Nervous System & Special Senses

The nervous system manages how the body works and reacts to its surroundings. The senses like sight, hearing, smell, taste, and touch differ among species based on what they need for living and survival.

Central Nervous System (CNS)

Dogs and cats have unique abilities due to their brain structures. Dogs have a highly developed olfactory bulb, which makes them great at tracking scents. Cats have strong reflex pathways that give them excellent balance and agility. Horses have a large cerebellum, helping them coordinate their movements. They are also very sensitive to stress and have a nervous system adapted for quick flight responses. Cattle and sheep are herd animals that focus on grazing and group safety, with limited fine motor skills. Birds have large optic lobes for seeing but small olfactory bulbs, meaning they usually have a poor sense of smell.

Peripheral Nervous System (PNS)

The nervous system controls voluntary and involuntary actions. Dogs and cats have well-developed motor and sensory nerves that help them in hunting and being agile. Horses have extensive sensory nerves in their skin and limbs, enabling balance while running. Birds are adapted for coordinating flight and perching.

Special Senses

Vision

Dogs have good motion detection but limited color vision. Cats have excellent night vision because of a special eye layer. Horses can see almost all around them but have limited front vision. Cattle struggle with depth but can see widely to spot predators. Birds generally have great vision, with some seeing ultraviolet light, and hawks and eagles have much better resolution than humans.

Hearing

Dogs can hear up to 45 kHz. Cats can detect even higher frequencies, up to 64 kHz, aiding in hunting rodents. Horses and cattle have mobile ears that can detect the direction of sound. Birds have decent hearing, though less developed than their vision, while owls have asymmetrical ears for precise sound localization.

Smell

Dogs have an extraordinary sense of smell, up to 100,000 times more sensitive than humans. Cats also have a strong sense of smell but less than dogs. Horses and cattle have a moderate sense of smell, which helps in social interactions. Birds typically have a weak sense of smell, but vultures are an exception, as they have a keen sense to detect carrion.

Clinical Relevance

Dogs are prone to epilepsy, spinal cord injuries, and deafness. Horses often exhibit head-shy behavior due to vision and nervous sensitivity. Cattle can be affected by listeriosis and polioencephalomalacia, which impact the central nervous system. Birds frequently experience vision-related injuries and central nervous system infections.