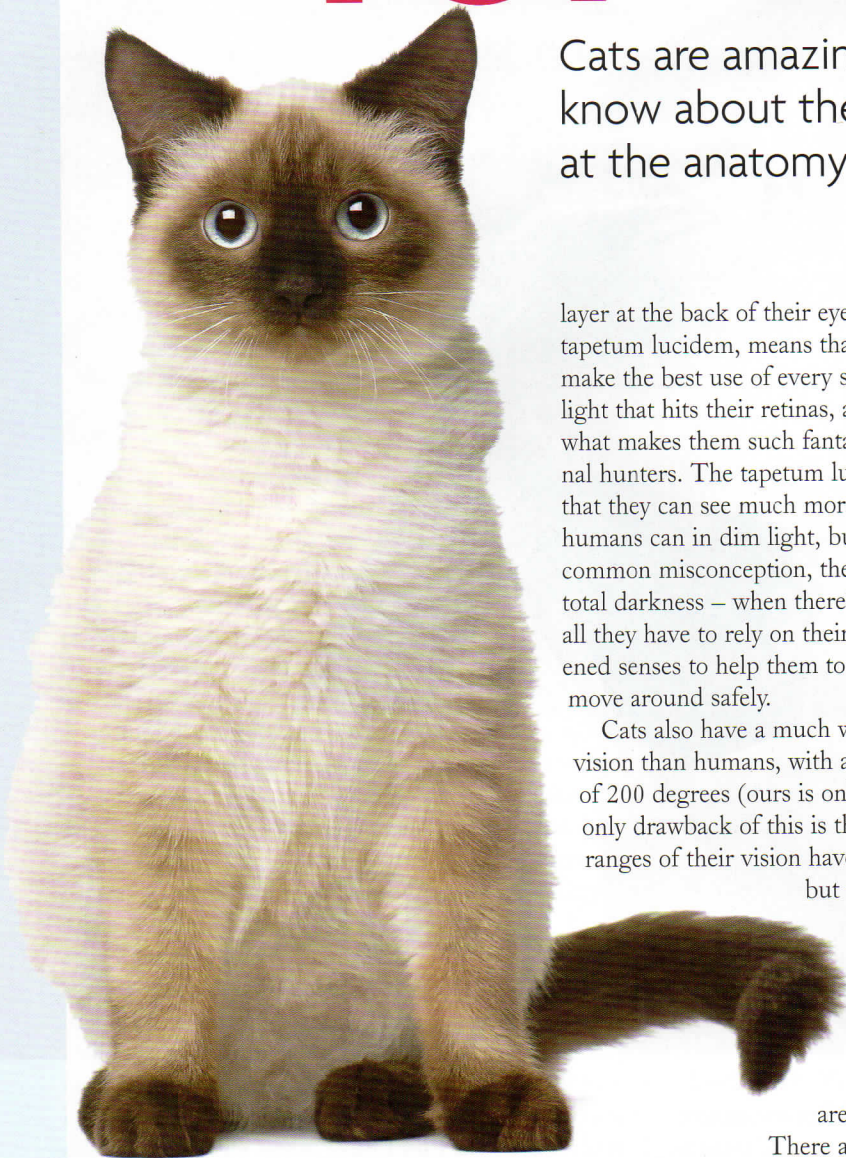


# YOUR CAT'S PHYSIQUE: TOP TO TAIL



Cats are amazing animals but how much do you know about their physique? Emily Fowler looks at the anatomy of a cat, from head to tail

*By Emily Fowler*

layer at the back of their eyes, known as tapetum lucidum, means that they can make the best use of every single bit of light that hits their retinas, and is part of what makes them such fantastic nocturnal hunters. The tapetum lucidum means that they can see much more clearly than humans can in dim light, but despite the common misconception, they can't see in total darkness – when there's no light at all they have to rely on their other heightened senses to help them to hunt and move around safely.

Cats also have a much wider range of vision than humans, with a visual field of 200 degrees (ours is only 180). The only drawback of this is that the outer ranges of their vision have less clarity,

but their excellent ability to judge size and depth means that their hunting skills aren't affected.

There are more rod cells than cone cells in cats' retinas, which is another factor that makes up their superb night vision but makes their daytime vision less clear. As rod cells are more sensitive to overall levels of light, but less so to different colours, they can only distinguish a limited number of colours, which is probably where the myth that cats are colour-blind comes from.

## Your cat's hearing

Despite what we may sometimes think when our cats suddenly become alert at seemingly nothing, only for us to hear the doorbell a minute later, it's not their supernatural powers that give them advanced warning. Cats can detect sounds up to 65,000 Hz compared to

our measly 20,000 Hz, so it's understandable that we're slightly slower on the uptake when there are noises around. They can also swivel their ears in all directions like satellite dishes to pick up noises from all around them, whereas our fixed ears mean that we have a more limited range.

The reason for their amazing hearing abilities comes down to nature; in the wild they would need very good hearing to hear both their prey (to be able to catch and eat them) and any predators (to avoid becoming prey themselves). A cat's typical prey includes birds and small mammals, creatures that make trills and squeaks, which is why cats are even better than dogs when it comes to picking up high-pitched noises.

Their super sensitive hearing is one of the reasons cats don't like loud noises, whether it's fireworks, a vacuum cleaner or a visitor with a booming voice. Even when they're sleeping they're alert to the slightest noise around them and will wake up at the drop of a hat. Maybe that's why they sleep so much, to make up for the lack of deep sleep!

## Your cat's whiskers

The old saying 'it's the cat's whiskers' refers to something that's first-rate, and when you look at how your cat's whiskers actually work, you can understand why. The long whiskers on a cat's face are used as feelers to sense what's around them by touch, and to make sure that gaps are big enough for the cat's whole body to go through. That's why wide, shallow food and water bowls are best; if your cat's sensitive whiskers are constantly touching the side of the bowl it's going to be very irritating for them.

Their whiskers aren't only sensitive to touch, they can also sense air currents,

All cats are unique, whether it's because of their distinct personalities or their wonderful markings. There are even breeds that have unusual features as part of their genetic makeup, like the hairless Sphynx or the Manx with no tail. Despite this, all cats share the same amazing physique and anatomy, much of which can even be found in our domestic pets' big cat cousins!

## Your cat's vision

A cat's slit-shaped pupils are extremely versatile, and can change size literally 'in the blink of an eye' depending on how much light is hitting them. The reflective

### Some of the most common cat tail signals:

- Curved down gently, up at the tip: A relaxed cat
- Slightly raised and curved: Something has caught the cat's attention
- Held erect with tip curved over: Very interested in something but not quite sure about it
- Erect and vertical: A greeting signal. If the tip or the whole tail is quivering, it's an extra friendly greeting
- Lowered and between legs: A submissive or defeated cat
- Fluffed out: A scared cat, trying to look bigger and more powerful
- Lashing from side to side: A sign of aggression

which is why cats are so adept at moving swiftly in the darkness. Any objects that are around will cause almost imperceptible movements in the air and a cat's whiskers will sense them so the cat can avoid them, without even touching them. During hunting, cats' whiskers move forward at the point of catching their prey and can read the outline of their prey in a split second so they can achieve the most effective kill.

A cat's whiskers are twice the thickness of their normal hairs and it's their direct connection to nerve endings that make them so sensitive. Apart from the long facial whiskers that are most obvious, cats also have this type of whisker on their chin and cheeks, above their eyes and on the back of their front legs.

### Your cat's purr

There has always been a great deal of debate and speculation over how and why cats purr. The science behind it is believed to be that nerve impulses from their central nervous system reach their diaphragm muscles and vocal cords to produce the sound and vibration we all know and love.

What is known for definite is that purrs start in kitten-hood, and both kitten and mother purr during nursing. It's something that continues as a kitten grows older, often used as a friendly greeting or during courtship. Some experts suggest that when our cats purr to us, it's an imitation of the bond between mother and young.

### Your cat's reflexes

The reason that cats are known to always fall on their feet is the great reflexes they have to right themselves when they fall, also helped by their tail as a counterbalance. Developed when they're kittens, the 'righting' reflex if they're falling starts from the head, which rotates until it's upright. Their front

legs come up to protect their face, their spine twists so their body is in line and then their back legs brace for impact. Just before they land, all four legs stretch towards the ground and their back arches to reduce the force of the impact. To us it seems like a casual thing but if you were to watch in slow motion, it's truly an amazing feat.

### Your cat's tail

A cat's tail contains roughly 10% of the total amount of bones in their body, as well as muscles ligaments and nerves. Apart from being used as a balancing aid

when they're walking along narrow pathways and garden fences, it also communicates your cat's moods and feelings. 🐾

