

lipid droplets (Fats)

- ❖ Happen by an accumulation of triglycerides and take spherical structures.
- ❖ Lipids storage in adiposities (fat cells, adipose tissue) also found around many vital organ like heart and kidney.

Glycogen

- ❖ Glycogen is storage unit of glucose within the cell in liver and muscles. It is found cluster together (in groups).
- ❖ Glycogen broken down into individual molecules of glucose and used in cellular respiration.

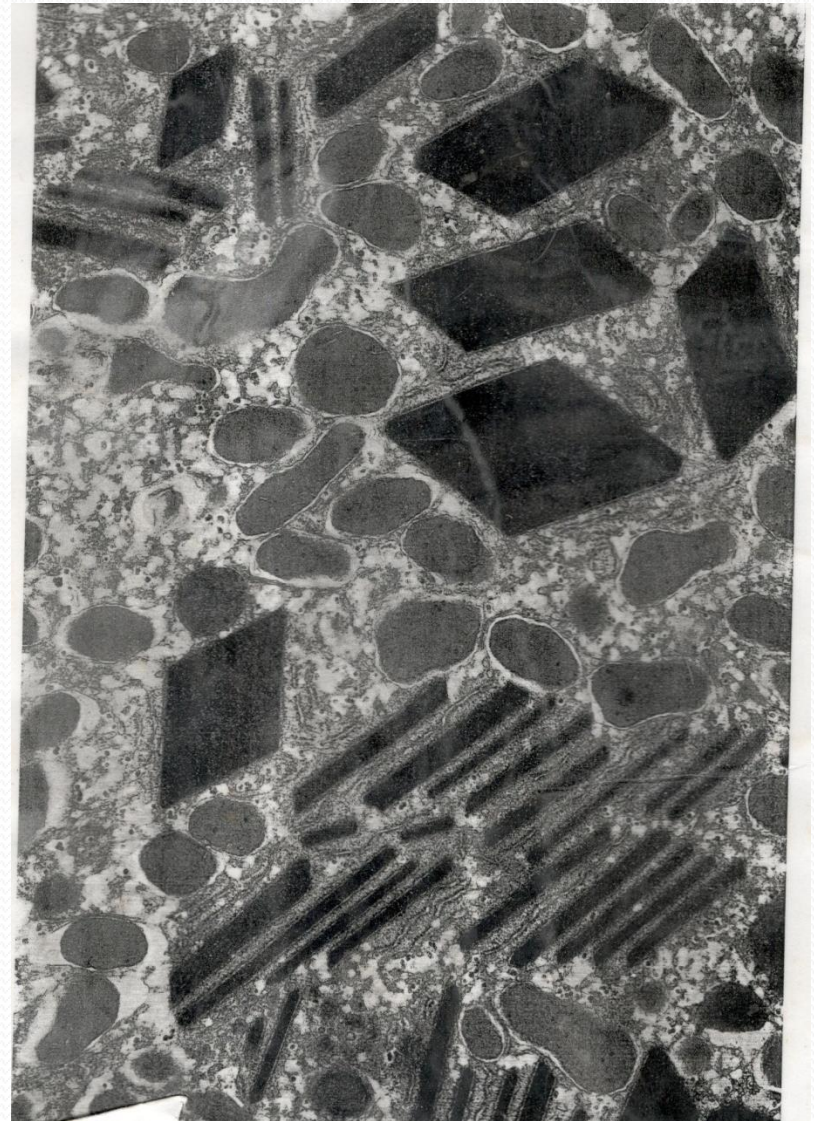
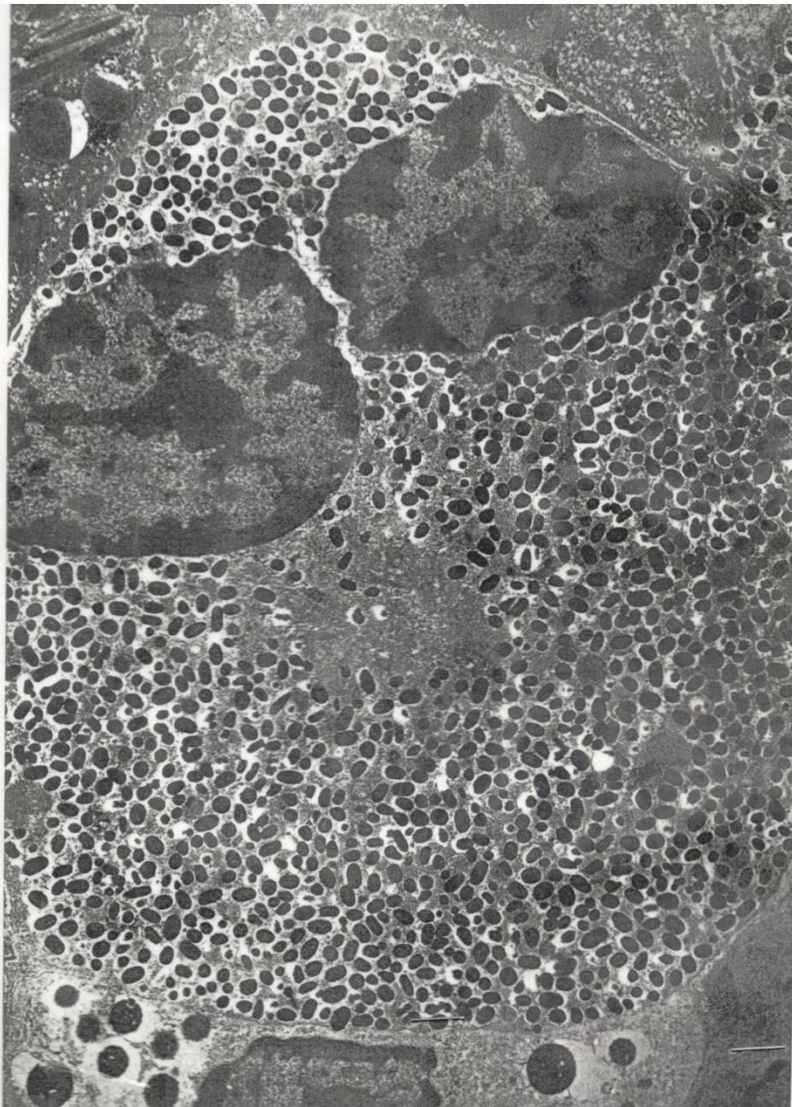


Pigments

- ❖ Pigment a substance that gives something a particular color. Found scatter (separated) in the cell.
- ❖ pigments such as melanin and hemoglobin.
- ❖ Melanin produced by specialized cells called melanocytes .
- ❖ Melanin give color of skin, hair and eye.
- ❖ Hemoglobin give color of red blood cells.

Crystals

- ❖ Crystals are another type of cytoplasmic inclusion found in many cells.
- ❖ Take geometric shapes
- ❖ Found in cells of the testis and inner ear (maintaining balance).
- ❖ Also consider as waste (Salts).



The Nervous System

Central Nervous System (CNS)

- brain
- spinal cord

Peripheral Nervous System (PNS)

- cranial nerves
- spinal nerves

Nerve cell

- ❖ Also called neuron.
- ❖ A type of cell that receives and sends messages(electrical signals) throughout nervous system.
- ❖ Neurons vary in size, shape, and structure depending on their role and location. However, nearly all neurons have three essential parts: a cell body, an axon, and dendrites.

Parts of a neuron

1-Cell body

- ❖ Also known as a soma. The cell body contains genetic information, maintains the neuron's structure, and provides energy to drive activities.
- ❖ Cell bodies contains a nucleus and specialized organelles. It's enclosed by a membrane that both protects it and allows it to interact with its immediate surroundings.

2-Axon

- ❖ An axon is a long, tail-like structure.
- ❖ It joins the cell body at a specialized junction called the axon hillock.

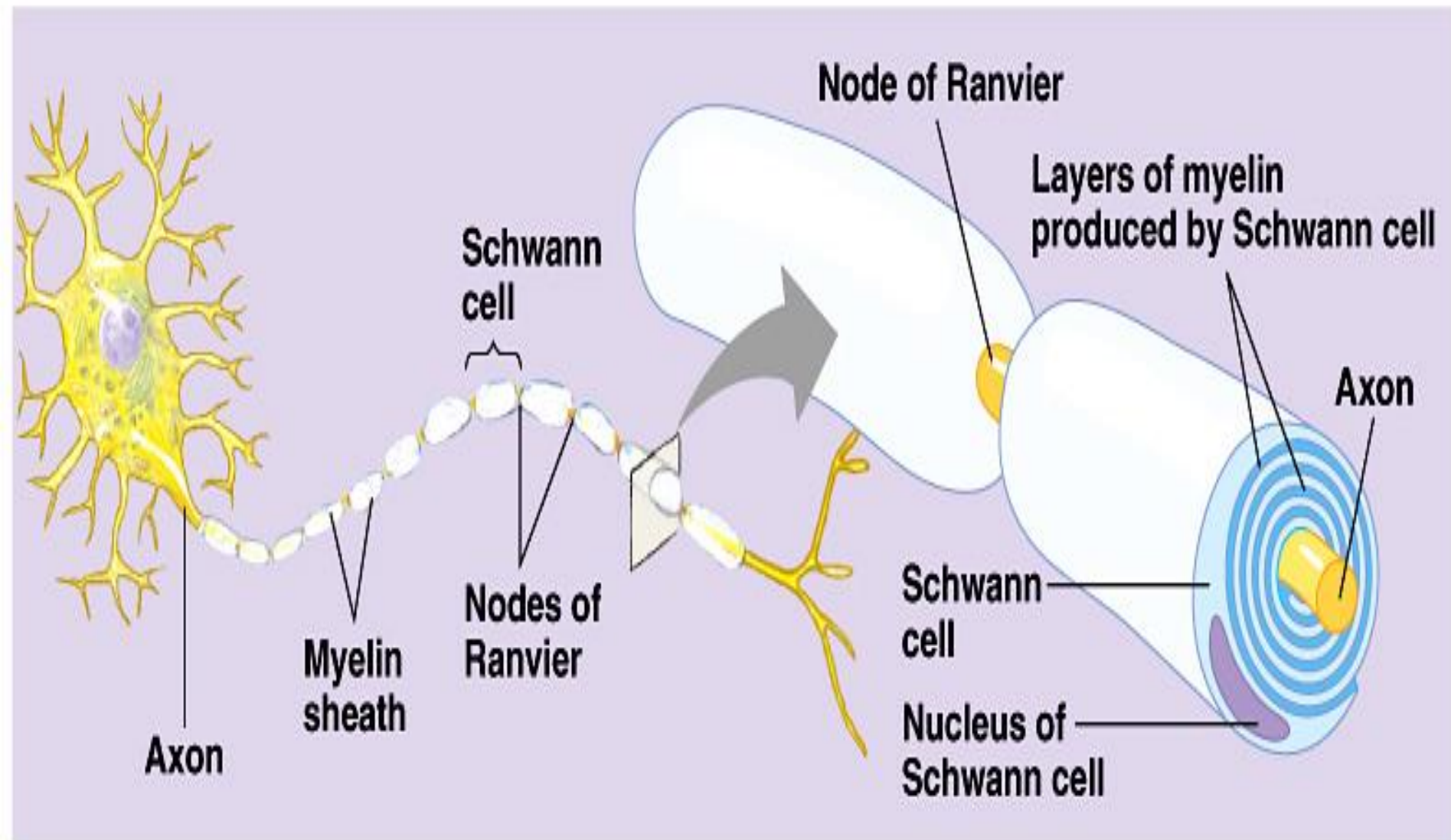
- ❖ Many axons are covered by fatty substance called myelin.

Myelin helps axons to conduct an electrical signal.

- ❖ Neurons usually have one main axon.

3-Dendrites

- ❖ Dendrites are fibrous roots that branch out from the cell body.
- ❖ Dendrites receive and process signals from the axons of other neurons.
- ❖ Neurons can have more than one set of dendrites, known as dendritic trees.



Types of neurons based on their function

1- Sensory Neurons

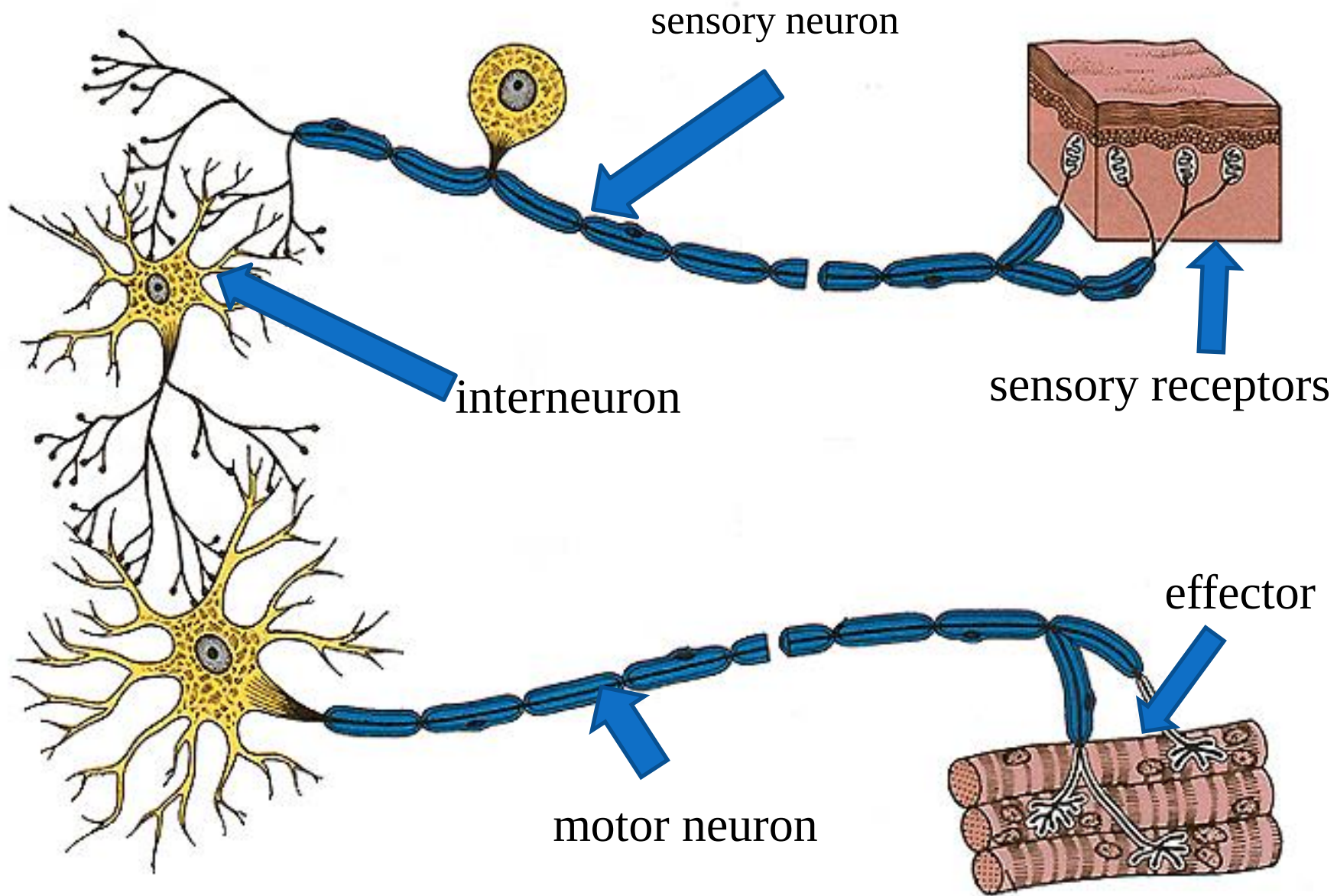
- ❖ Sensory neurons help us feel and explore the world around us. Major senses such as touch and pain can help us to move safely through the world.

2- Motor Neurons

- ❖ Motor neurons control the movement of the body. These neurons coordinate our muscles and ensure that our arms and legs move together.

3- Interneurons

- ❖ Interneurons are the most abundant neurons in the body. They act as the signal controllers within the body, relaying important information from one end of the nervous system to the other.



Types of neurons based on structure include:

1-Unipolar neurons:

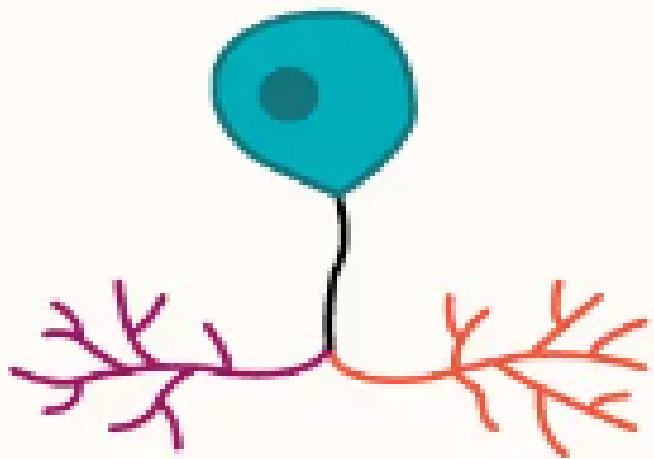
- ❖ These neurons have a single long axon that is responsible for sending electrical signals.

2-Multipolar neurons:

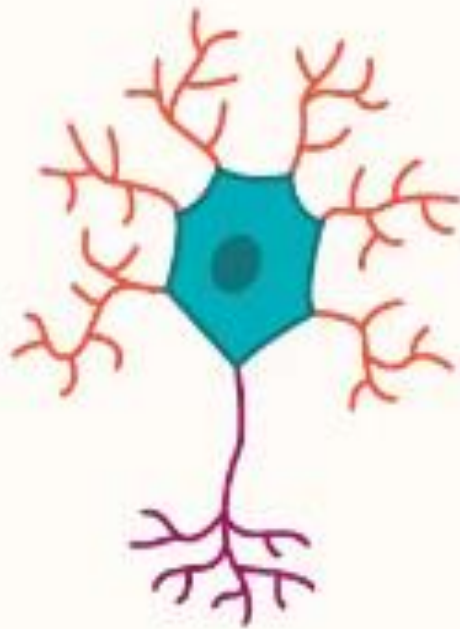
- ❖ These neurons are able to receive impulses from multiple neurons via dendrites. The dendrites transmit the signals through the neuron via an electrical signal that is spread down the axon.

3-Bipolar neurons:

- ❖ These neurons send signals and receive information from the world. Examples include the neurons in the eye that receive light and then transmit signals to the brain.



unipolar



multipolar



bipolar