CLASS X/ BIOLOGY
CONTROL AND COORDINATION

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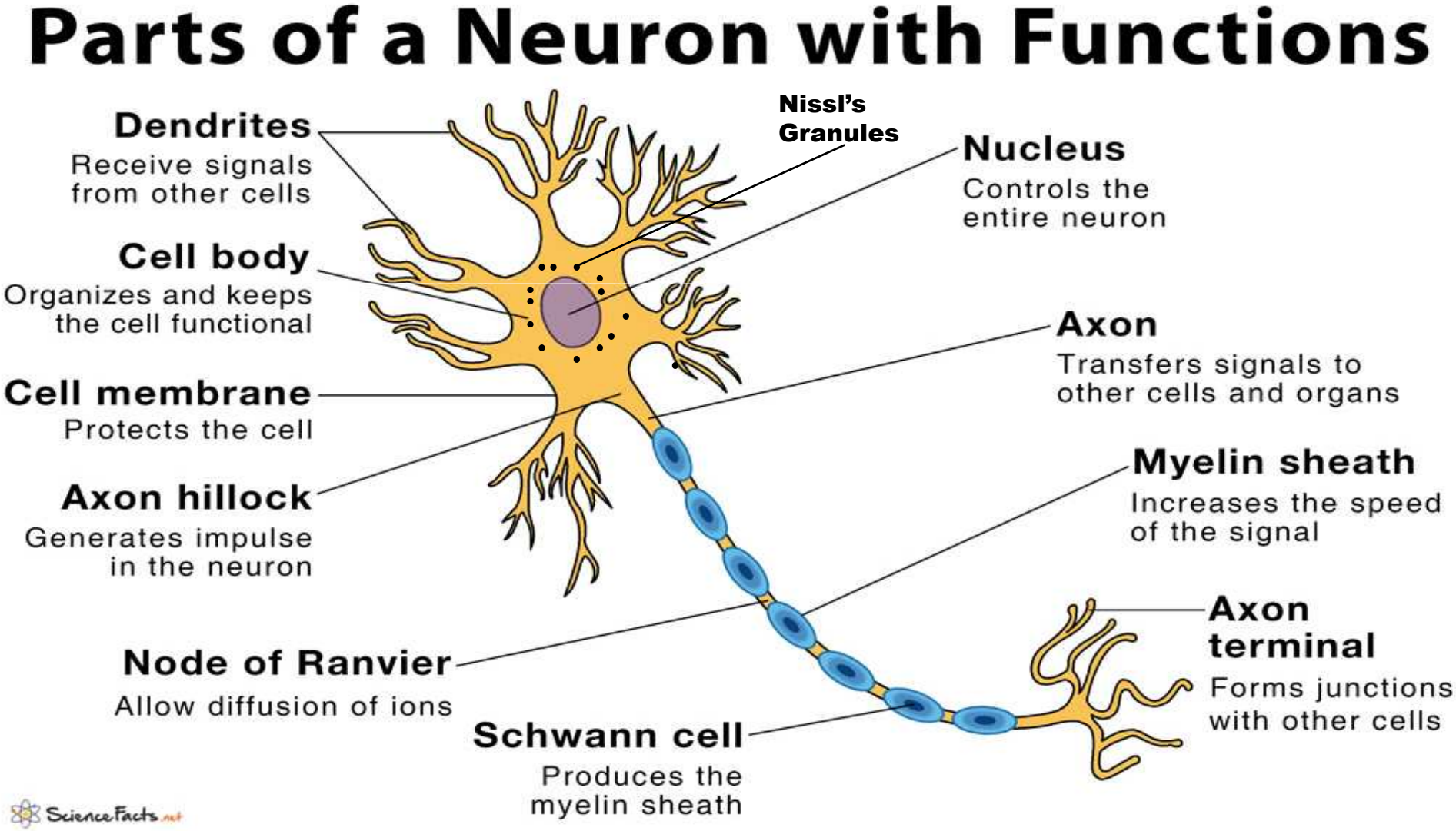
- **Nervous System in Human:**

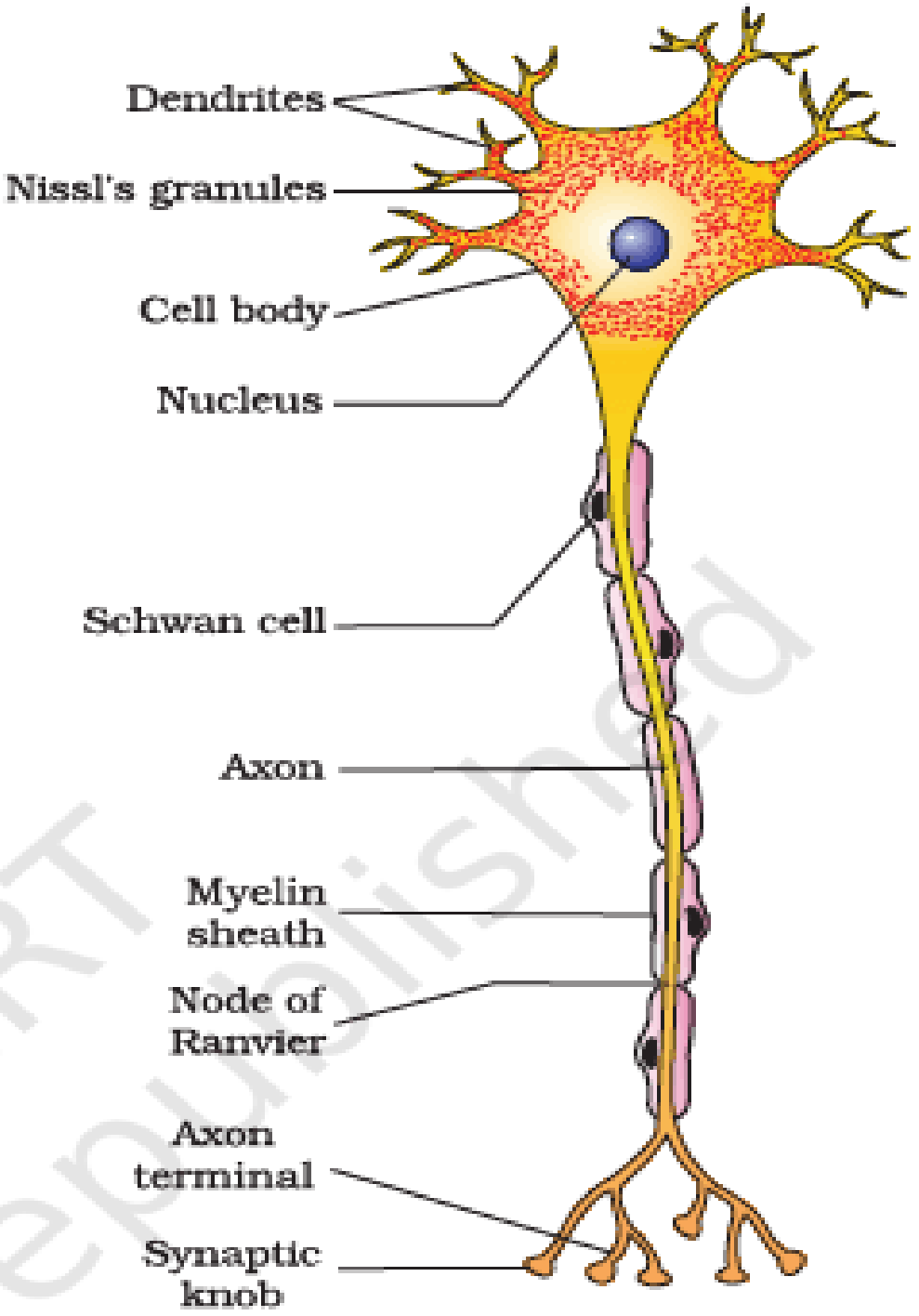
1. Central Nervous System (CNS)- Its includes the brain and spinal Cord
2. The Peripheral Nervous System (PNS) – CNS is connected to the various parts of the body by the peripheral nervous system. Its includes 12 pars of cranial nerves and 31 pairs of spinal nerves from the spinal cord.
3. The Autonomic Nervous System (ANS) – This system is connected with the PNS. Its regulate the activities of all body organs

UNIT OF NERVOUS SYSTEM: NEURON

Neuron: Neuron are the structural and functional units of a nervous system. They connect the receptors and effector organ with each other. Impulses of receptors run through neurons. It is the largest cell present in the human body.

Draw the structure of Neuron, describe and explain its function





STRUCTURE OF NEURON:

CYTON

➢Each neuron consist cell body called cyton. An a number of branches arises from the cyton.

➢Cyton contains a nucleus within the cytoplasm, Nissl's granules formed of RNA and find thread like fibres called Neurofibrils.

Two types of nerve fibres are found in a neuron:

i) **Dendrites** – These are short and several, much branched, contain Nissl's granules .They carry the impulse towards the cyton.

ii) **Axon** – ♦It is large single and unbranched

♦It does not contain **Nissl's granules**

♦It carries impulses from the cyton to effector organ.

♦It cytoplasm is called **axoplasm** having neurofibrils

ii) Axon - ♦ Axis cylinder is enclosed in a thin permeable membrane called **axolemma or nerve membrane**.

♦Outside the axolemma is found a layer called **myelin or medullary sheath**

♦ Such fibres called **myelinated (medulated) fibre**

♦ Nerve fibres lacking myelin sheath are called **non myelinated**

♦ Myelin in interrupted at regular interval by circular constrictions, called **nodes of Ranvier.**

♦ The part of nerve fibre between two nodes is called **internode**

♦Terminal branches of axon are called **telodendria**

♦ Each telodendron ends in a swollen knob called **synaptic knob or terminal button.**

♦ Synaptic knob of one nerve fibre form synapse with the dendrites of another neuron.

What is Synapse?

Synapse is a very fine gap between two neurons.

Functions of Neurons:

The information acquired at the end of the dendritic tip of a neuron sets of a chemical reaction which creates and electrical impulse. This impulse travels from the dendrite to the cyton along with the axon of its ends. At the end of axon, the electrical impulse sets off the release of some chemicals which cross the synapse and start a similar chemical impulse in a dendrite of the next neuron. In this way nerve impulse travel in the body from one neuron to another till it reaches the brain or the target organ.

What are nerve impulses?

The information passing through the neuron in the form of chemical and electrical signals are called nerve impulses.

Types of Neurons:

Neurons are of two types:

1. **Sensory:** It transmit impulses from sensory organ to the central nervous system.
2. **Motor:** It carry impulses from the brain and spinal cord to effector organ.
3. **Association:** Sensory and Motor neurons form a synapse with each other in the brain and spinal cord through association neuron.