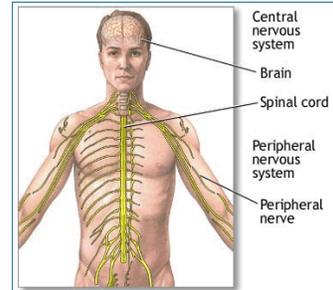


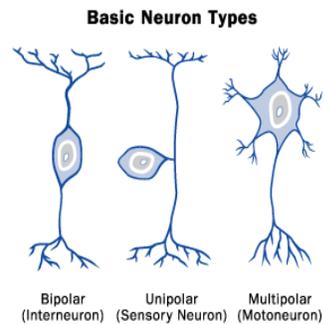
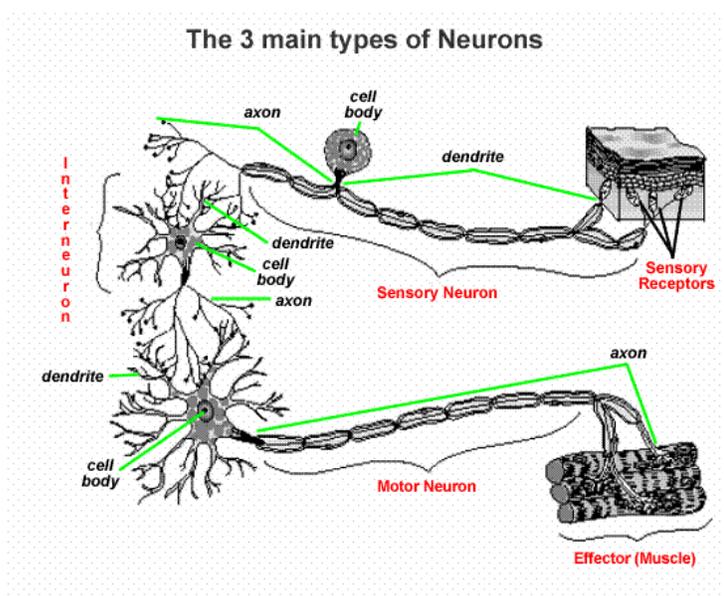
1. The Nervous system consist of :

- **Central Nervous System (CNS):** the brain (receive, interpret and generate nerve impulses) and the spinal cord (transmit nerve impulses to and from the brain).
- **Peripheral Nervous System (PNS):** the Cranial nerves from the brain, the Spinal nerves from the spinal cords and the sense organs.
- The nervous system help organism to adjust rapidly to changes in the environment & to enable the various parts to co-ordinate with one another.



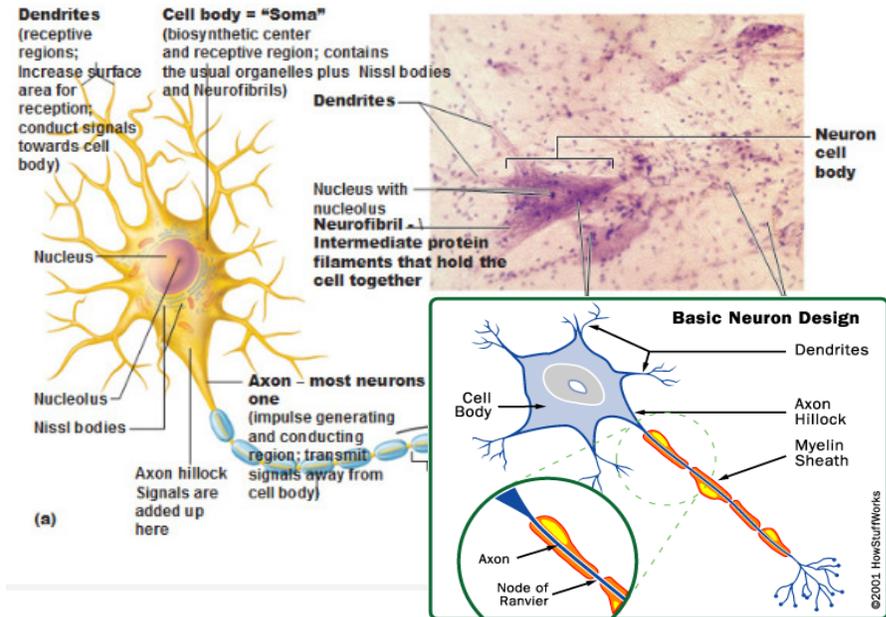
2. Nervous tissues consist of :

- **Sensory neurons:** transmit nerve impulse from receptors (sensing organ) to the CNS.
- **Motor neurons:** transmit nerve impulse from CNS to the effectors.
- **Relay neurons:** transmit nerve impulse from sensory neurons to motor neurons.

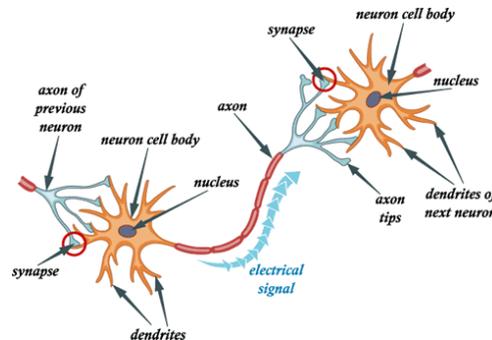


3. Structure of Motor Neurons

- **Dendrites:** receive nerve impulses from other neurons.
- **Cell body:** with nucleus to control cell activity.
- **Axon:** transit impulse away from cell.
- **Myelin shield:** electrically insulate the axon.
- **Node of Ranvier:** allow nerve impulse to jump from node to node speeding up the transmission.
- Dendrites of an axon: transmit nerve impulse to effector.
- **Motor end plate:** connecting the axon dendrite to the muscles.



4. **Synapse:** is the junction between a neuron with another neuron or with an effector such as a muscle or a gland. The nerve impulses are transmitted a tiny space by certain chemicals called neurotransmitter.



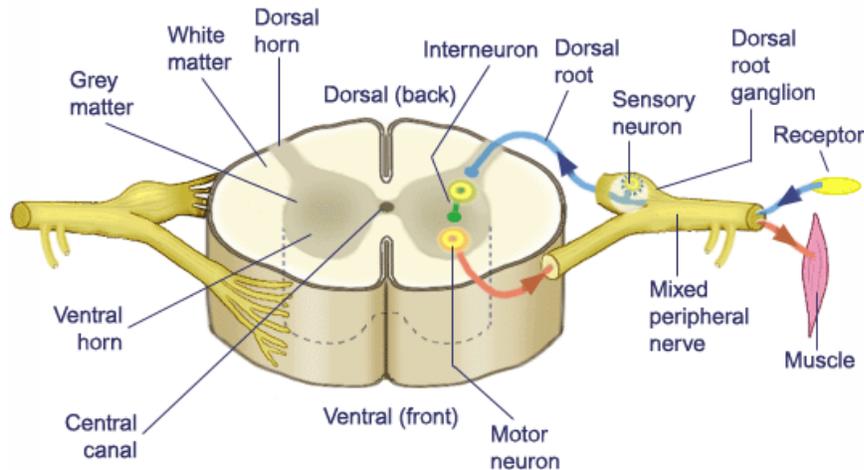
5. **Grey matter and White matter**

- **Grey matter** consists mainly of the cell bodies of the neurons. It forms the outer layers of the brain and the central parts of the spinal cord.
- **White matter** consists mainly of the nerve fibres. It forms the central parts of the brain and the outer layer of the spinal cord.
- **A Nerve** is a bundle of nerve fibres or neurons enclosed in a sheath of connective tissue. Spinal nerve contains a mix of fibres from motor neurons and sensory neurons.

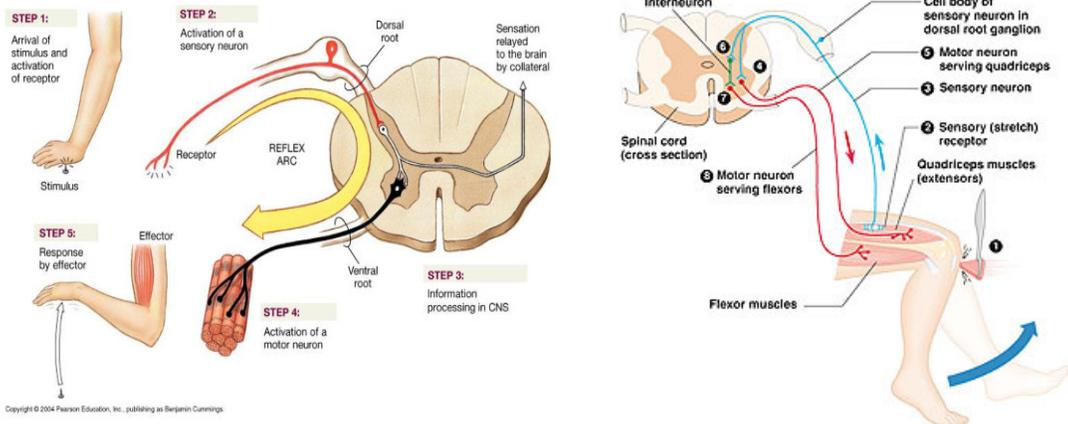
6. **Structure of the Spinal Nerve**

- **Dorsal root:** contain sensory neurons only connected to dorsal part of the spinal cord.
- **Dorsal root ganglion:** where the cell bodies of the sensory neurons are clustered together.
- **Grey matter:** contains the relay neurons to transmit the nerve impulse to/from the brain. It also contains the cell body of motor neurons. The relay neurons also connected the motor neurons and sensory neurons for some reflex loops.
- **Ventral root:** contain motor neurons only and connected to ventral part of the spinal cord.

- **Spinal nerve:** Contains both the dorsal root and the ventral root. As it leaves the spinal cord, it subdivides into branches supply fibres to various parts of the body.
- **Neurons separate:** where the motor neuron and sensory neurons separated. Motor neuron goes the effectors whereas the sensory neuron connected to receptors.



7. **Reflex actions:** an immediate (Involuntary) response to a specific stimulus without conscious control.



- **Reflex arc:** is the shortest pathway by which nerve impulses can travel from the receptor to the effector.
- **Spinal reflexes** are controlled by the spinal cord. Eg hands or legs reflexes.
- **Cranial reflexes** are controlled by the brain and usually occur in the head region. Eg pupil reflex, blinking and salivation.