts of carbohydrate, cats are less efficient at digesting carbohydrates than other animals. The enzymes responsible for digesting carbohydrates are still present in the intestine in cats, but are at much lower concentrations than in dogs, for example, and cats do not depend on carbohydrates as an energy source the way many animals do.

In addition to an altered liver metabolism reflecting their carnivorous diet, some other aspects of liver metabolism are different in cats as well.

The liver is a vital organ, responsible for many different functions in the body, including **the breakdown** (or "metabolism") **of many different chemicals and compounds within the body** (endogenous substances) **and also external** (exogenous) **sources of chemicals such as drugs**.
The hepatic function controls **catabolism (or degradation) of toxic and non-toxic substances**, as well as the residues of various bodily functions, allowing them to either be recycled or eliminated via the urine and faeces.

While many of these pathways are present and work extremely well in cats, it has been shown that they lack some of the pathways that are present in other animals (such as dogs and humans). The reasons for this are not entirely clear, but may again potentially be related to their development and adaptation as strict carnivores.

However, what this means is that **cats cannot always metabolise and/or detoxify chemicals and drugs the way other animals can**, and because of this, they **can be very vulnerable to the toxic effects of some drugs and chemicals**, which other animals can deal with relatively well.
Some examples of drugs and chemicals that cats are uniquely sensitive to (because of their metabolism) include:

- **Paracetamol** (or acetaminophen)
- **Aspirin, ibuprofen and other non-steroidal anti-inflammatory drugs**
- **Phenolic disinfectants** (Dettol™ and other similar products)
- **Insecticides containing permethrin**
- **Ethylene glycol** (anti-freeze)
- **Chocolate**

> Because of their unique metabolism, cats should never be treated with drugs that are not specifically licenced for them or recommended by a veterinarian.

In conclusion, cats **show many anatomical and physiological characteristics that reflect their unique and fascinating nature**. Understanding these, and understanding the unique needs of cats will enable owners to not only enjoy their cat more, but also **adapt the environment and diet** to ensure the **cat remains as healthy and happy as possible**.

WARNING!

Cats are neither small dogs, nor small humans.
The specific features of their physiology
make them ***particularly sensitive***
to some chemical, drug or event plant compounds*.*
They can absorb these toxins orally,
but also through the skin or when grooming.
Never use products designed for dogs
or people on your cat.
Insecticides for external parasites
which contain permethrin, ***disinfectants***
or cleaning products, antifreeze *(ethylene glycol),*
solvants *(white spirit),*
drugs such as paracetamol*,*
but also ***certain plants or flowers*** *often used*
in bouquets (particularly lilies)
can all cause serious, even fatal poisoning*.*
The cat's secretive nature, which means
she will hide away if she feels ill,
often makes the results of poisoning worse
because the owner does not see the initial signs
clearly enough.

CATS' LIFE STAGES

There is no scientific foundation for calculating the "human" age of your cat because each species has a clear and distinct pattern of ageing, but it does help owners to understand their pets' lifecycle stage.

There are 6 life stages for cats:

	AGE OF CAT	HUMAN EQUIVALENT	
Kitten 0-6 months	0 - 1 MONTH	0 - 1 YEAR	A period when the young cat is growing rapidly and is usually not quite sexually mature.
	2 - 3 MONTHS	2 - 4 YEARS	
	4 MONTHS	6 - 8 YEARS	
	6 MONTHS	10 YEARS	
Junior 6 months- 2 years	7 MONTHS	12 YEARS	During this time the cat reaches full size and learns about life and how to survive.
	12 MONTHS	15 YEARS	
	18 MONTHS	21 YEARS	
	2 YEARS	24 YEARS	
Prime 3-6 years	3 YEARS	28 YEARS	The cat is mature physically and behaviourally, and is still usually healthy and active, looking sleek and shiny and making the best of life.
	4 YEARS	32 YEARS	
	5 YEARS	36 YEARS	
	6 YEARS	40 YEARS	
Mature 7-10 years	7 YEARS	44 YEARS	The cat is what we call 'Mature', equivalent to humans in their mid-40s to mid-50s.
	8 YEARS	48 YEARS	
	9 YEARS	52 YEARS	
	10 YEARS	56 YEARS	
Senior 11-14 years	11 YEARS	60 YEARS	The senior life stage takes the cat up to the equivalent of about 70 human years.
	12 YEARS	64 YEARS	
	13 YEARS	68 YEARS	
	14 YEARS	72 YEARS	
Geriatric 15 years and over	15 YEARS	76 YEARS	Many cats do reach this stage, some not showing any signs of being geriatric at all!
	16 YEARS	80 YEARS	
	17 YEARS	84 YEARS	
	18 YEARS	88 YEARS	
	19 YEARS	92 YEARS	
	20 YEARS	96 YEARS	
	21 YEARS	100 YEARS	

SOME KEY FIGURES

GESTATION lasts on average 63 DAYS for cats

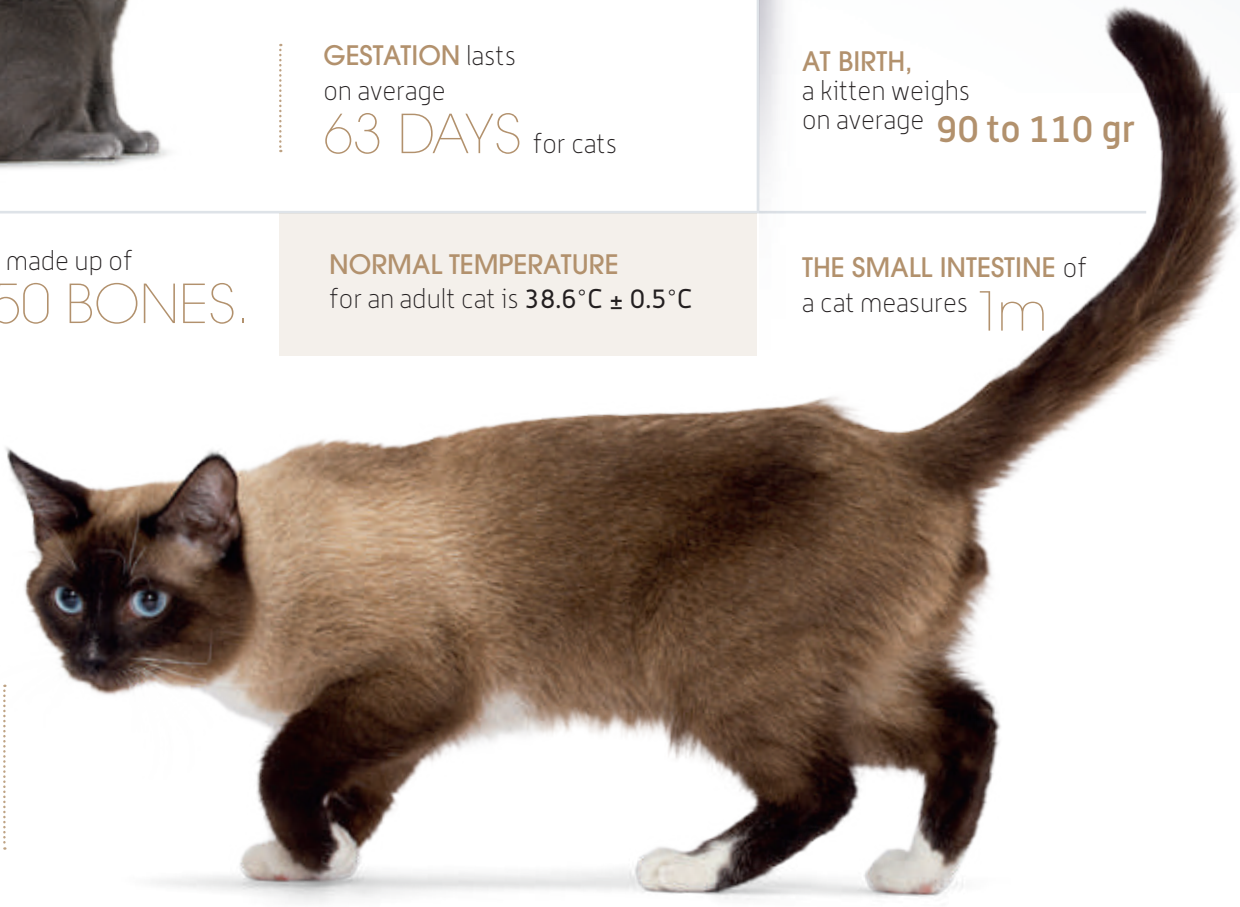
AT BIRTH, a kitten weighs on average **90 to 110 gr**

A cat's **SKELETON** is made up of 240 TO 250 BONES.

NORMAL TEMPERATURE for an adult cat is **38.6°C ± 0.5°C**

THE SMALL INTESTINE of a cat measures 1m

FUR DENSITY is between 6,000 to 10,000 hairs per cm^2



As from **3-4 weeks** the **incisors and milk teeth (canines)** appear

ADULT INCISORS appear at 3 months, and the canines as from **12 - 20 WEEKS**

At rest, normal respiratory rate is from 16 – 40/minute

A cat produces 10 – 20ml of urine per Kg and per day

In total, a cat has 26 MILK TEETH

The total number of adult teeth is 30

Normal **HEART RATE** for cats is **120 TO 140** beats/minute

Cats have a stomach capacity of 45-60 ml/kg

Urine density is from 1.020 – 1.040

BLOOD VOLUME (per kg) for cats is 55ml

FELINE
REPRODUCTION

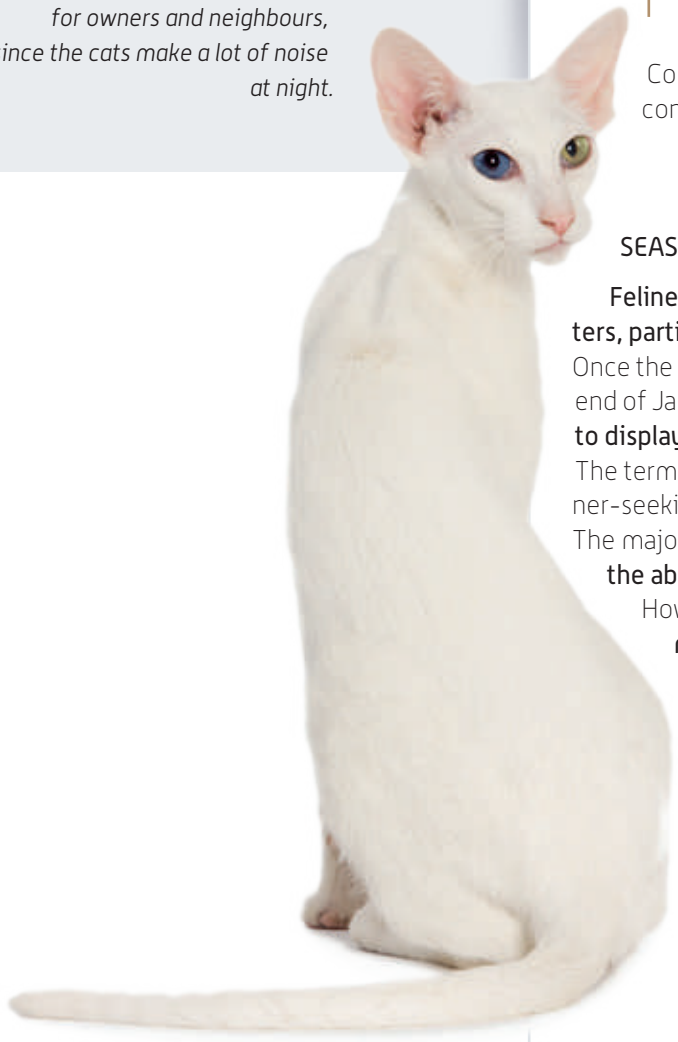
CATS:
A PROLIFIC SPECIES

During the reproduction season, which in the northern hemisphere lasts until October, November, and sometimes December, female cats are regularly on heat every 2 or 4 weeks, if they do not mate. This is of course a problem for owners and neighbours, since the cats make a lot of noise at night.

The constantly increasing number of free-roaming or abandoned cats means that animal shelters are always full; illustrating the fact that felines are amongst the most prolific species. In the absence of any birth control methods, cats can produce many descendants in a very short space of time.

> in just 15-16 months,
> a pair of non-sterilised cats can produce
> over 50 "children" and "grand-children".

Consequently, feline reproduction and birth control are a major concern for cat owners.



SEASONAL REPRODUCTION

Feline reproduction is influenced by certain environmental parameters, particularly light.

Once the days **begin to get longer towards the end of winter** (around the end of January or February in the northern hemisphere), **most cats begin to display sexual behaviour**.

The term **"on heat"** is used for female cats when they adopt typical partner-seeking attitudes and are ready to mate.

The majority of cats do not display this behaviour in winter; this is called **the absence of cycle or anoestrus**.

However, it is not always the case - **there are some breeds which may be on heat all year round**, such as Siamese or Oriental cats.

In addition, **many cats these days live in flats or houses which are well-lit at night**. As a result **they do not experience this winter drop in light, and do not stop being on heat in winter**.

The same thing occurs **for cats who live in sunny climes,** such as southern Europe, the Mediterranean, or the southern hemisphere. **Male cats, however, are not much affected by light or seasons**, even though some recent studies in Germany have shown that there is **a reduction in libido in winter**, together with **a decrease in the quality of semen**, although the cat is not sterile.

Other external factors play a role in the expression of sexual behaviour, such as the absence of other cats. **A solitary cat is often less frequently on heat** than a cat who lives in a group, for example in a cattery.

Similarly, **the presence of a non-neutered male nearby**, who can be seen, heard, or even just smelled by queens, **also plays a role**.
On the other hand, **excessive heat** (during summer heat waves for instance) slows down the rhythm of reproduction and the expression of sexual instinct.

PUBERTY: WHEN DO SIGNS OF REPRODUCTION START?

Puberty, i.e. the ability to reproduce, **has early onset for the majority of cats**. **It is by no means rare for a young queen** to be on heat as **from the age of 4 to 6 months**, and **a young male** left inadvertently with adult females for a long period of time **may become a father before the age of 6 months.**
Here, once again, **seasonality plays a role**.

A female who reaches **puberty at the end of autumn stands a good chance of only being on heat at the end of the winter, when the days get longer,** whereas a young queen who is just a little bit older, **reaching puberty at the beginning of the autumn, will be on heat for the first time before winter; thus at an earlier age**.

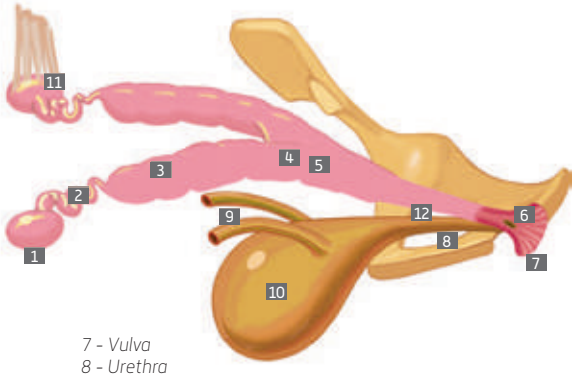
It is not recommended **that these very young queens, who are still adolescent, carry a litter of kittens**; the birth will be potentially more difficult, especially since **the mother's pelvis is not yet full-sized, and also because health risks for both mother and kittens are high**. **In many western countries, it is actually illegal to mate female cats as soon as they are first on heat** (unfortunately, this cannot be applied to young stray cats, who thus often give birth to a litter before they are one year old - http://www.catvets.com/guidelines/position-statements/early-spay-castration).

The AAFP - (American Association of Feline Practitioners) *recommends carrying out early spaying for male and female cats between 6 and 14 weeks, so as to limit uncontrolled reproduction, amongst other positive effects. In America, for example, between 3 to 4 million free-roaming cats are caught and placed in shelters every year, with almost 75% of them being euthanised, since they are not adopted.*

SEXUAL PHYSIOLOGY OF THE MALE AND FEMALE CAT

The genitalia of a female pubescent cat is composed of **a small, slightly protuberant vulva, located under the anus**, leading to **a very short posterior vagina, around one centimetre long, continuing to a narrow anterior vagina less than one millimetre in diameter**.
This is **connected to the uterus by the cervix**, and has a tract up which the spermatozoa swim after mating.
The uterus is made up of the uterine body and two horns. These are **connected to the fallopian tubes or oviducts, which are near the ovaries**.

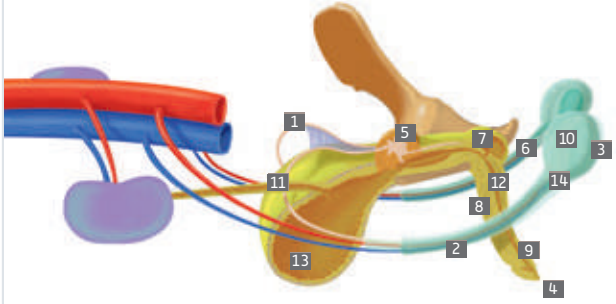
GENITAL ORGANS OF THE FEMALE CAT



1 - Ovary
2 - Oviduct
3 - Uterine horn
4 - Uterus
5 - Cervix
6 - Urethral orifice
7 - Vulva
8 - Urethra
9 - Ureter
10 - Bladder
11 - Adipose tissue
12 - Vagina

The male genitalia is quite unusual. The male has, of course, **two testicles located in the scrotum, but his penis is covered with small horned spines, which disappear after neutering**. **This strange system is designed to trigger ovulation for the queen**, and in fact, during copulation, **these spines stimulate vaginal transmitters** which provoke her ovulation. **Cats are a species with provoked ovulation.**

GENITAL ORGANS OF THE MALE CAT



1 - Vas deferens
2 - Spermatic cord
3 - Epididymis
4 - Gland
5 - Cowper's gland
6 - Ischiocavernosus muscle
7 - Prostate
8 - Penis
9 - Foreskin
10 - Testicle
11 - Ureter
12 - Urethra
13 - Bladder
14 - Testicular vessels

WHEN THE FEMALE CAT IS ON HEAT

A queen is on heat when **the follicles – which are like small spheres filled with liquid** present in the ovaries, and **each containing an ovule (or oocyte) – begin to develop and to secrete female hormones or oestrogens**.
This triggers sexual receptivity for the female cat, and **she begins to miaow loudly and often, with a powerful raucous voice** which is very disturbing for her owners!
She adopts **very distinctive physical behaviour**. **She rubs up against objects, and as soon as her back or rump is touched, she arches** (this is called a curved spine position) and puts **her tail to one side**. This helps the mating process: we talk about **oestrus behaviour**.
The heats last between 5 days to a week, and during this time the female cat **is receptive to mating**. However, some queens at the beginning of their heat may take a day or two before they are ready to mate. This is called **proestrus**. Breeders who wish to mate their cats usually wait until the second or third day of heat before putting the male and female together.

MATING

Mating, or coitus, is rapid for felines. The female cat on heat becomes immobile in the presence of the male, who takes advantage of this position to straddle her, and **then bites her on the shoulders so as to get in position and stabilise the weight of their body.**
This is so important that sometimes male cats who have mouth problems such as gum disease or stomatitis are unable to mate because they cannot hold on to their partner's shoulders.
The female cat puts her tail to one side, and the male gives a quick thrust, penetrates her and ejaculates. **The whole sequence lasts between 5 and 15 seconds.** At the moment of penetration, the female cat lets out a loud miaow, **and after mating, aggressively chases the male away**.

After mating, the cat licks her vulva, and rolls frantically on her back, which is typical behaviour after penetration. There is then a 10 to 30 minute refractory period after which the female cat is once again receptive to mating, and coitus may take place again.

> If several males are present, a female cat may mate successively with different partners. In this case, kittens born in the same litter may well have different fathers. This is called "superfecundation".

"What greater gift than the love of a cat?"
Charles Dickens

REPRODUCTION CYCLES

Female cats have **several types of sexual cycles**. If, as is frequently the case for cats living alone in a flat, no mating has taken place, the cat will finish her heats with no ovulation taking place. This is known as an "**anovulatory cycle**". In this case, she will be **on heat again 2 to 4 weeks later on average**, and **so on during the whole of the breeding season**. This is very problematic for owners, because of their cat's noisy behaviour during her repeated periods on heat.

There are some variations from one breed to another for this rhythm of sequenced heats: **Siamese cats or related races (Orientals) can have times of being on heat which are so close together that they give the impression of being continuous**.
On the other hand, some long-haired races (Persians, Maine Coons...) often have infrequent heats, which only take place every month or even less often.

If mating takes place **in optimum conditions for the female, ovulation will occur**.
But this only happens if there has been sufficient vaginal stimulation, and as has been seen, it is the penetration by the penis during mating which stimulates ovulation.
Some studies have shown that **for ovulation to take place, mating must be repeated several times**.

> For female cats, if mating takes place just once, ovulation will only be triggered in 50% of cases

Therefore **the ideal situation is for mating to take place several times within the space of 4 hours**. This can be a problem for breeders, when the female is reluctant, or when the male has a low libido, which is more frequent in long-haired breeds (Persians in particular). Mating does take place, but is too spaced out and not enough to trigger ovulation.

Ovulation takes place around thirty hours after stimulation.

Once a cat has ovulated, **there are two possible developments**:
• **If she has been fertilised, she will begin a pregnancy**. This is called the cycle of gestation. In this case, **her ovaries will secrete a hormone which is indispensable** to the development of gestation: **progesterone**.
This hormone **is produced by small round ovarian structures** which are yellow in colour, called **"corpora lutea". Progesterone will be produced throughout gestation, which is for around 63 to 65 days after mating**.

Normally, the cat will no longer be on heat during this period. However, it would appear **possible for certain females to display oestrus behaviour during pregnancy**.

There have been cases of gestating cats mating, which could lead to a second gestation, later than the first, and consequently **producing kittens at different stages of development**.

This curious phenomenon, which is only suspected to exist for cats but has not yet been proved, does exist for other species, such as rodents, rabbits, or even bears, and is called **"super-foetation"**.

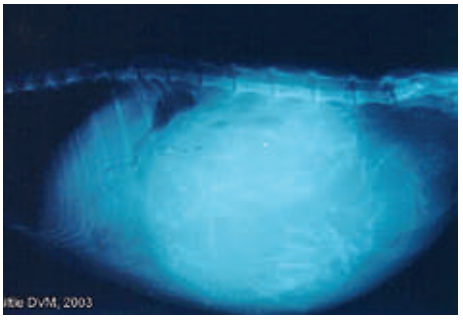
DID YOU KNOW?

In some rare cases, especially when cats live in groups in a cattery, ovulation may take place in the absence of vaginal penetration. This is called "spontaneous ovulation", even though the term is in fact inexact, since ovulation has actually been triggered, but by factors which remain unknown. It is thought that factors such as female cats straddling one another, or else stimuli connected with the presence of a male in a cattery, in a different room for example, may sometimes be sufficient to trigger ovulation.

• **If a cat ovulates but is not fertilised** (either because the quality of male semen is insufficient, or else because the cat ovulated "spontaneously" without coitus having taken place), **her ovaries only secrete progesterone for around forty days**.
This is called **the cycle of "pseudo-gestation"**. In most cases, heats are interrupted during this time.

GESTATION

Gestation lasts around 63 to 65 days, sometimes less when the litter is a big one (over 5 kittens).
During this time, **the embryos will first of all move freely** in the uterine horns, and then fix. **This is called "implantation" of the embryo**.



Placenta structures develop, allowing the exchange of hormones and nutrients between mother and kittens.

In cats, **the placenta forms a circular band around the bladder** containing the embryo, then the foetus, called the **"ring placenta"**.
The organs of the future kittens are progressively formed for each embryo, during organogenesis.

At the end of this period, **towards the 35th day**, the embryos look just like miniature kittens. **They are now called fœtuses,** and will grow a lot during the second month of pregnancy: **two thirds of their birth weight is gained during this second month**.

HOW CAN YOU TELL A CAT IS GESTATING?

2 or 3 weeks after fertilisation, the cat's mammary glands become bigger and pinker, and the fur around them falls out. It's a positive sign.

Towards the 4th week, her belly begins to swell, first of all behind the back ribs, then for the whole volume. Breeders often ask their vet to diagnose gestation by conducting an ultrasound scan towards the 3rd week, to confirm if the cat is indeed expecting kittens.
This also shows the number of kittens to be born (even if it is not 100% accurate). It is also possible to take a blood sample to analyse the level of a placental hormone, relaxin, to know if the cat is gestating. From the 45th day, an x-ray can show the skeletons of the fœtuses and thus confirm how many kittens there are.

DELIVERY

Two weeks before the estimated delivery date (sometimes called **whelping** or **parturition** for animals) the future mother must be isolated in a calm, peaceful room, with **a temperature of at least 72° F (22 or 23 °C).**

Your queen will need a "nest", which can be a plastic box, or else material topped with disposable or washable absorbent material (newspaper cut into strips, paper towels, towelling). **If the cat is alone in a big room, it may be a good idea to prepare 2 or 3 different nests** because some mothers are very selective about where they give birth, and do not always choose the place their owners would like. Sometimes they give birth in cupboards, or even in dirty laundry baskets!

What are the signs of the happy event?

In general, **in the last two days of gestation, the queen changes behaviour**. She **seems anxious, paces, and miaows a lot**. She becomes "clingy" with her owner. This is particularly the case **for "primiparous" cats**, i.e. those gestating for the first time. **She will pant a lot**, with her mouth open, and **her breathing accelerates**. Sometimes she will stop eating, or even be nauseous.

The onset of labour is characterised by **strong abdominal contractions**. The cat **miaows a lot**, which can worry her owner who may think she is "crying", but this is normal.
The first kitten is born quickly and the mother licks off the membrane from its face and body. **The next kittens are born every 20 to 30 minutes on average**, and this means that **delivery is usually over in less than four hours**.

Kittens are **born with their eyes closed**, but **they quickly find a nipple, and begin sucking their mother's first milk, colostrum, which is rich in nutrients** and plays **a role in the immune system**. Colustrum is also rich in immunoglobulins (or anti-bodies) protecting the newborn kitten from several diseases, especially those against which their mother has been vaccinated.

A cat who is giving birth **is very sensitive to stress**. If she is disturbed, she can stop during parturition for over a day. Sometimes, **if she is anxious, the queen will keep moving her kittens**, carrying them delicately in her mouth one by one, from one place to another. Of course, this can be dangerous for the newborn kittens.

> It is important to avoid disturbing a cat during delivery.

Sometimes, things may not go smoothly and it may be necessary to call the vet. This is called **dystocia**. Often, these difficult births take place **when the kittens are too big, or for some breeds which have protruding heads** when the kittens' heads can sometimes be blocked in the pelvis during delivery (Persians, Exotic Shorthairs...). **It be may be necessary to perform a caesarian section in this case.**

FADING KITTEN SYNDROME

In some cats, especially certain breeds (British Shorthair, Cornish and Devon Rex and, to a lesser extent, Persian, Birmans, and Somalis), the mother's blood group may be different to that of the father.
If she is blood group "B", and the father is "A", there is a danger during colostrum feeding if the kittens are from group "A".
The group "B" queen develops "anti-group A" anti-bodies during her gestation, which do not pass through the placenta (or only minimally) during gestation, and thus do not present a risk before birth, but are transmitted in the colostrum.
They can then pass into the organism of the newborn kittens after suckling, and cause massive destruction of their red blood cells, leading to multiple haemorrhages and even death.
This problem is called neonatal isoerythrolysis, and to avoid this risk, pedigree queens should be tested to discover their blood group before breeding.

FEEDING

The mother cat feeds her kittens for a minimum of 6 weeks.
As from 4 weeks, the kittens, who **will have opened their eyes at around 8 weeks** and **started walking at around 15 days**, start taking **an interest in more solid foods**, such as weaning purées.
Weaning thus takes place progressively, in step with the mother's milk supply drying up, which takes place gradually.

> In general, towards 9 weeks, the kittens are completely independent from their mother as far as food is concerned.

During this period, **the mother cat plays an important role in the kittens' education, pushing them away when they hurt her** with their claws, or bite her, and **she thus teaches them the bases of proper feline behaviour.** Their social education continues with their future owner after weaning.

Until recently, surgical neutering seemed to be a practical solution for cats. But more and more owners, as well as pedigree breeders, seek out different medical solutions

CONTROLLING REPRODUCTION

Apart from the case of pedigree breeders, **most owners do not want their cat to breed**.

Reasons include avoiding increasing the feline population unnecessarily, and the risk of loss, abandonment or accident to the kittens.

Many owners also do **not wish to deal with all the problematic behaviours connected with their cat's sex life**. As we have seen, **cats on heat run away a lot, and are noisy** and extremely difficult for their owners to live with.

Male cats who have not been neutered, **("entire" cats)** will all sooner or later **start urinating inside the house**. **This is natural scent marking behaviour** for adult males, done by spraying urine horizontally, and trampling it with the back paws. The problem is that tom cat pee **has a terrible, strong and persistent ammoniac smell**.

Male adults also have **a tendency to run away and fight** with other male cats, coming home with **scratch wounds, abscesses, and the increased risk of contamination with infectious disease**. Because of this, even the most reluctant owners often end up neutering their cats.

HOW CAN YOU TELL IF A CAT HAS BEEN NEUTERED?

Sometimes a cat just arrives in your life without you having invited them! It's as if cats know where they will be welcomed… In the case of kittens, you can assume that they have not been neutered, but things get more complicated in the case of adult cats.

For male cats, there are easy to check visual signs – after castration there will be no testicles, and the little spines on the penis will have shrunk.

Entire cats have very clear behaviour (urinary marking, running away, fighting); not to mention the stench of their pee!

For female cats, it's harder to tell, since the ovaries and uterus are located inside the abdomen. It is possible to see these organs with an ultrasound scan, but this operation can be delicate, necessitating high definition material, an experienced operator, and a cooperative cat! It is not only necessary to shave her abdomen, but also to make sure that she stays still a minimum amount of time, which sometimes means that a short-term sedation or anaesthetic has to be administered.

Another possibility – not often used - is that of "going inside", i.e. opening the abdomen and examining the ovaries and uterus.

Fortunately, blood tests are now a valid option. They consist of measuring a specific hormone produced by the pituitary gland, LH, (Luteinising Hormone). If it is present at a high level, this means that the ovaries no longer send control signals to stop production, and it may thus be deduced that the cat has been neutered. On the other hand, if the level is low (<1 ng/mL), it means that the cat is intact.*

For stray cats in a TNR programme (Trap, Neuter, Release), there is a marking system. During the neutering operation, a little piece of their ear is snipped off. This allows remote detection of neutering; an important advantage, since many of these animals are difficult to approach.

* Rohlertz M, Ström Holst B, Axnér E.- Comparison of the GnRH stimulation test, and a rapid semi-quantitative test of LH level, in order to determine the presence of ovaries in female domestic cats. Theriogenology. 2012 Dec;78(9):1901-6

SURGICAL STERILISATION

Probably the most widespread neutering technique used **for tom cats is castration, and for queens an oophorectomy** (removal of the ovaries), or **an ovario-hysterectomy** (removal of ovaries and the uterus) (spaying). They have both advantages and disadvantages.

Over and above the benefits previously mentioned concerning positive behavioural modification (less running away, no period on heat for female cats, no urinary marking for the male), **surgical neutering has a number of positive effects on the cat's health**.

Young females

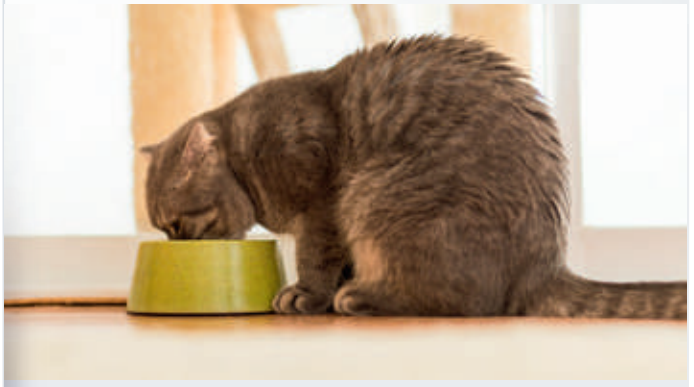
When a young queen is neutered, if possible before the first heats, **the risk of developing mammarian tumours as an adult is significantly reduced.** These tumours are very frequent for non-neutered cats, and in 90% of cases give rise to highly aggressive cancer. The benefit is thus significant. Furthermore, **spayed female cats do not develop uterine infections such as pyometra,** which is connected to the accumulation of pus in the uterus, and is an untreatable, fatal, illness.

Tom cats

Male cats fight less, and thus **have less risk of developing abscesses, scratches and bites, or being contaminated by contagious transmitted diseases** (especially feline leukemia).

The main disadvantage of surgical neutering for both male and female cats **is that of weight gain**, following the modification of their metabolism, and potentially leading to obesity and its associated complications: diabetes, cardiac or vascular problems, shortened life span…

Surgical neutering is **usually carried out around the age of 4 to 6 months for both male and female cats**, but recently "early neutering", at the age of 6 to 7 weeks, has become popular, especially for some breeders or in cat-shelters.



After neutering it is important to monitor your cat's diet closely to avoid excess weight gain due to appetite and hormonal changes. Your vet can advise on a suitable diet.

DID YOU KNOW?

The constraints associated with surgical sterilisation have led to the quest for alternative solutions. Consequently, certain pedigree cat breeders wish to use effective - but temporary - contraceptive methods, in order to avoid the problems associated with females on heat and/or male urinary marking, without compromising the future fertility of their animals. A medical solution would also limit the constantly increasing free-roaming cat population.

MEDICAL STERILISATION

The "pill"

For over 40 years, many owners have been giving their cats the "pill", usually every fortnight, in order to block the appearance of heats.
These pills are made of **progesterone synthesis derivatives** (progestagens or progestins). We do not yet fully understand how they work, but we do know that **they inhibit cerebral control of the cat's cycles**, blocking the onset of heats.

Unfortunately, these composites may be dangerous for the organism after repeated or prolonged use.
Several authors have shown that progestagens could have side-effects **such as the potential risk of uterine infections, diabetes or effects on the mammary glands, abnormal growth of the mammary tissue, or the development of mammary tumours**. It is therefore considered: *"the longer the prescription, the higher the risk"*. **Their toxicity has not been proved, however, in the case of short-term use**.

According to a recent study in Europe and North America, many cat breeders continue to use them. It is therefore **recommended that they be used with moderation, and for short periods only**, for example to avoid a cat being on heat when she goes on holiday for a week with you, but not all year round, and certainly not all through her life.
It is especially important to avoid giving them to pre-pubescent queens.

According to some studies, the "pill" that some owners give to their cats every two weeks seems to provoke fewer side-effects when only half a dose, or even a quarter of a dose is given, twice a week.

> For male cats, progestin pills may be used to decrease the libido and urinary marking, but they are not always totally effective.

Sub-cutaneous implants

Very recently, **sub-cutaneous implants** using a hormone releasing analogue produced by a region of the brain, the hypothalamus, have been marketed to control the fertility of male dogs. Several studies show that **they also work for cats**, even though they are not officially intended for felines, and that they probably **imply fewer risks than progestagens**.

• For female cats

All the studies show that these sub-cutaneous implants seem to be very effective at blocking heats. **They stay active for a period which can vary between 16 to over 37 months**. **It is recommended that they be implanted in female cats in interœstrus (between two periods on heat) or in anoestrus in winter**. **They must not be implanted on a gestating cat,** because they could cause an abortion. The fertility of cats once the implant is no longer active seems to be very good, **indicating that there is no side-effect on the uterus**.

• For male adult cats

Cat breeders have used implants regularly, and more pet owners are now doing so too. **After a period varying from 3 to 10 weeks**, there is **a spectacular reduction in the size of the testicles**, and the spiny horns disappear from the penis, which is the sign of complete medical neutering. **Urinary marking is significantly reduced, as is the libido, and aggressiveness** towards other males. **On the other hand, appetite may increase** and hence there is a risk of weight gain. This must be carefully monitored. The implant remains active for at least a year, **so must be replaced annually by the vet**.

Other contraception protocols are being studied

Amongst them **melatonin,** which is already often used for humans to encourage sleep. Since cats are a species with seasonal reproduction, **this neuro-hormone** (which is secreted at night by all animals and humans from a region of the brain, the epiphysis), imitates darkness and **inhibits sexual cycles** especially for female cats. Although not many studies have been carried out as yet, this seems a promising solution. **For female cats, melatonin administered orally for just over a month, or in the form of subcutaneous implants, is capable of blocking heats for 75 to over 170 days (100 days on average).** However, there are many individual variations, and studies are ongoing. **For male cats**, taking melatonin **lowers the quality of semen, but does not seem to cause genuine medical castration.**

In North or South America, **the use of intra-testicular or intra-epididymal injections of sclerosing agents** (calcium chloride, zinc glutonate) is widespread for male cats. It causes **the progressive necrosis of testicular tissue,** leading to the same effects as surgical castration. **In the future, immuno-contraceptive vaccines may exist** or other molecules or agents which produce genuine medical sterilisation.

DID YOU KNOW?

Cat breeders need to know that once an implant has been put in place, fertility is blocked for around 2 years, which may be a problem for those who are breeding their cats.
For domestic cats, re-implanting is possible throughout their life, and thus constitutes a viable option to surgical spaying.

IN CONCLUSION

It is essential to control cats' reproduction, in order to avoid as much as possible proliferation, abandonment, and animal suffering.
It is even more desirable since sterilisation **has a positive impact on cats' behaviour and health.**
All cats should have access to sterilisation, whether it be surgical or medical, in proper conditions as far as safety, harmlessness and effectiveness are concerned.

HOW TO
FEED YOUR CAT

COMPLETE, WELL-BALANCED FOOD

Cats need to be fed with complete, well-balanced food which is not only suitable for their age and morphology (or more specifically their breed), but also for their metabolic status: spayed or not, and any predisposition to a disease or health condition.
Food supplies the energy which is indispensable for life. The animal's body converts food into heat and usable elements, in order to fulfil all its vital functions. Energy is measured in calories or, less often in certain countries, in joules. A calorie corresponds to the energy needed to heat one gram of water from a temperature of 14.5 °C to 15.5 °C. Since it is a very small unit of energy, it is more usual to speak in kilocalories (kcal), sometimes also called Cal (with a capital C). Energy needs are calculated per kilo of metabolic weight, and per 24h.

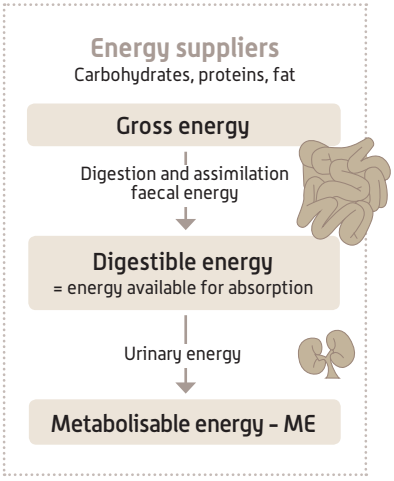
> We use the term "complete nutrition" when a ration contains everything needed by the animal. For a food to be complete and balanced it must contain sufficient quantities of different nutrients.

1 CALORY = 4,184 JOULES

A FEW DEFINITIONS

GROSS ENERGY:
The gross energy of a foodstuff ***corresponds to the energy which it would release after combustion****, i.e.* ***the total quantity of energy*** *it contains. By analysing food composition, it is possible to obtain a precise definition of its energy content.*

METABOLISABLE ENERGY:
Metabolisable energy –(i.e. the energy available to the body) ***corresponds to the amount of energy the body has once the energy lost in urine and faeces has been subtracted.***
ME = gross energy (of food) – (Gross energy of urine + gross energy of stools)
If we also subtract the energy of the heat produced by food consumption, then we obtain ***net energy****.*



THE DIFFERENT NUTRIENTS

Nutrients are organic or mineral substances which come from food. **The digestive process makes them easy to assimilate by the body**. They are essential for different physiological functions, **such as supplying energy, sustaining growth, metabolic regulation**, or **tissue maintenance**. Some **nutrients provide calories**, or, in other words, energy. **This is the case for fats, carbohydrates, and proteins.**
Other nutrients are also indispensable, even though they don't supply calories, such as **water, fibres, vitamins, and minerals.**

II Water

Water is actually the second most important nutrient, after oxygen. **The body is composed of 70% water** (going up to 80% for kittens).
An animal can manage to survive even if it loses almost all its body fat and half of its protein, but **dehydration of only 10% can cause serious damage. A 15% loss of water can quickly be fatal**, even for an animal which originally came from the desert, like cats.

> “I love cats because I enjoy my home; and little by little, they become its visible soul.”
>
> **Jean Cocteau**

Water in the body comes from **two different sources: water ingested through food and drink, and metabolic water**, from oxidation of the other nutrients (proteins, fat, carbohydrates), corresponding to around 10 % of daily needs.

Why is water so important?
Water is found everywhere in the body, both within and outside cells. Since it is a chemical agent necessary for food to decompose, it **acts as a support for metabolic reactions**.

Water also acts as **a lubricant**, especially at the level of the joints, and is also the means of transmission of several soluble agents and of waste. Blood and the lymph are first and foremost… water.
In cases of hypothermia, cats will mainly eliminate excess calories by evaporation.

> We estimate that cats’ water needs in ml are equivalent to their energy needs in kilocalories. For example, a cat who needs 300 kcal per day needs to “drink” 300 ml of water.
> ME = 77.6 $BW^{0.711}$ kcal
> (BW = body weight in kg)

II Proteins

Proteins are organic components **made of elements called amino acids**. They form shorter or longer chains, and are assembled 3 dimensionally into proteins. **There are 22 natural amino acids, which means that, by combining them together, a large variety of proteins may be formed.** Sometimes **proteins are combined with other elements**, making what is called a **protein conjugate, such as haemoglobin.**

There are two sorts of amino acids: essential and non-essential. However, when a nutrient is described as being **"essential", it actually means that it must be supplied by food**, since the body is not able to synthesise it de novo (i.e. spontaneously).

There are 11 essential amino acids for cats. The first 10 are the same as for dogs, and **the 11th is specific to cats: taurine.** This amino acid was discovered in the 19th century in the bile of bulls (hence its name), and is also found in **animal protein** (meat).

> Physiologically, there can be no such thing as a vegetarian cat!

In cases of taurine deficiency, the cat will develop **degeneration of the retina**, leading to irreversible blindness and **serious heart problems. Foetal anomalies can also be seen in pregnant queens.**

Proteins are **necessary for tissue and cellular growth and structure**. They allow **muscles to contract** and give both **flexibility and solidity to ligaments, tendons and cartilage. They transmit several endogenous substances** (such as calcium), or **external substances** (medicine) in the blood, **transport oxygen to the tissues** (haemoglobin) and can be **stored in muscles** (myoglobine).

THE CAT'S 11 ESSENTIAL AMINO ACIDS

- ARGININE
- HISTIDINE
- ISOLEUCINE
- LEUCINE
- LYSINE
- METHIONINE
- PHENYLALANINE
- THREONINE
- TRYPTOPHAN
- VALINE
- TAURINE

Certain hormones, as well as the enzymes responsible for several metabolic reactions, are proteins. Skin, claws, antibodies, and also mucous all have a high protein level. This is why when cats do not have enough protein, their fur is dull and brittle.

> Cat hair is made of 95 % protein, and a third of food protein is used by the skin to renew epidermal cells and fur growth.

Finally, proteins make up **an important source of glucose for cats, their liver being able to convert them into glycogens** (this process is called gluconeogenesis). Cats cannot stock glycogen well (only for around 24 hours), but **glucose is essential for the brain, kidneys, and the red blood cells.**

So, for example, in the case of anorexia, the body will first of all seek a source of energy in fats; but a protein deficiency could rapidly set in. The liver will compensate by using protein from the viscera, and then in muscle mass. This is why **a cat who refuses to eat, whatever the reason, is in great danger.**

Proteins can be of animal origin or come from plants. The quality, digestibility, and the organic value* will justify using them in food, or not.

** Organic value: the quantity of nutrients absorbed and used by the body. So a digestible protein which supplies all or almost all the essential amino acids will be considered as having a high organic value.*

II Lipids

Lipids are also called **fats**, and are the nutrients which are the richest in energy. For an equal weight, they contribute over twice as much energy than protein or carbohydrates.

1 g lipids = 9 kcal
1 g protein = 4 kcal
1 g carbohydrates = 4 kcal

They include **fats which are solid at room temperature** (such as lard) and **oils which take on liquid form at that same temperature** (such as olive oil). Lipids are made up of short, medium, or long chains of fatty acids.

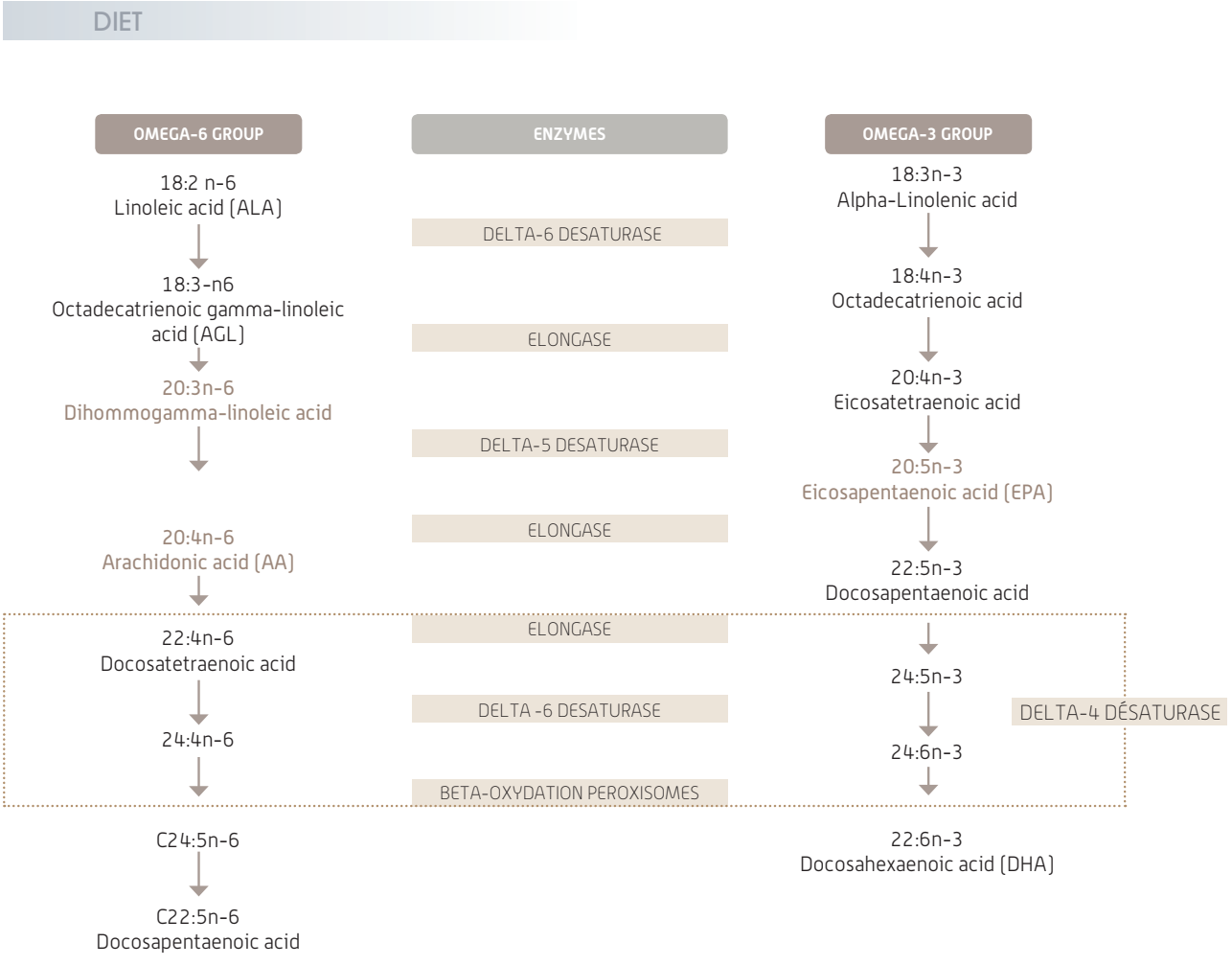
> “The knowledge to understand them, to understand love, love to defend.”
>
> **Fernand Mery**

Saturated fatty acids are those where there is no double link between carbon atoms in the skeleton of the fatty acid.

Non-saturated fatty acids have at least one double link; they will be defined as **mono-unsaturated or polyunsaturated fatty acids depending on the number.**

If the first double link is at the level of the 3rd carbon atom, then they are called **omega-3 fatty acids**, and if it is at the level of the 6th, then they are **omega-6**.

There are **essential fatty acids: linoleic acid, linolenic acid, arachidonic acid, and polyunsaturated fatty acids omega-3 EPA and DHA.**



Oils made from corn, sunflower, grape seed, evening primrose or **borage** contain **omega-6 fatty acids**.
Omega-3 fatty acids are present in **rapeseed, soya, or linseed oil**, and particularly in fish oil.

Fats do, of course, constitute an **important source of energy**, but they also have **other metabolic functions: storing excess energy, absorbing liposoluble vitamins** (A, D, E, K), **a source of essential fatty acids, forming cell walls, isolation** (subcutaneous fat), **impermeability** (secretion of sebaceous glands), and **mechanical protection of organs**. Certain essential fatty acids are pro-inflammatory.

The fatty tissue is made up of cells called adipocytes
(cf. Chapter on Obesity).

> "Cats are creatures made for storing caresses."
>
> **Stéphane Mallarmé**

Carbohydrates

Carbohydrates are **not essential nutrients for cats**, but they do nonetheless **constitute a significant source of energy**. They are classified according to their structure, as mono- di-, or polysaccharides, depending on whether they are made up of one, two, or several glucose, fructose units…

The carbohydrate category contains **sugars, such as glucose or fructose**, and also **starch and fibres**.

Cereals, rice, or potatoes are just a few examples of sources of carbohydrates. In plants, they represent up to 90% of energy reserves.

Carbohydrates are an important source of energy for many tissues. In order to function correctly, **the brain, and also the kidneys and the red blood cells need to be constantly supplied with glucose**. This glucose can come from amino acids or from the digestion of starch.

Fibres

Fibres are **carbohydrates which come from plants, and are not directly digestible by mammals' digestive systems**. Fibres can be classified according to **their solubility in water** (soluble or insoluble), or **their ability to ferment in the intestine** (fermentable or non fermentable).

They will thus provide food for the bacteria in the digestive system. Fibres also have other interesting nutritional properties, such as: **delayed gastric emptying, modifying absorption of certain nutrients, regulating digestive transit, regulating integrity of intestinal mucosa, water retention, and ballast effect**.

Remember that in the wild, cats eat every part of their prey, including the intestines and their contents which are often plants, but also their tendons and dander (hair, claws), which have the same role as carbohydrates.

Minerals

Minerals are inorganic constituents which represent approximately 4% of the animal's weight.

They are generally divided in two groups: **macro-minerals such as calcium, phosphorus, magnesium, iron, sulphur, and electrolytes such as sodium, potassium and chlorine**, and also **micro-minerals (often called oligo-elements)** present in very small quantities, but also indispensable.

> In animal food formulas, macro-minerals are measured in grams per kilo, and micro-minerals per kilo.

Vitamins

Vitamins are **complex organic substances, needed by the body in very small quantities for growth and to maintain health**.

Vitamins have several different functions. **Vitamin A enables night vision and renewal of the skin; vitamin D is essential to metabolise Calcium; vitamin K** is involved i**n coagulation of the blood; vitamin E is a powerful antioxidant** and protects lipids against aggression by free radicals.

B vitamins are indispensable elements in **the cell system**.

Vitamins are classified in two broad categories: **water-soluble** (B and C) and **fat-soluble** (ADEK).

ANTIVITAMINS:

Antivitamins are substances which are able to degrade or inhibit a vitamin, so that the body is unable to use it. Thiaminase, which can be found in the viscera, in certain raw fish heads, or in ferns, degrades thiamine (or vitamin B1). Avidin is a substance present in raw egg-white which prevents the absorption of biotine. Both of these substances are destroyed by heat. Since egg yolks contain high quantities of biotine, eating raw eggs has no adverse effect.

WHAT IS THE DIFFERENCE BETWEEN KIBBLES AND CANNED PET FOOD?

The main difference is their rate of humidity, i.e. the quantity of water expressed in percentage form.

> Dry cat food (kibble) has a low rate of humidity, around 5% to 8%, whereas pouches, patés, and chunks in sauce may contain up to 90% water.

These two types of food have their advantages and their disadvantages. Kittens' gastronomical experiences at an early age will influence their preferences for different types of food later on in life *(cf. Chapter on Feeding Behaviour)*.

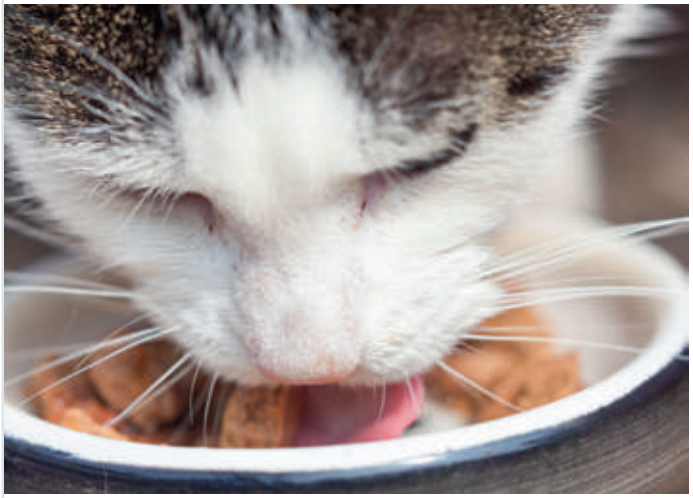
Dry food

Concentrated, dense, and hence with a lighter carbon footprint during transport, **this type of food keeps well in the food bowl**, and so can be left down for the cat to help herself, **eating small quantities more often**, as cats do in the wild. Cats often enjoy the texture and crunchiness; perhaps because they provide sensations similar to those when eating their prey. **Kibble is also good for oral health**. It is important to also make sure that **your cat always has access to fresh clean water**.

Wet food

These meals are diluted, and **increase water absorption and hence urine production** (diuresis). Since water contains no calories, wet food can also **help prevent obesity**. Wet food is also beneficial for **cats who suffer from painful teeth or mouth problems as they can still eat comfortably**.

Some formulas can also be administered under veterinary supervision via tubes placed directly in the oesophagus or the stomach. Many cat owners combine both sorts of food, and in this case, **it is important to monitor calorie intake, to be sure it does not exceed the cat's daily energy requirements**.



> “Cats don’t like change without their consent.”
>
> **Roger Caras**

PRE AND PROBIOTICS. ONE LETTER MAKES A BIG DIFFERENCE !

Some unscrupulous manufacturers take advantage of the confusion which can exist between these two terms. But the difference is significant, and merits explanation.

Prebiotics are non-digestible nutrients which nonetheless have **a positive effect** on animal health, since **they have an influence on growth and activity of the “good” bacteria which are found in the large intestine**. Some examples are: **FOS, MOS, inulin, lactose**…

Probiotics are living organisms which, when ingested, will have **a positive effect on digestion**. Several studies have shown the potential benefits of these “good” bacteria, but sometimes with contradictory results.

What is sure is that, **in order to function properly, these organisms must be alive**. But, in general, the manufacturing process of these foodstuffs requires cooking at high temperatures, much higher than 100°, which means that even if there were probiotics initially, they have been cooked away in the finished product!

UNDERSTANDING WHAT CAT FOOD LABELS SAY

Apart from the marketing message which is often just written to be catchy, pet food packaging must give **precise information about the type of product inside**.

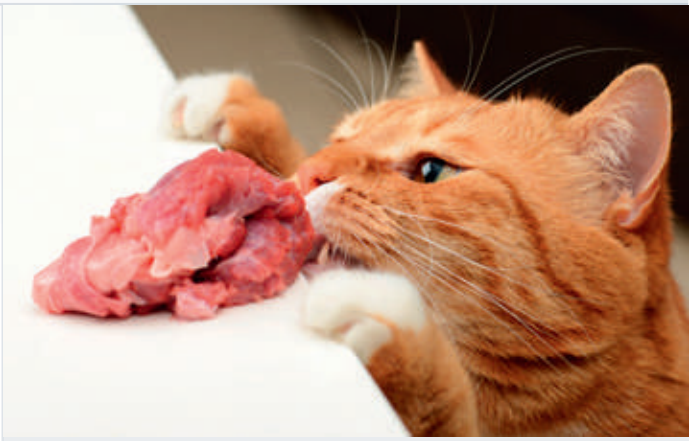
It must be well-balanced and suited to the animal it is intended for, without it being necessary to give any kind of food supplement. **In order to use the term “complete”, it must comply with a strictly defined composition list, defined by official bodies such as the FEDIAF in Europe, or the AAFCO in the United States**. The purpose of the product must be clearly written, for example “food for kittens”.

Some manufacturers can be less explicit than others. For example, if a label says **“chicken flavour” it merely means that this flavour must be detectable by a laboratory test! A product claiming “contains chicken” legally only has to contain a minimum of 3% chicken in the formula!**

> To know what is really in the diet, take the time to read what is written on the back of the pack.

Indeed, the real composition corresponds to the ingredients list. These will be listed in decreasing order, so make sure you read to the end of the list!
It is also important to look at **the analytical constituents, i.e. the distribution of nutrients by category**. Their value is indicated in percentage terms, beginning with proteins. Since the total is always 100%, the missing data corresponds to the quantity of carbohydrates.
Everything should be mentioned; vitamins, antioxidants, colouring agents… It is sometimes necessary to add vitamins in order to be sure there are enough in the finished product, after the manufacturing process which can sometimes destroy vitamins, especially those which are heat-sensitive.
The batch number, the recommended use-by date, the manufacturer's name and address must also be clearly indicated.

So just like for humans, nutrition plays a key role in the good health of our favourite felines, and it is thus important to feed them with a well-balanced food product, suited to their physiological and morphological needs, which – we must remember – are different to our own, and even different to those of dogs.



A POTENTIALLY DANGEROUS NEW FASHION

Recently a food trend ***has emerged: "raw" food*** *(or BARF).*
Originating in Australia, this recommends a diet based on raw meat*.*
The theory (which it is impossible to refute) is that ***in the wild, cats eat their prey raw****.*
It has also been observed ***that cats often eat young barley shoots****, or that* ***they only eat the mouse's head (i.e. its brain), which is the place where most of the omega-3 fatty acids is found****.*
Several studies have taken an objective look at the risks connected to this form of diet, and all the results concur: ***there are indeed several risks****.*
First of all, ***there is a risk of finding foreign bodies*** *in the food, with associated consequences, such as causing tears in the digestive system, occlusions or infections.*
A cat's jaw is certainly capable of crunching down on a mouse, but not a chicken bone.
The main danger is invisible to the naked eye: the risk of infection*.*
Most of these foods are contaminated by bacteria which are dangerous for cats, and also for humans (especially children), such as ***salmonella, campylobacter, or E-coli****.*

CHAPTER 05

PREVENTIVE MEDICINE

INFECTIOUS DISEASES

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CAT ENCYCLOPEDIA

INFECTIOUS
DISEASES AND THEIR PREVENTION

Infectious diseases are diseases caused by micro-organisms such as **viruses, bacteria, parasites and fungal infections**. Most of these microbes are constantly present in the environment, which means that cats are always at risk of infection.

> Cats who live exclusively indoors are no exception!

The cat may stay in the house or apartment, but the humans who share her space can put her at risk. Indeed, most infectious agents are quite resistant to the outside world, and are easily brought into the home on clothes or shoes. Some factors can increase the risk of an infection developing, depending on the individual cat's condition: young, stressed, ill, or old, and the environment itself can also be a factor. More cats around also increases the chance of disease being spread.

"CAT FLU"

"Cat flu" is a general term for **upper respiratory tract and eyes (conjunctivitis) infections** caused by a number of different infectious agents. ***Feline Herpesvirus-1*** (FHV) and ***Feline Calicivirus*** (FCV) are the most common causes.
They are both viruses and are very common in the cat population.

Additionally, **bacterial agents** can contribute to the disease syndrome: *Bordetella bronchiseptica*, *Chlamydophila felis* and *Mycoplasma* species. Cat flu is very common. It is spread directly between cats and also by people stroking cats and not washing their hands.
It is also spread by objects, such as food bowls, cages, brushes, etc. that are contaminated with sneezing or tears. Clinical signs include streaming eyes and nose, excess salivation, sneezing, mouth ulcers, inflamed gums, sore throat and enlarged lymph nodes.
Some cats may also develop **lameness**, and if the disease becomes more serious, **a cough or chest infection.**
"Cat flu" can have **dramatic consequences, especially for kittens**. Because sense of smell is so important for a cat to eat, **a blocked nose can mean food refusal**, and **painful lesions in the mouth** are another reason for anorexia.
Feline calcivirus exists as a wide variety of strains and so a cat can get re-infected many times: a little bit like we can get the common cold over and over again.

> Once a cat is infected with FHV, it is infected for life.

The virus hides in the nerve and **can flare up again at times of stress**. This characteristic is shared by all the herpes virus family, including the one which results in oral herpes in man. However, these viruses are species-specific, so if your cat has herpes, it has nothing to do with a cold sore.

FELINE PARVOVIRUS

Feline Parvovirus or ***Feline Panleukopenia Virus*** is a **highly infectious and potentially fatal disease**. It is now well controlled in pet cats due to widespread vaccination, but can **cause outbreaks in shelter cats and feral cat populations**, with a high death rate.

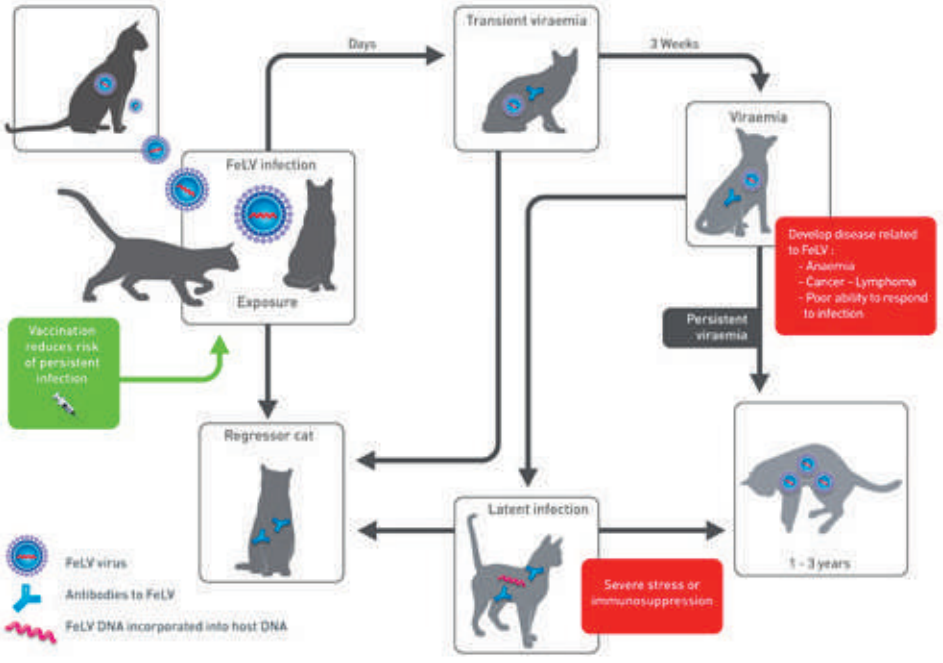
GOOD TO KNOW

Vaccination against the cat flu viruses helps reduce severe disease and helps the cat recover more quickly from infection.

Clinical signs include **sudden death, fever, depression, vomiting, diarrhoea (often bloody), pain and dehydration**.
Cats surviving the first few days become **immunosuppressed** as **the virus destroys the blood cells** that fight infection, and they can get secondary infections, e.g. septicaemia.
If a queen is infected whilst she is pregnant, she can abort/lose her pregnancy, have a stillbirth, or give birth to kittens with abnormal brain development (cerebellar hypoplasia).

> Vaccination against FPV is recommended for all cats.

FELINE LEUKAEMIA VIRUS



Feline leukaemia (FeLV) is a **retrovirus**; it belongs to the **same group of viruses as HIV, but it can't infect people**. Widespread and effective vaccination protocols since the 1990s has meant that the virus is much less common than it used to be, **with <1% of healthy cats infected.**

The disease is passed between cats **in saliva** by **grooming each other, sharing food bowls and generally being close and cuddly**.
It can also pass in other **body secretions, blood and milk**. The virus causes a slow infection

which can develop into **a variety of disease syndromes**, depending on the part of the body the virus targets, including **anaemia, immunosuppressive diseases, cancers, leukaemia, inflammation of different body organs, reproductive problems and, in kittens, a gradual decline leading to death**.

This virus is very clever and can hide inside the cells of the body ("latency"). It inserts its DNA (its genetic code) into the cat's DNA. **The virus can wake up** and cause disease a long time after the initial infection. The course of the disease usually lasts up to three years, although death can occur more quickly. It is a devastating disease and there is no known cure. **Fortunately, vaccination is available,** which helps prevent persistent infection and fatal disease.

FELINE IMMUNODEFICIENCY VIRUS

Feline immunodeficiency virus (FIV) is the cat equivalent of HIV, but it can't infect people. Approximately **1–5% of cats are infected with FIV.**

> Once infected with FIV, a cat is infected persistently for life.

FIV is spread through **fighting and biting**, so it is seen more frequently **in younger, non-sterilised cats** with outdoor access, establishing a