

Central nervous system (CNS)

Brain and spinal cord

Peripheral nervous system (PNS)

Spinal and cranial nerves

Communication between CNS and the rest of the body

Afferent fibres

Sensory

Conduct impulses from receptors present in different tissues and organs to CNS

Efferent fibres

Motor

Conduct regulatory impulses from CNS to the effector tissues or organs

Somatic nervous system (SNS)

Relay of impulses from CNS to skeletal muscles (voluntary)

Autonomic nervous system (ANS)

Relay of impulses from CNS to organs (involuntary) and smooth muscles

Sympathetic nervous system

A division of ANS

Unfavourable condition, 'fight or flight' response

Parasympathetic nervous system

A division of ANS

Favourable condition, 'feed and breed' then to 'rest and digest' responses

Nissl's granules

Granular body present in the cyton (soma or cell body) and dendrites of a neuron. Absent in the axon

They possess RER and free ribosomes and are a site of protein synthesis

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| <p>Axon</p> | <p>Long fibre, branched terminally</p> <p>Transmits signal away from the cell body</p> <p>Synaptic knob- bulb-like nerve endings of axon terminals, contain neurotransmitters</p> |
| <p>Myelinated axon</p> | <p>Myelin sheath made up of Schwann cells encloses the axon</p> <p>Nodes of Ranvier- gap between two successive myelin sheaths</p> <p>Present in spinal and cranial nerves</p> |
| <p>Non-myelinated</p> | <p>Myelin sheath does not enclose the axon</p> <p>Present in autonomous and somatic nervous systems</p> |

Multipolar neurons

Contain- 1 axon and 2 to many dendrites

Integration of information from many neurons

Present in- Cerebral cortex

Bipolar neurons

Contain- 1 axon and 1 dendrite

Transmission of sense

Present in- eye retina, olfactory epithelium, vestibulocochlear nerve, etc.

Unipolar neurons

Contain only 1 axon

Present in the cells at the embryonic stage

Cranial meninges

The protective covering of the brain, triple-layered

Outer- dura mater
Middle- arachnoid
Inner- pia mater

Forebrain (Prosencephalon)

Cerebrum- controls vision, hearing, speech, intelligence, voluntary actions

Thalamus- coordinates sensory and motor signals to the cerebral cortex

Hypothalamus- controls body temperature, eating, drinking

Midbrain (Mesencephalon)

Cerebral aqueduct

Corpora quadrigemina

Forms brain stem with the hindbrain (pons and medulla oblongata)

Hindbrain (Rhombencephalon)

Cerebellum- coordinates motor movements and precision, balance, posture, etc.

Pons- A fibre tract and interconnects different parts of the brain

Medulla oblongata- regulatory centre for respiration, cardiovascular reflexes and gastric secretion

Limbic system

The inner part of the cerebral hemisphere and associated structures such as the amygdala, hippocampus, etc.

Along with hypothalamus, they regulate sexual behaviour and emotions

Corpus callosum

A tract of nerve fibres connecting the two cerebral hemispheres

Polarised state

The potential difference across the axonal plasma membrane at resting stage, i.e. -50 to -75 mV

The membrane is more permeable to K^+ than to Na^+

Outer- positive
Inner- negative

Depolarised

Reversal of polarity on the application of a stimulus

The membrane becomes freely permeable to Na^+ resulting in a rapid influx of Na^+ ions

Outer- negative
Inner- positive

Sclera

The outer layer of the eye

Made up of dense connective tissue

Anterior portion- cornea

Choroid

The middle layer of the eye

Vascular layer have blood vessels and appear bluish

Anterior portion- forms ciliary body and iris

Iris

The visible coloured portion of the eye

Regulates the diameter of the pupil

Pupil

Lens aperture and surrounded by the iris

Retina

The inner layer of the eye

Contains three types of cells: photoreceptor, bipolar and ganglionic

Rods

Responsible for twilight or scotopic vision

Contains rhodopsin photopigment (derivative of vit A)
retinal- aldehyde of vit A
opsin- protein

Cones

Responsible for daylight or photopic and colour vision

Contains pigments sensitive to red, blue and green light

Blindspot

The region in the retina without photoreceptor cells, where optic nerves exit

Fovea

A central pit in the macula of the retina

Densely packed cones are present

Provides the greatest resolution

Aqueous humour

Thin watery fluid present between the cornea and the lens

Vitreous humour

The transparent gel, filled between the lens and the retina

Ear ossicles

Present in the middle ear

Malleus- hammer-shaped attached to the tympanic membrane

Incus- anvil-shaped attached to the other two ossicles

Stapes- stirrup, the smallest bone, attached to oval window

Eustachian tube

Connects the cavity of the middle ear to the pharynx

Equalises pressure across the eardrum

Labyrinth

The fluid-filled inner ear

Bony labyrinth- filled with perilymph

Membranous labyrinth- filled with endolymph

Cochlea

Coiled portion of the bony labyrinth, auditory organ

Scala vestibuli- opens in the oval window

Scala media- filled with endolymph

Scala tympani- opens in the round window (middle ear)

Present on the basilar membrane

Organ of Corti

Contains hair cells- auditory receptors, afferent nerves at the base

Stereocilia- at the apical part of each hair cells, are covered by the tectorial membrane

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| <p>Vestibular apparatus</p> | <p>Equilibrium organ present in the membranous labyrinth</p> <p>Contains 3 semicircular canals and otolith organs (sacculle and utricle)</p> |
| <p>Crista ampullaris</p> | <p>Projecting ridge present at the base of canals (ampulla)</p> <p>Contains hair cells</p> <p>Responsible for dynamic equilibrium</p> |
| <p>Macula</p> | <p>Projecting ridge in sacculle and utricle</p> <p>Sensory receptors are present here</p> <p>Responsible for static equilibrium</p> |

Otoliths

Statoconium or statolith

Calcium carbonate crystals
in saccule and utricle

Play role in spatial
orientation

