

# Equine

## SMELL

# senses

Your horse's sense of smell puts that of a human to shame. Vet Sophie Wilkinson from Fellowes Farm Equine Clinic explains why it plays such an important role in his everyday life

**W**hen your horse gently sniffs you, exhaling warm breath on your skin, his whiskers tickling, it always feels like a special moment – sniffing like this helps him to recognise people and other horses. But that's not all, among other things it can also save his life – enabling him to detect the presence of predators and preventing him from eating something potentially dangerous.

Because your horse's sense of smell is so important to him, it is highly developed and far more acute than ours, however, it's not quite as sensitive as that of a dog. The area of the body used for smelling is called the olfactory system, and the surface area of this system is, on average, 100 times greater in horses than in humans.

### Our expert



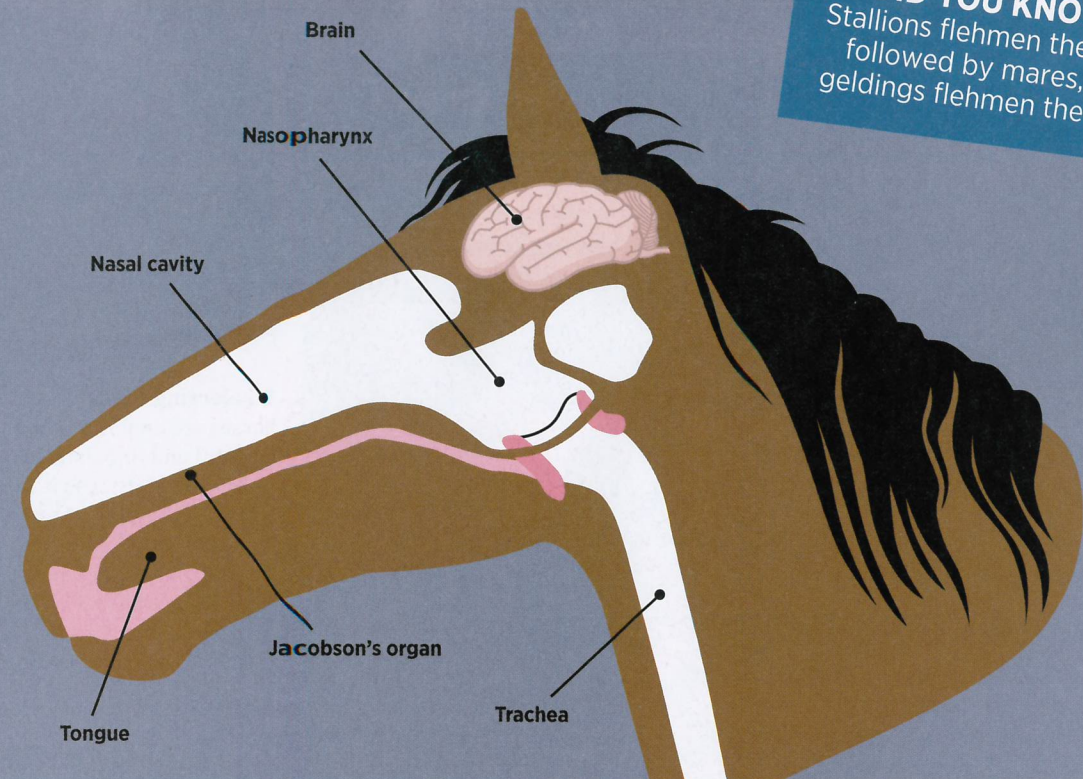
**Sophie Wilkinson**  
BVetMed MRCVS joined Fellowes Farm Equine Clinic, a member of XLEquine, in 2014. She has a particular interest in equine lameness and surgery.

### DID YOU KNOW?

The Jacobson's organ is named after Ludvig Jacobson, a Danish anatomist who first described them in 1813.

### The equine olfactory system

Your horse's olfactory system consists of the structures he uses for his sense of smell.



**DID YOU KNOW?**  
Stallions flehmen the most, followed by mares, and geldings flehmen the least.

The **nostrils** contain cartilage that enables your horse to flare them so he can take in more air when needed, which will intensify the smell of anything he's investigating.

The **nasal cavity** is large and long, and has a big surface area for detecting smells. The mucous membranes covering the upper part of the nasal cavity are packed with millions of olfactory receptors – specialised nerve cells – that analyse scents. These receptor cells have microscopic tufts of hair sticking out of them that interact with odour molecules as they are inhaled. Sniffing provides

more contact between the odour molecules and the receptor cells, allowing more time for the smell to be analysed. Once the olfactory receptors have detected an odour, they produce nerve impulses that travel along the olfactory nerves to the olfactory bulbs.

The **olfactory bulbs** are two areas of the brain that are responsible for identifying smells – the left olfactory bulb is connected to the olfactory receptors in the left nostril, and the right olfactory bulb to the receptors in the right nostril. The olfactory bulbs sit at the front of the cerebrum. ➤

### All the better to smell you with

Unlike humans, your horse has an additional structure for smelling that is specially designed to detect pheromones – chemical signals that are produced and excreted by the body – called the vomeronasal organ or, more commonly, the Jacobson's organ. It is a tubular structure lined with a mucous membrane that contains olfactory receptor cells, and it sits in the floor of the nasal cavity.

When your horse curls his top lip, he is performing what is known as the flehmen response. This directs the pheromones into the Jacobson's organ and prevents more air entering the nostrils while he registers the pheromones.

**DID YOU KNOW?**  
Wild equidae can smell the blood of freshly dead animals up to two miles away.

## The role of equine smell

Your horse's sense of smell, as in most animals, has far more important and wide ranging roles than yours, including...

- **marking territory** Both urine and faeces can be used as territorial markers, and stallions tend to pile up their manure, which contains lots of pheromones, to notify other stallions that it is his turf. You'll notice that your horse will often sniff the droppings of other horses.

- **detecting the presence of predators** Horses sniff the air to pick up the scent of potential predators. They are even able to detect their proximity.

- **preparing for mating** Mares in season frequently pass small amounts of urine, which contains secretions and pheromones that alert the stallion that she is receptive. In this situation, the stallion will perform the flehmen response to trap the mare's pheromones in his Jacobson's organ.

### DID YOU KNOW?

Artificially drying a new foal can interfere with the bonding process and lead to the mare rejecting it.



- **selecting food and water** Because horses are unable to vomit to remove harmful and unpalatable feedstuffs from their body, it's vitally important that they're sure food and water are safe for them to consume beforehand. Their exceptional sense of smell allows them to do this and is the reason why your horse is not easily fooled when you try to disguise medication in his feed.



- **greeting** Horses often sniff when they interact to take in the other animal's smell – for example, they sniff noses when they meet and will often sniff your hand when you hold it out to greet them.

- **bonding after the birth of a foal** When a foal is born, the mare will usually smell the birthing fluids and placenta, and it's common for this to trigger her flehmen response. She will then spend a significant amount of time smelling and licking her new arrival. This enables mare and foal to bond and become familiar with each other's scent, which will help them recognise each other in the herd. When a surrogate mare takes on an orphan foal, the foal is often covered in the dead foal's skin so that the mare recognises the foal to be hers. ■

### DID YOU KNOW?

Leading your horse around a new home or field and letting him sniff his way around will help him get to know his new surroundings and settle better.