CLASS 10TH MID TERM

SCORE BOOSTER

CONTROL AND COORDINATION

- ONE SHOT

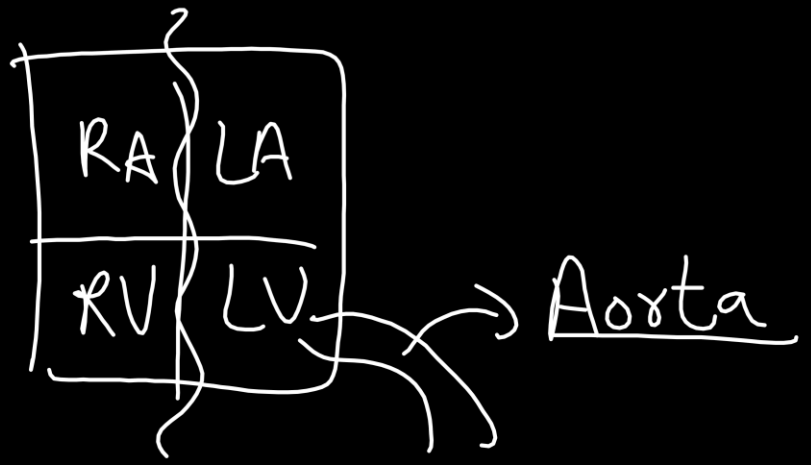
BIOLOGY

Were You Able to Solve this?

Q1. Which blood vessel contains blood with these characteris

(a) Vena cava
(b) Pulmonary vein
(c) Aorta
(d) Pulmonary artery

Oxygen concentration	Carbon dioxide concentration	Pressure
High	Low	High



Were You Able to Solve this?

Q2

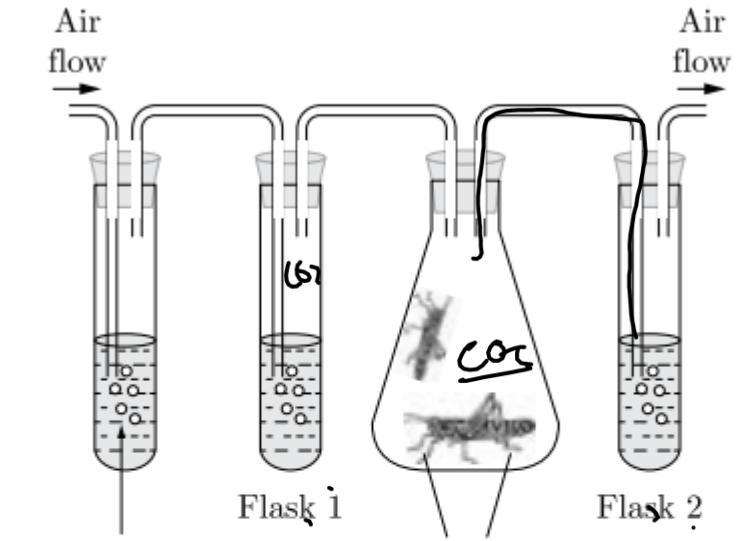
In photosynthesis, which substances are used up, which are produced and which are necessary, but remain unchanged after the reaction?

	Used up	**Produced**	**Remain Unchanged**
(a)	Water	Oxygen	Chlorophyll
(b)	Oxygen	Starch	Cellulose
(c)	Carbon dioxide	Water	Oxygen
(d)	Chlorophyll	Carbon dioxide	Water

Were You Able to Solve this?

Q3

An experiment is set up as shown. Flasks 1 and 2 contain lime water. Air is pumped through the flasks.

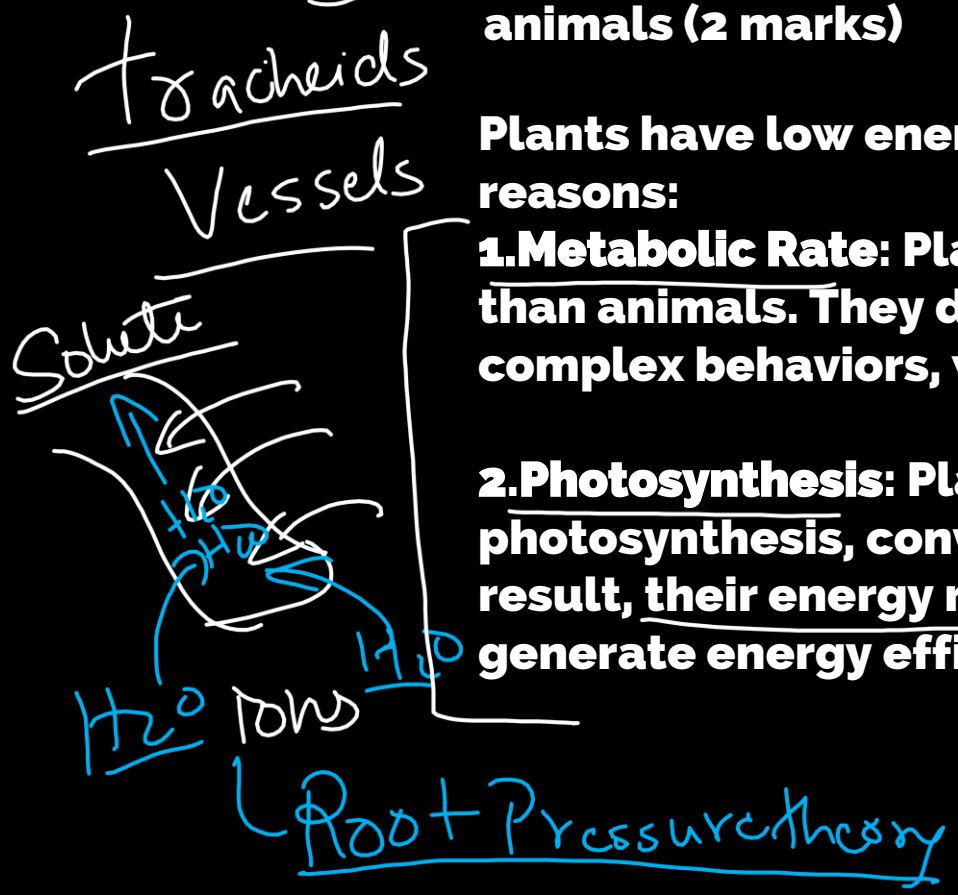


$CO_2 + Ca(OH)_2 \rightarrow CaCO_3$

What is the appearance of lime water in flasks 1 and 2 after a period of ten minutes?

	Flask 1	**Flask 2**
(a)	Clear	Clear
(b)	Clear	White/Cloudy
(c)	White/Cloudy	Clear
(d)	White/Cloudy	White/Cloudy

Were You Able to Solve this?



Q4.(a) Write two water conducting tissues present in plants. How does water enter continuously into the root xylem?
(b) Explain why plants have low energy needs as compared to animals (2 marks)

Plants have low energy needs compared to animals for several reasons:

1.Metabolic Rate: Plants generally have a lower metabolic rate than animals. They do not require energy for movement or complex behaviors, which are common in animals.

2.Photosynthesis: Plants produce their own food through photosynthesis, converting sunlight into chemical energy. As a result, their energy requirements are lower since they can generate energy efficiently from sunlight.

Your Roadmap to Success

Stay on track with a structured schedule that covers every essential topic you need for mid-term success. Each class is designed to reinforce core concepts and provide ample practice to ensure you're fully prepared. Follow the timetable, access class PDFs, and watch video lessons—all at your own pace. Your journey to acing the exams starts here!

13th Sept 2024

Topic	PDF	Link
Real Numbers		
Life processes		

Download the class PDF now ! link in the description.

Were You Able to Solve this?

Q5.Write three points of difference between respiration in plants and respiration in animals (3 marks)

Feature	Plants	Animals
Energy Source	Produces energy through photosynthesis and respiration	Obtains energy by consuming organic matter
Oxygen Requirement	Can perform respiration in the presence or absence of oxygen	Primarily requires oxygen for aerobic respiration
Respiratory Organs	No specialized organs; gas exchange occurs through stomata and lenticels	Specialized organs (lungs, gills) for gas exchange
Rate of Respiration	Generally lower rate due to lower energy demands	Higher rate, especially during physical activity

Were You Able to Solve this?

Q6.Explain the functions of kidney and the formation of Urine. (5 marks)

Functions of the Kidneys:

1.Filtration of Blood: Kidneys filter waste products, excess substances, and toxins from the blood.

2.Regulation of Blood Pressure: They help regulate blood pressure by controlling blood volume and releasing the enzyme renin.

3.Electrolyte Balance: Kidneys maintain the balance of electrolytes (sodium, potassium, calcium) in the body.

4.Acid-Base Balance: They help regulate the pH level of the blood by excreting hydrogen ions and reabsorbing bicarbonate.

5.Erythropoiesis Regulation: Kidneys produce erythropoietin, a hormone that stimulates red blood cell production in the bone marrow.

6. Vitamin D formation

Were You Able to Solve this?

Q6.Explain the functions of kidney and the formation of Urine. (5 marks)

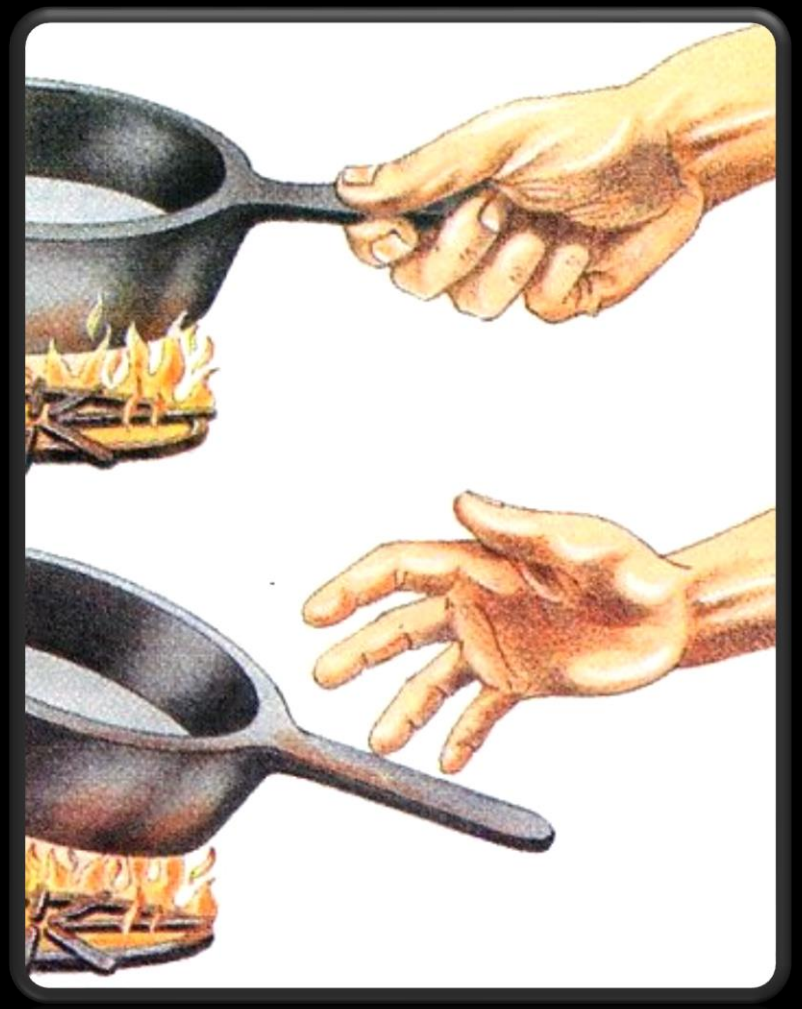
Formation of Urine:

1.Glomerular Filtration: Blood enters the kidneys through the renal artery, and in the glomerulus, water, ions, amino acids and glucose, urea are filtered out into the Bowman's capsule, forming filtrate.

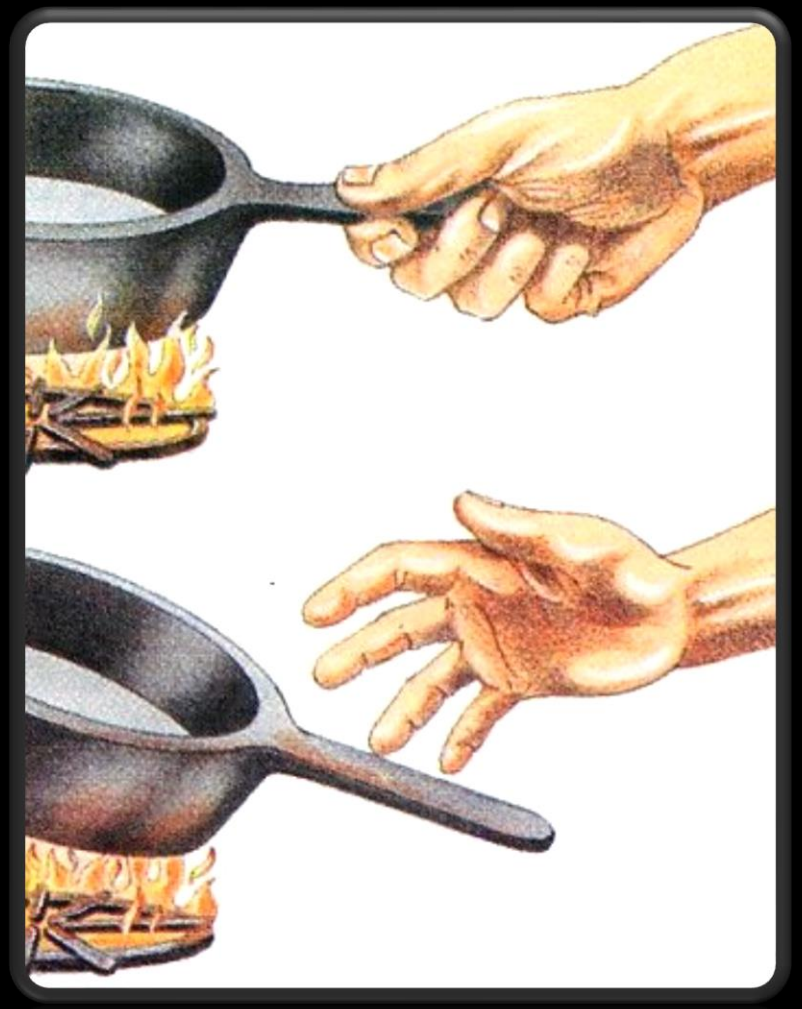
2.Tubular Reabsorption: As the filtrate passes through the renal tubules (mainly proximal convoluted tubule)essential substances (glucose, amino acids, water, and ions) are reabsorbed back into the bloodstream.

3.Tubular Secretion: Additional waste products and excess ions are secreted from the blood into the renal tubules, further concentrating the urine.

4.Excretion: The final urine, containing waste products and excess substances, is collected in the renal pelvis and transported to the bladder via the ureters for excretion.



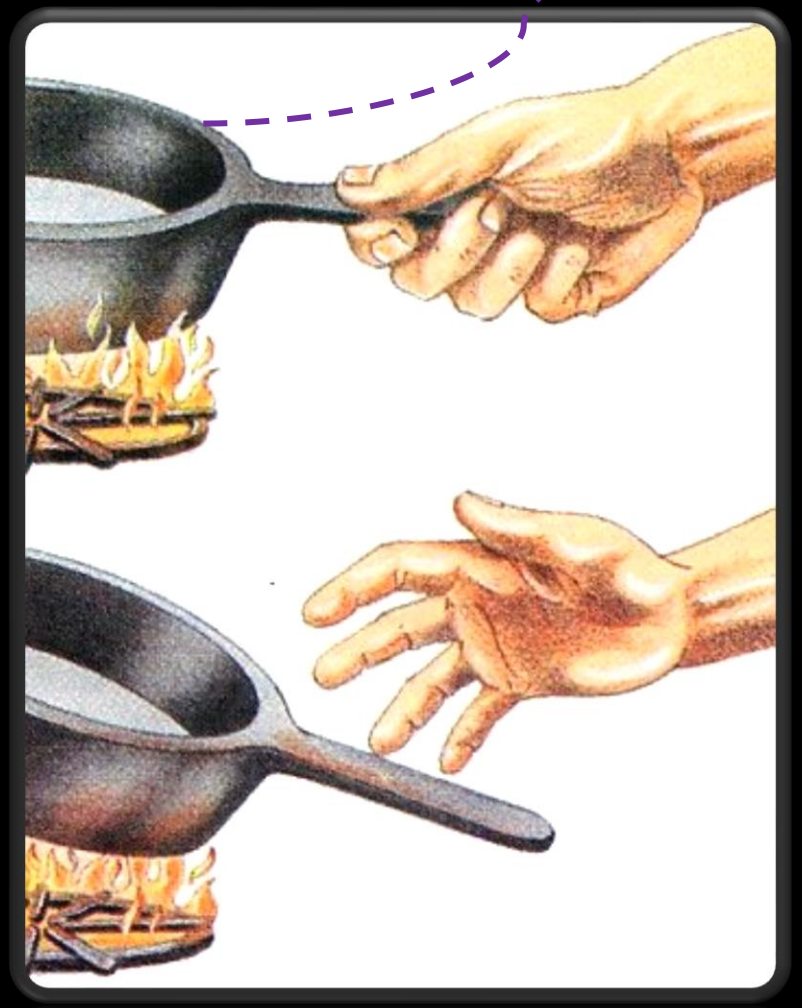
Why do we just take off our hands when we touch something hot?



Why do we just take off our hands when we touch something hot?

Reflex Action

Stimulus



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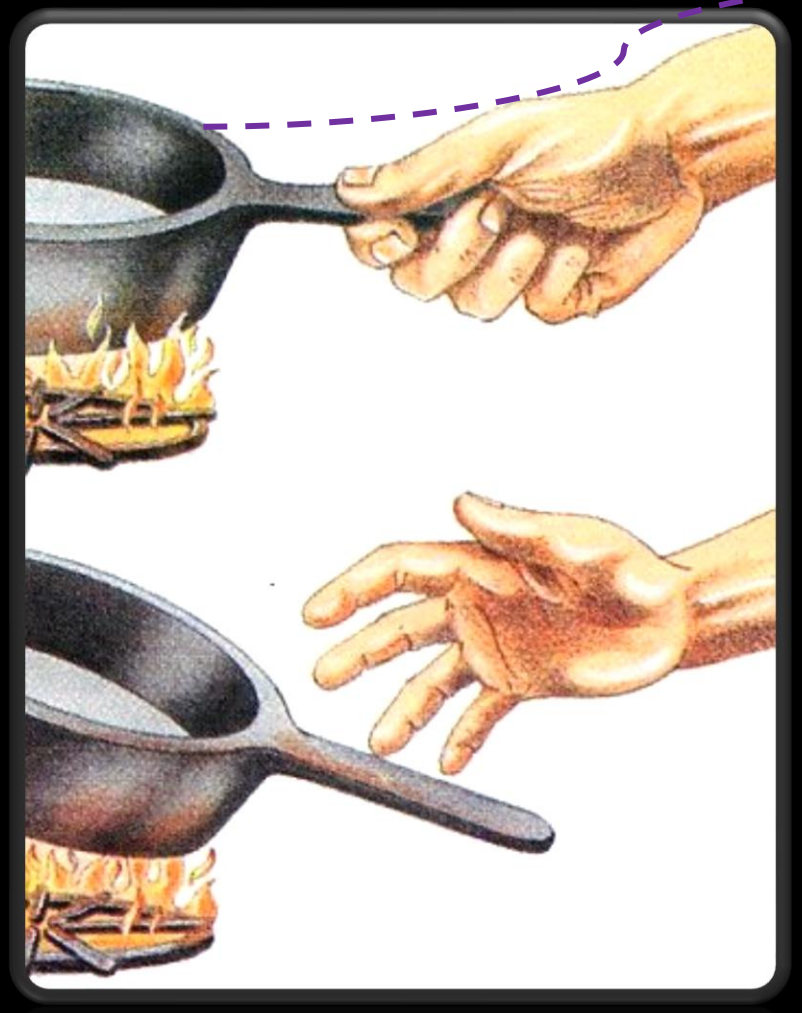
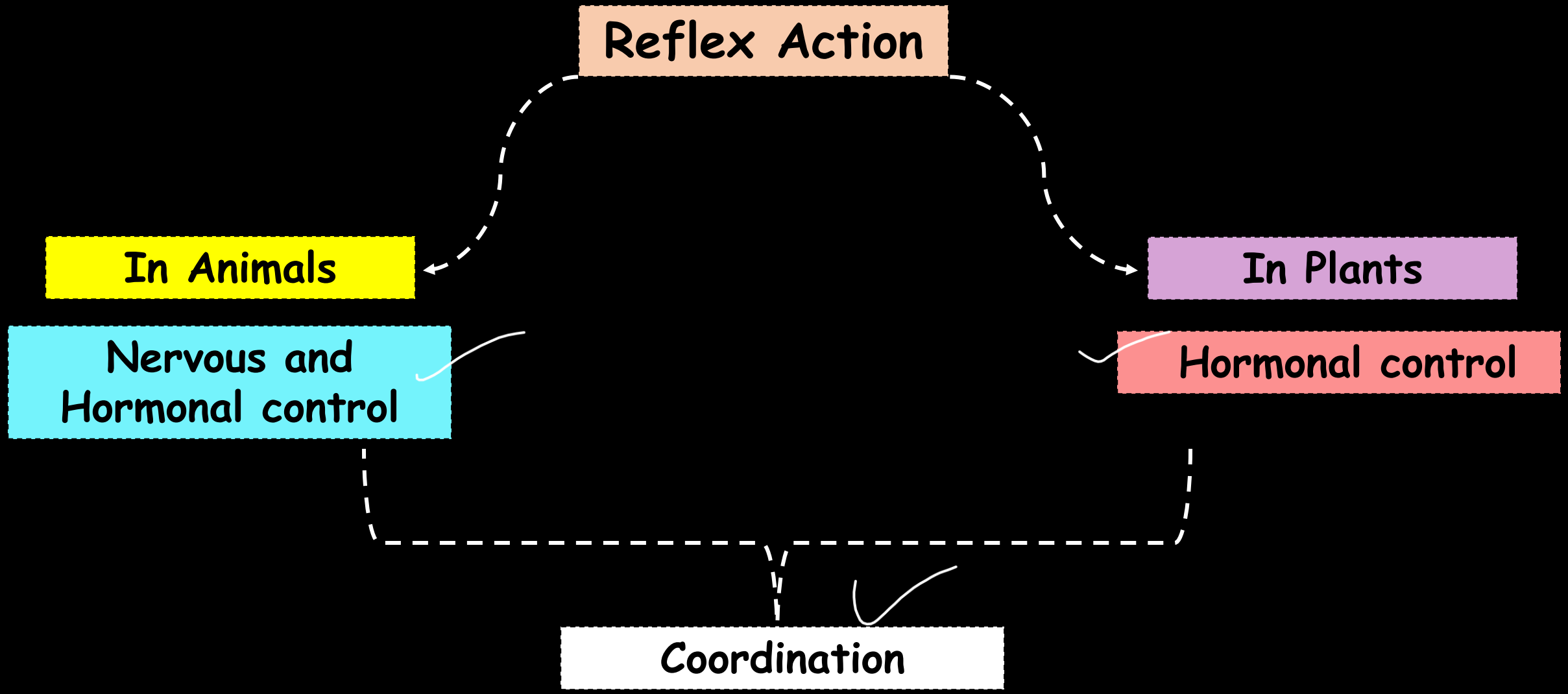
Reflex Action



Stimulus

The changes in the environment to which the organisms respond and react are called Stimuli.

hot



The working together of various parts of the body of an organism in a proper manner to produce a proper reaction to a stimulus is called coordination.

Control & coordination "Plants"

Do plants move?

Movements

- Nastic Movement
- Tropical movement
  - Tropic

Movements

Nastic Movement

- Here the direction of response is not determined by the direction of the stimulus.
- It is a non-directional movement
- It may or may not be growth movements

Movements

Thigmonasty

Thigmonastic movements are responses to touch or physical contact.

touch

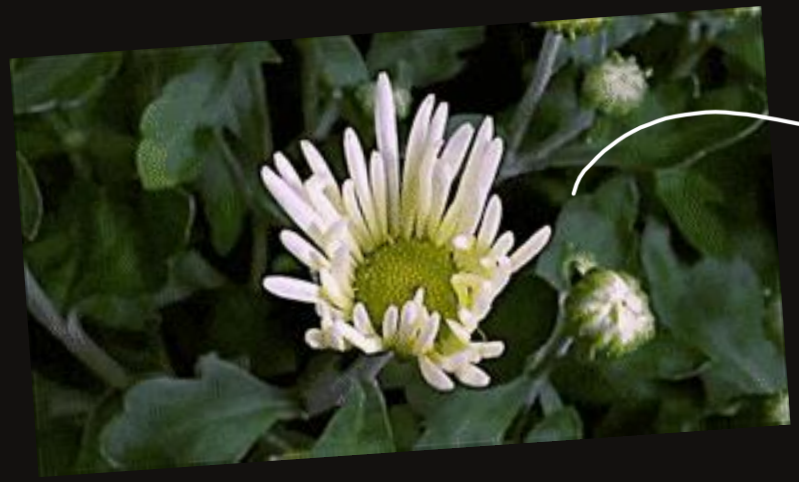
Mimosa pudica

touch me not

Movements

Photonasty

Photonastic movements are responses to light.



Daisy

Thermonasty

Thermonastic movements are responses to temperature

Rhododendron

Trivia time !

Sunflower shows Tropic movement or Nastic movement?

Movements

Tropical movement

- Here the direction of response is determined by the direction of the stimulus.
- It is a directional movement
- They include growth movements

Phototropism (Light)

Geotropism (Gravi- Gravity)

Chemotropism (Chemicals)

Hydrotropism (Water)

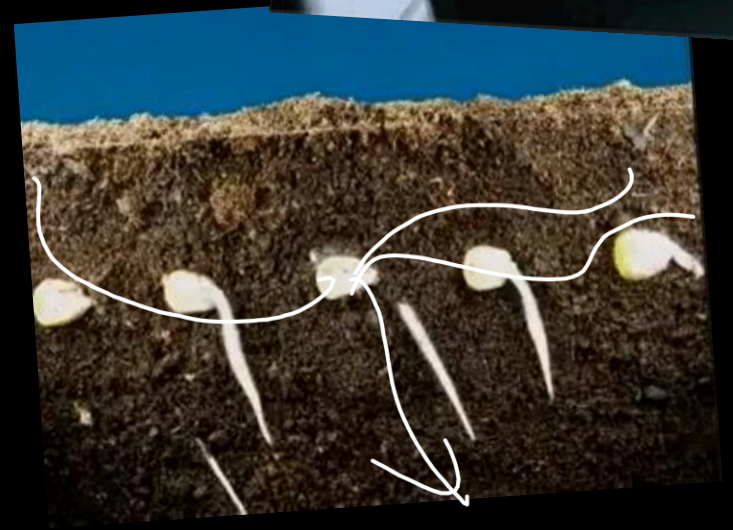
Thigmotropism (Touch)

Phototropism

Tropical movement

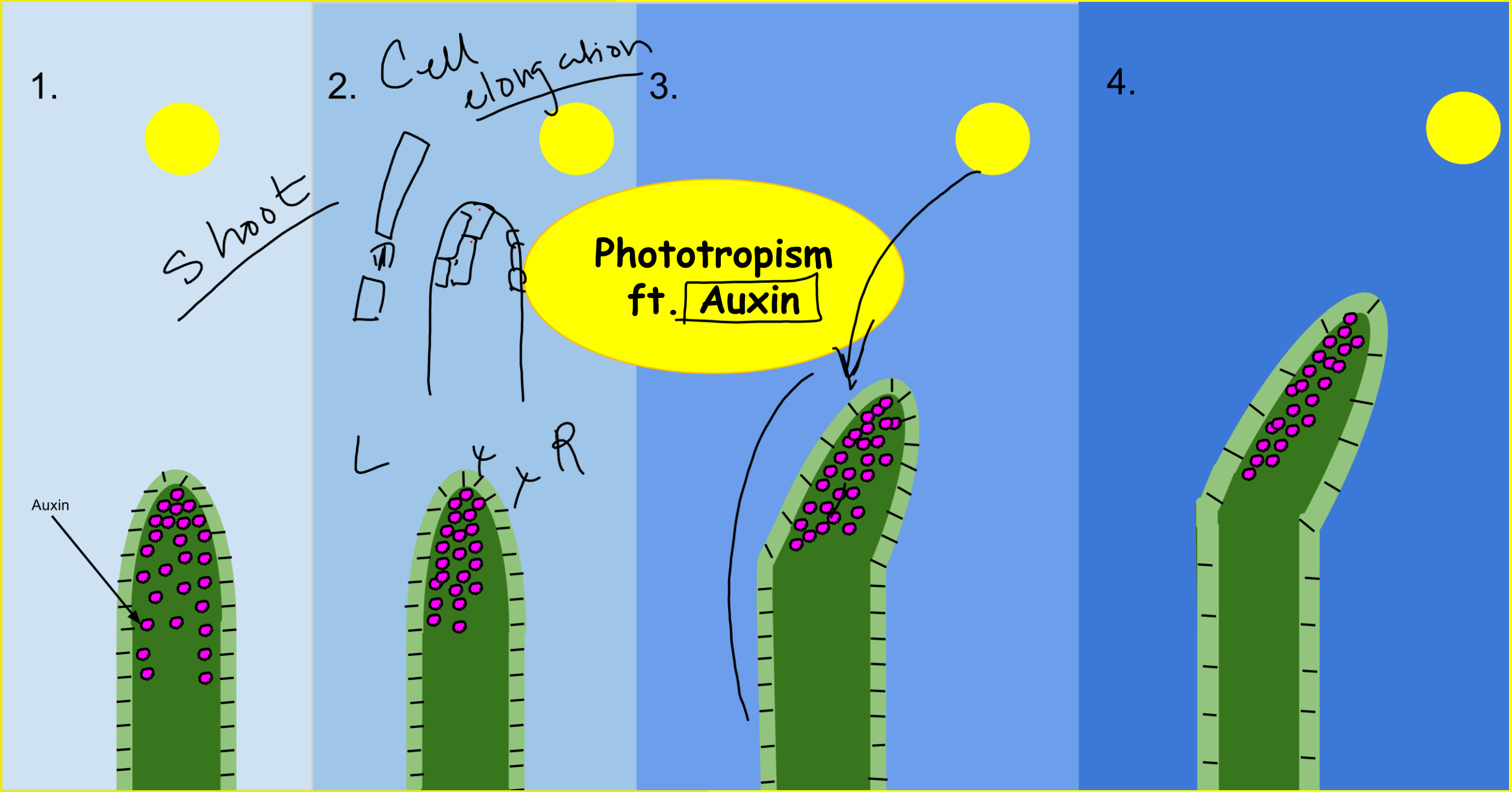
- It is the directional movement of the plant part in response to light.

- There are two types:
  - Positive Phototropism(shoots)
  - Negative phototropism(roots)



Phototropism

Tropical movement


1.
2.
Cell elongation
3.
4.
Shoot
Phototropism
ft. Auxin
Auxin
L
R

Phototropism

Phototropism (Roots Growing Away from Light): In the case of phototropism, when light is detected on one side of the root, auxin tends to move away from the lighted side and accumulates on the shaded side. Auxin promotes cell elongation, and its accumulation on the shaded side stimulates greater elongation of cells on that side.

So, in phototropism, auxin's movement away from the lighted side and its accumulation on the shaded side result in enhanced cell elongation on the shaded side of the root. This increased elongation causes the root to bend away from the light source.

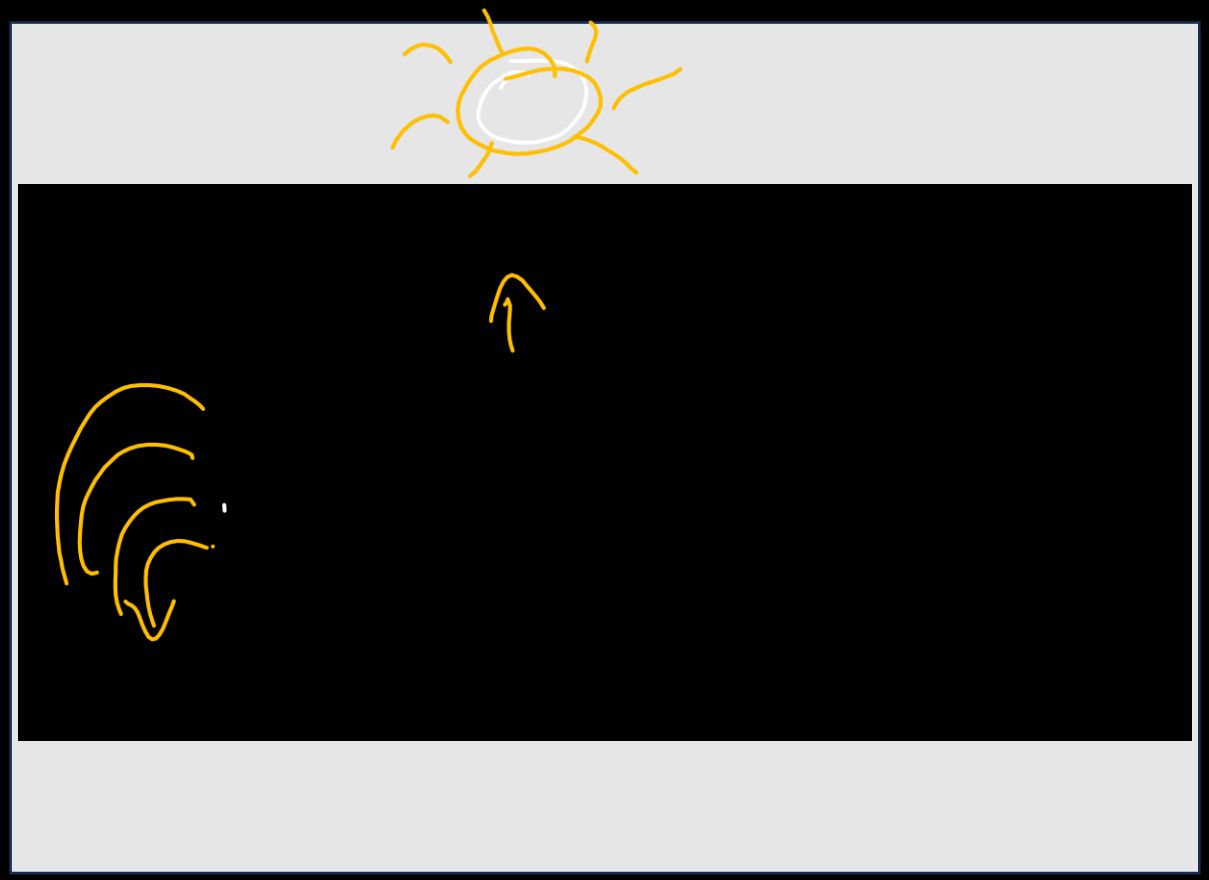
miss

Gravitropism

Geotropism

Gravity

Tropical movement



- It is the directional movement of the plant part in response to gravity.

Positive Geotropism: Roots

Negative Geotropism: Shoot

Tropical movement

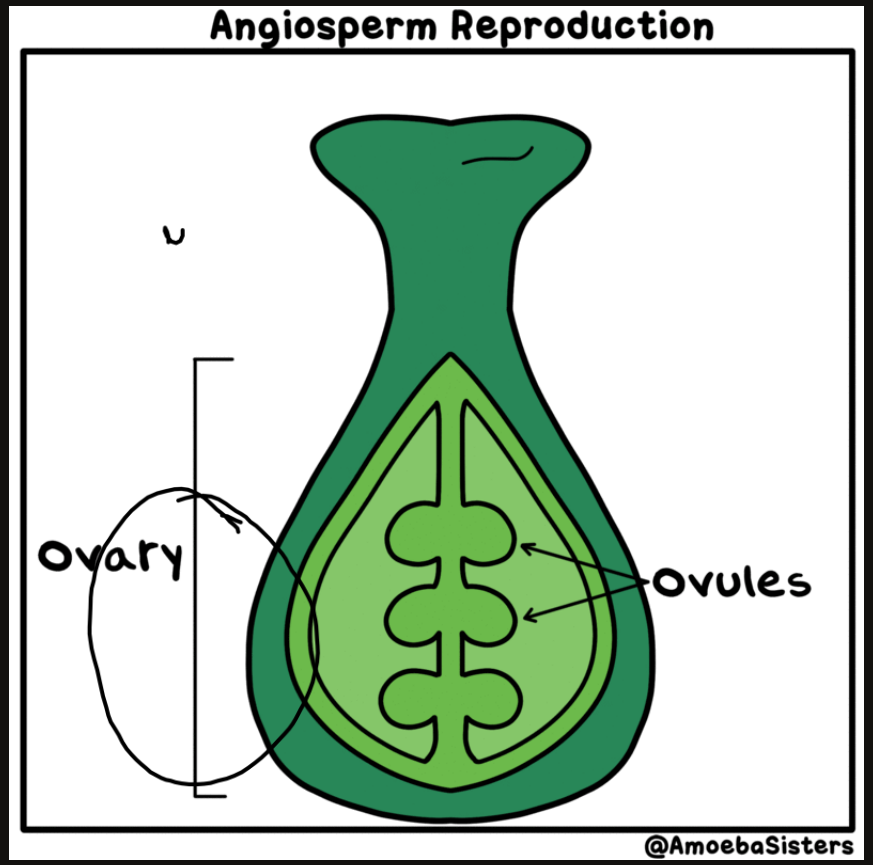
Chemotropism
Chemical

- It is the directional movement of the plant part in response to chemicals.

Positive chemotropism: Pollen tube formation.
Negative chemotropism: Roots move away from toxic chemical source

Chemotropism

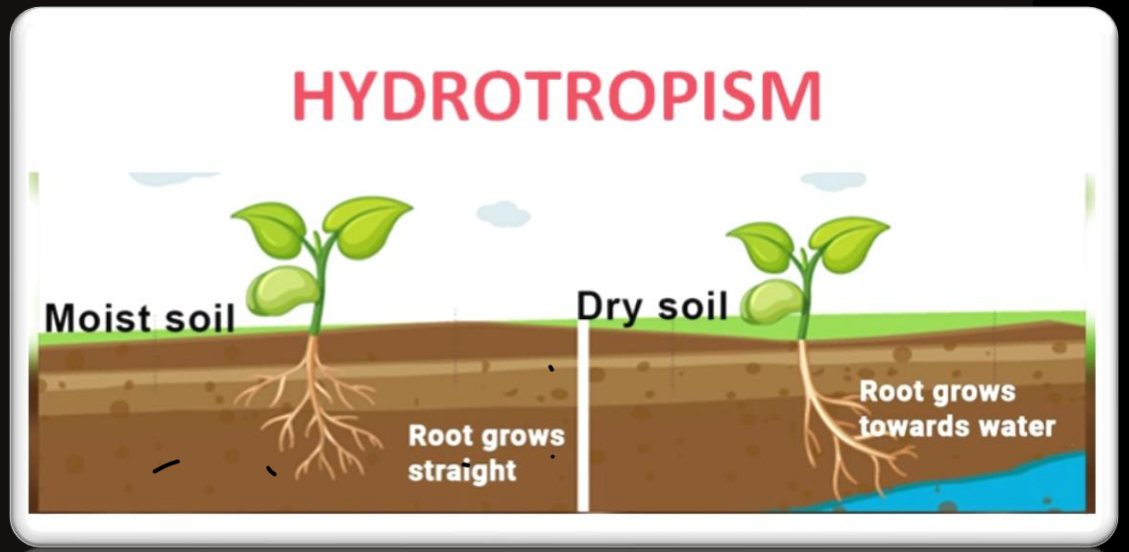
Tropical movement



- The ovule within the ovary of the flower produces chemicals known as chemoattractants.
- These chemoattractants are often sugars or other molecules that serve as signals to guide the pollen tube toward the ovule.
- The pollen tube grows in the direction where the concentration of chemoattractants is higher.

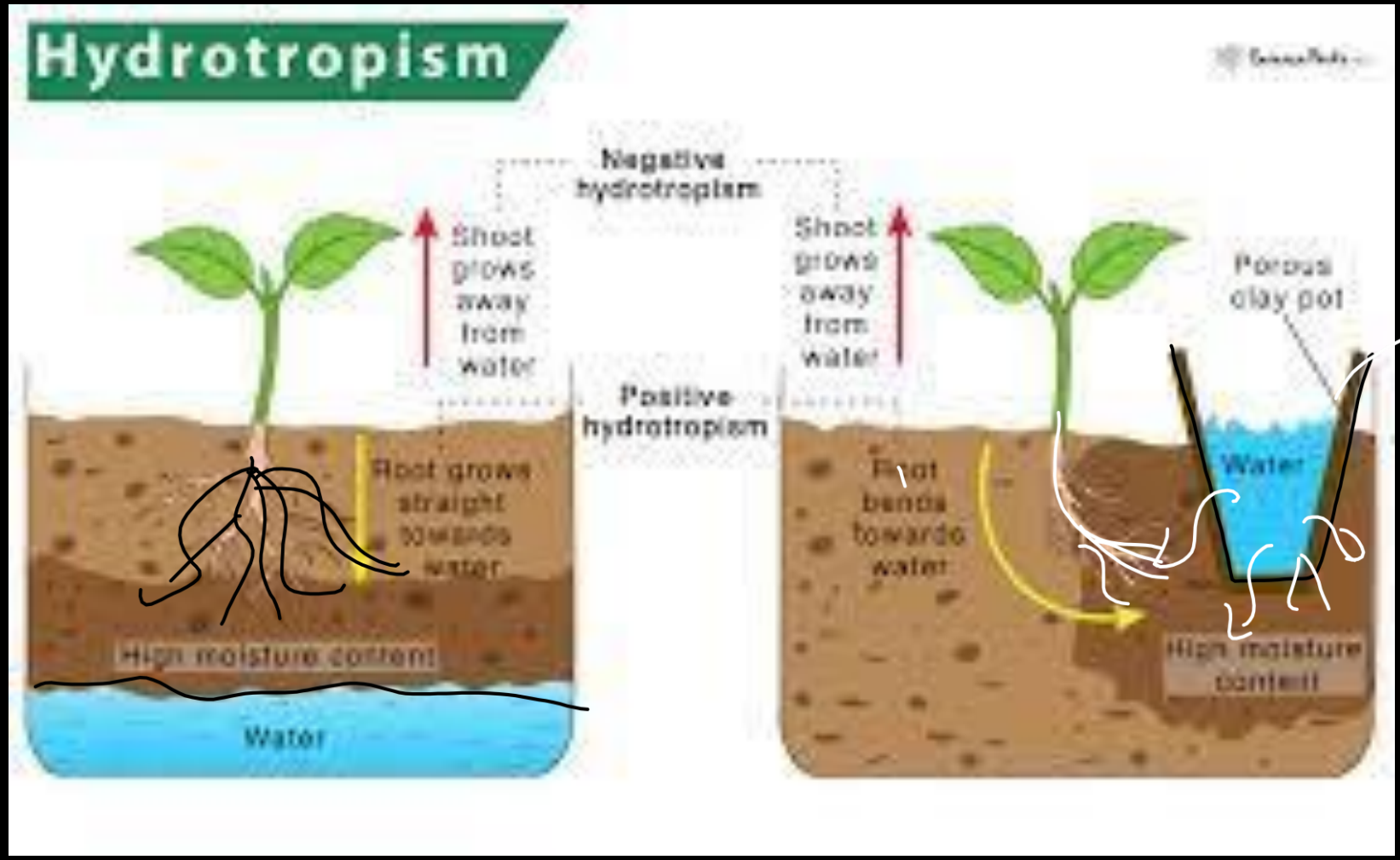
Hydrotropism

Tropical movement



- It is the directional movement of the plant part in response to water source.

- Positive Hydrotropism: Plant moves towards the water source.
- Negative hydrotropism: Plant moves away from the waterlogged regions due to deficiency of oxygen.


Hydrotropism
Negative hydrotropism
Shoot grows away from water
Root grows straight towards water
High moisture content
Water
Positive hydrotropism
Shoot grows away from water
Porous clay pot
Root bends towards water
Water
High moisture content
Clay

Tropical movement

Thigmotropism

Touch

- It is directional movement in response to touch stimulus.
- Positive thigmotropism: Tendrils helping in the growth of plant with the help of support.
- Negative thigmotropism: Tendrils moving away from unsuitable support.

Time for PYQ Practice

Select from the following the correct statement about tropic movement in plants : 1

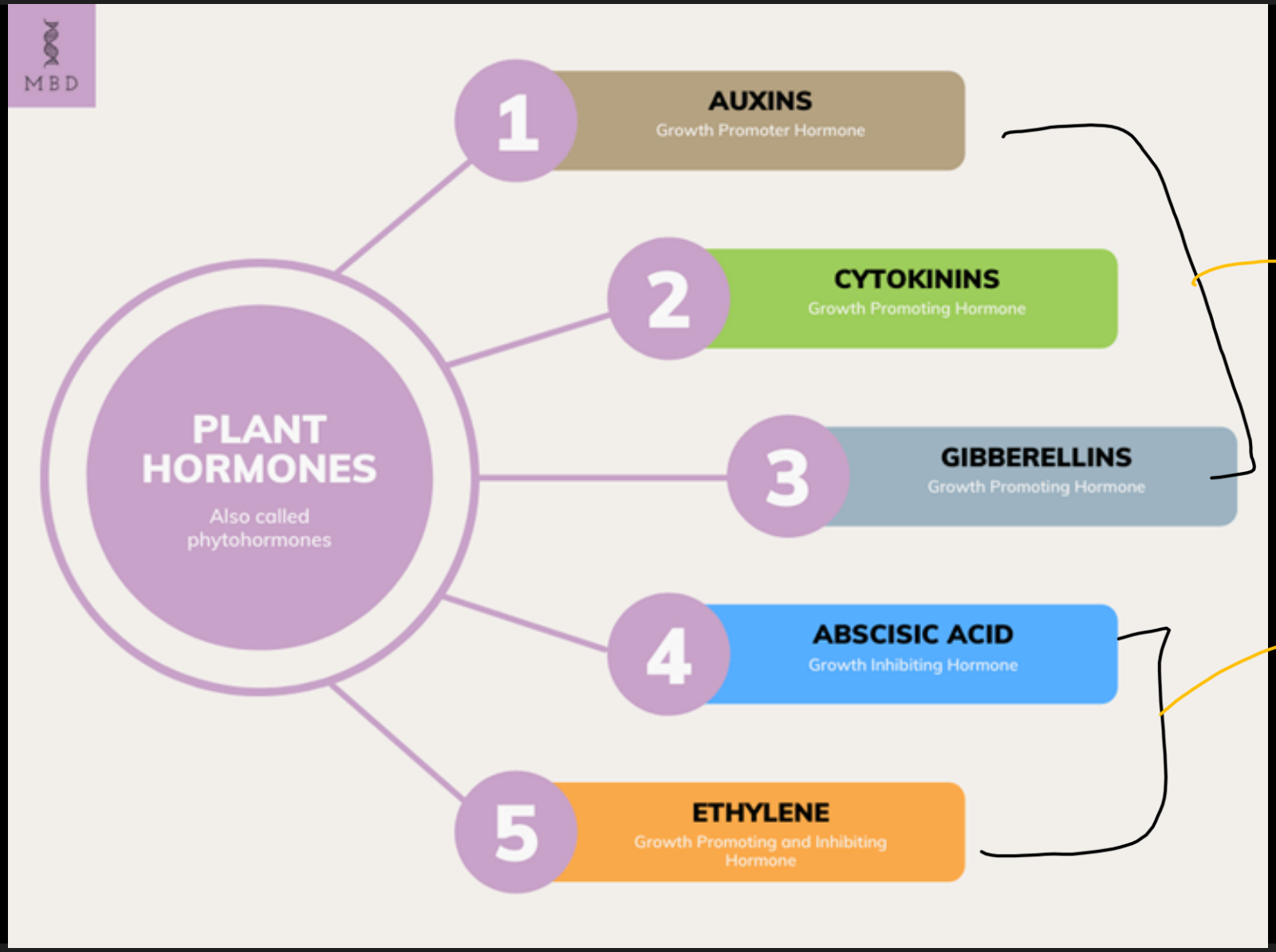
(a) It is due to stimulus of touch and temperature.

(b) It does not depend upon the direction of stimulus received.

(c) It is observed only in roots and not in stems.

(d) It is a growth related movement.

Welcome to the world of Plant Hormones


MBD
PLANT HORMONES
Also called phytohormones
1
AUXINS
Growth Promoter Hormone
2
CYTOKININS
Growth Promoting Hormone
3
GIBBERELLINS
Growth Promoting Hormone
4
ABSCISIC ACID
Growth Inhibiting Hormone
5
ETHYLENE
Growth Promoting and Inhibiting Hormone
Growth Promoting hormones
Growth Inhibiting hormone

Hi I am Auxin !

- **Cell elongation:** Auxins promote cell elongation, influencing the growth of stems and roots.

- **Tropisms:** Auxins are responsible for phototropism (growth towards light) and gravitropism (response to gravity).

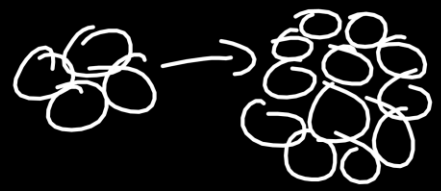
Hi I am Gibberalic acid but my friends call me Gibberelin !

Seed germination: They break seed dormancy and stimulate seed germination.

Hi I am Cytokinin !

- **Cell division:**
Cytokinins stimulate cell division, promoting overall plant growth.

- **Leaf senescence:**
Cytokinins delay the aging and death of leaves.



Hi I am Abscisic Acid !

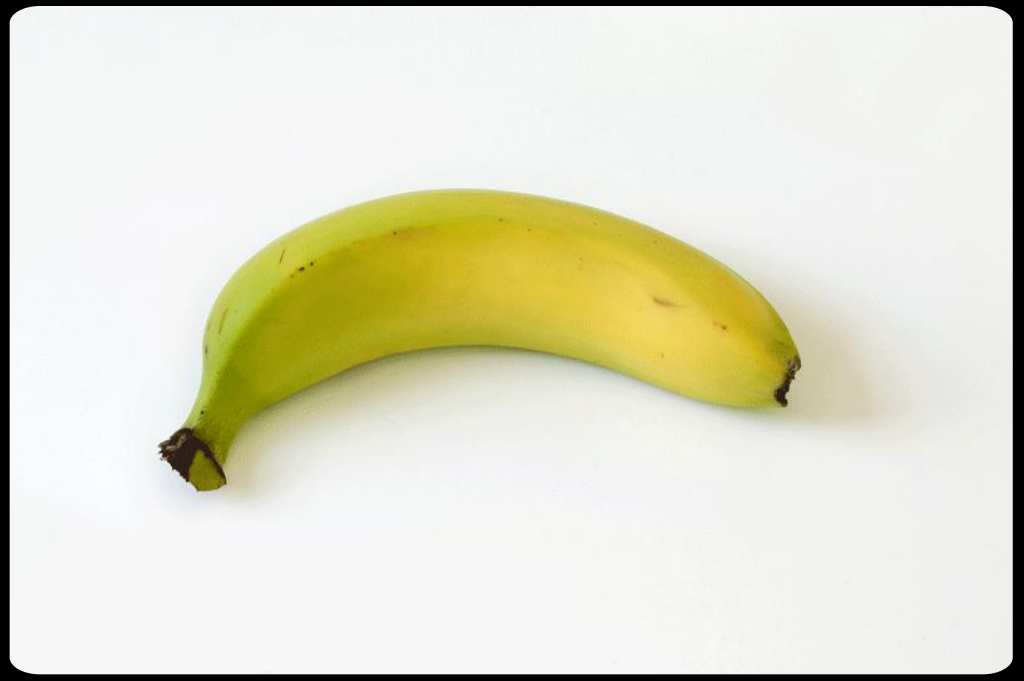
→ Stress hormone

- **Drought tolerance:** ABA helps plants respond to water stress by promoting stomatal closure and reducing water loss.

- **Seed dormancy:** ABA induces and maintains seed dormancy, preventing germination under unfavorable conditions.

- **Stress response:** ABA is involved in various stress responses, such as salt and cold tolerance.

Hi I am Ethylene!



Gaseous hormone

- **Fruit ripening:** Ethylene accelerates the ripening of fruits by promoting the breakdown of cell walls and chlorophyll degradation.

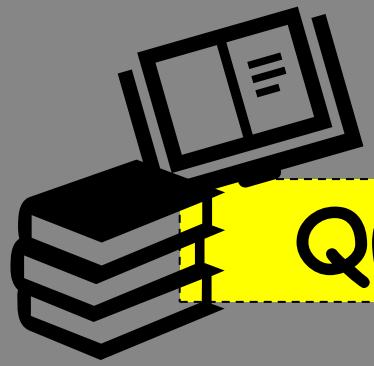
- **Senescence:** Ethylene triggers leaf and flower senescence.

- **Root growth:** It inhibits root elongation, leading to thicker and shorter roots.

Try maadi !

(a) What are plant hormones ? Give one example each of a plant hormone that

1. promotes growth → Auxin
2. inhibits growth. → Ethylene
3. promotes cell division → Cytokinin
4. promotes the growth of a tendril around a support. (CCE 2011) — Auxin



Questions from NCERT

Time for Question Practice

How is the movement of leaves of the sensitive plant different from the movement of a shoot towards light ?

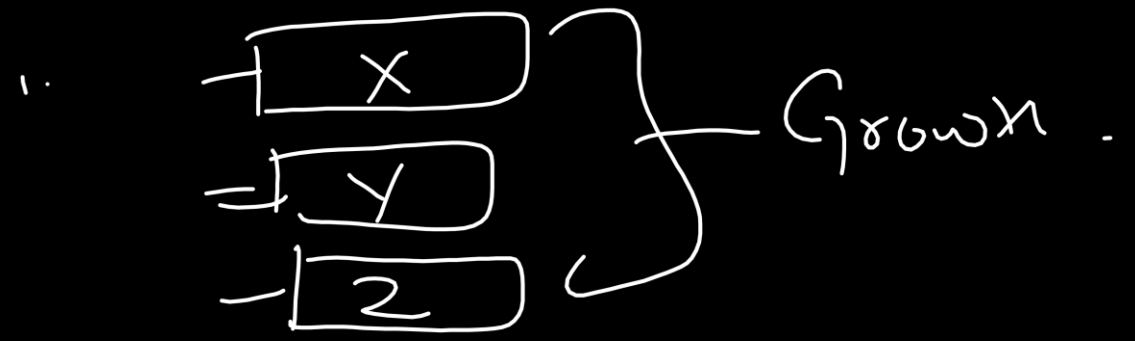
Answer:

Movement of leaves of sensitive plant	Movement of a shoot towards light
1. It is a nastic movement which does not depend on the direction of stimulus applied.	1. It is a tropic movement which depends on the direction of stimulus applied.
2. The stimulus is touch.	2. The stimulus is light.
3. It is caused by the sudden loss of water from the swellings at the base of leaves.	3. It is caused by the unequal growth on the two sides of the shoot.
4. It is not a growth movement.	4. It is a growth movement.

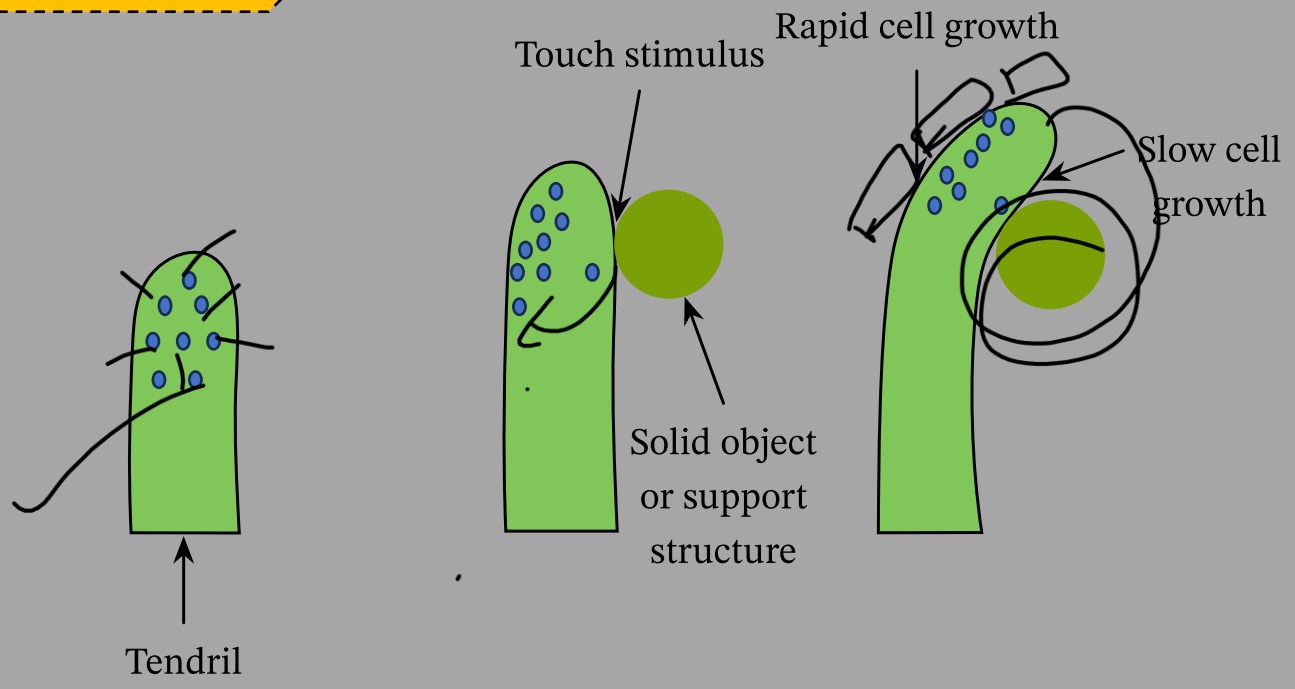
Time for Question Practice

6. What are plant hormones?

Solution : Plant hormones or phytohormones arenaturally-occurring organic substances. These are synthesized in one part of the plant body (in minute quantities) and are translocated to other parts when required. The five major types of phytohormones are auxins, gibberellins, cytokinins, abscisic acid, and ethylene.



Time for Question Practice



9. How do auxins promote the growth of a tendril around a support?

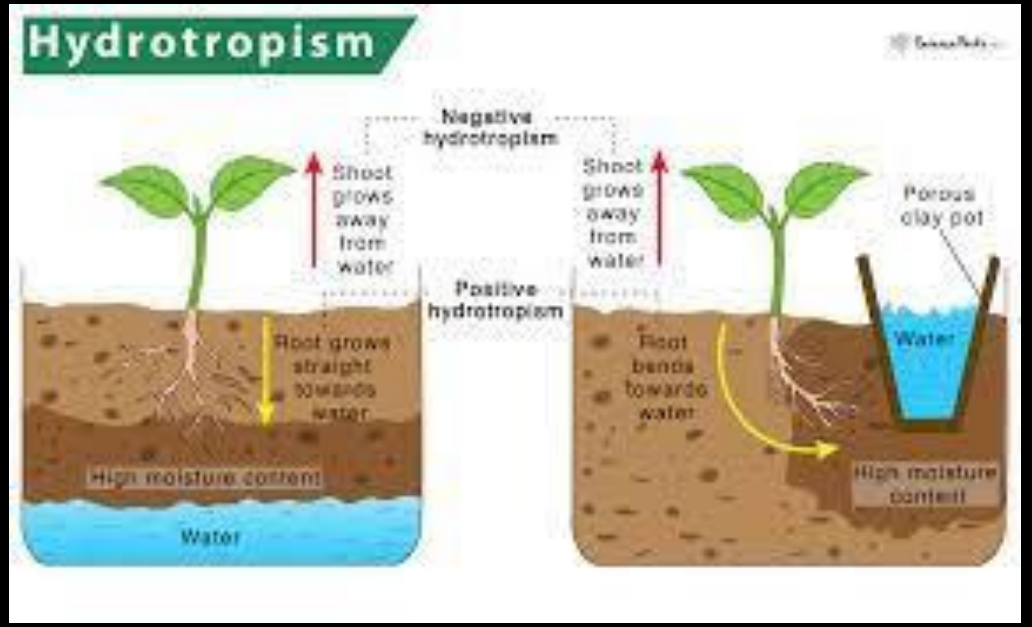
Solution : When tendrils come in contact of any support, the part of the tendril in contact does not grow as rapidly as the part away from the object due to auxin secreted moves away from the object in contact. This rapid growth on one side causes tendril to circle around the object.

Design an experiment to demonstrate hydrotropism?

i. Plant a seedling in a vessel containing soil.
ii. Adjacent to the seedling put a ~~porous~~ clay pot containing water.
iii. Leave the set up for a few days.

Observation: On examining the roots of seedlings it is observed that the roots bend towards the source of water and do not grow straight.

Inference: It confirms that plant shows hydrotropism as the roots bend towards the porous pot of water. Hydrotropism is a plant growth response in which the direction of growth is determined by a stimulus of the gradient in water concentration.



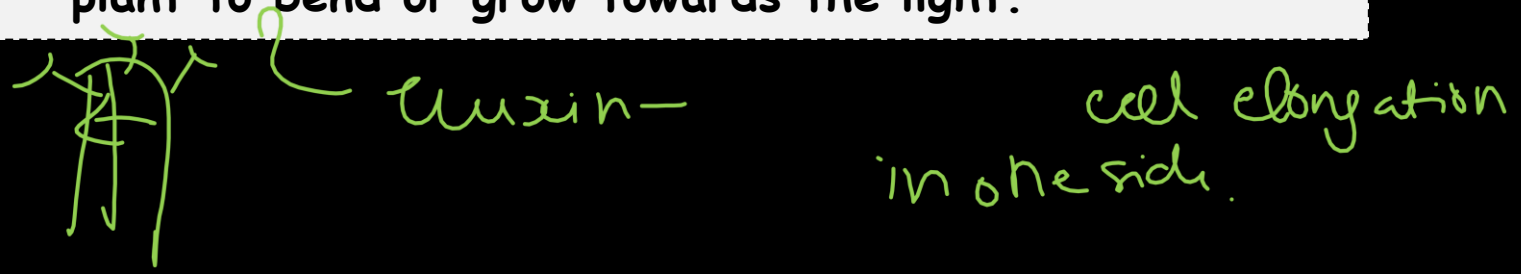
How does phototropism occur in plants?

1. The movement in any part of a plant due to light is called phototropism.

2. The shoot of plant shows positive phototropism and roots show negative phototropism.

3. Phototropism in plants occurs through the redistribution of the growth-promoting hormone auxin in response to light.

4. Photoreceptors detect light, triggering a movement of auxin away from the light source. This leads to uneven growth, causing the plant to bend or grow towards the light.



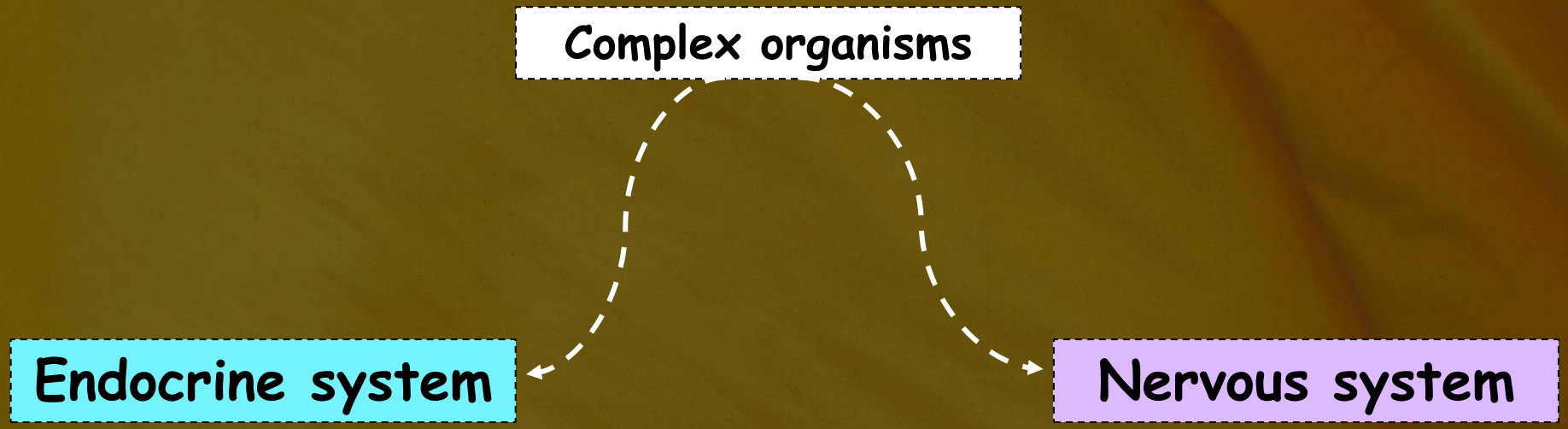
What are electrical impulses?

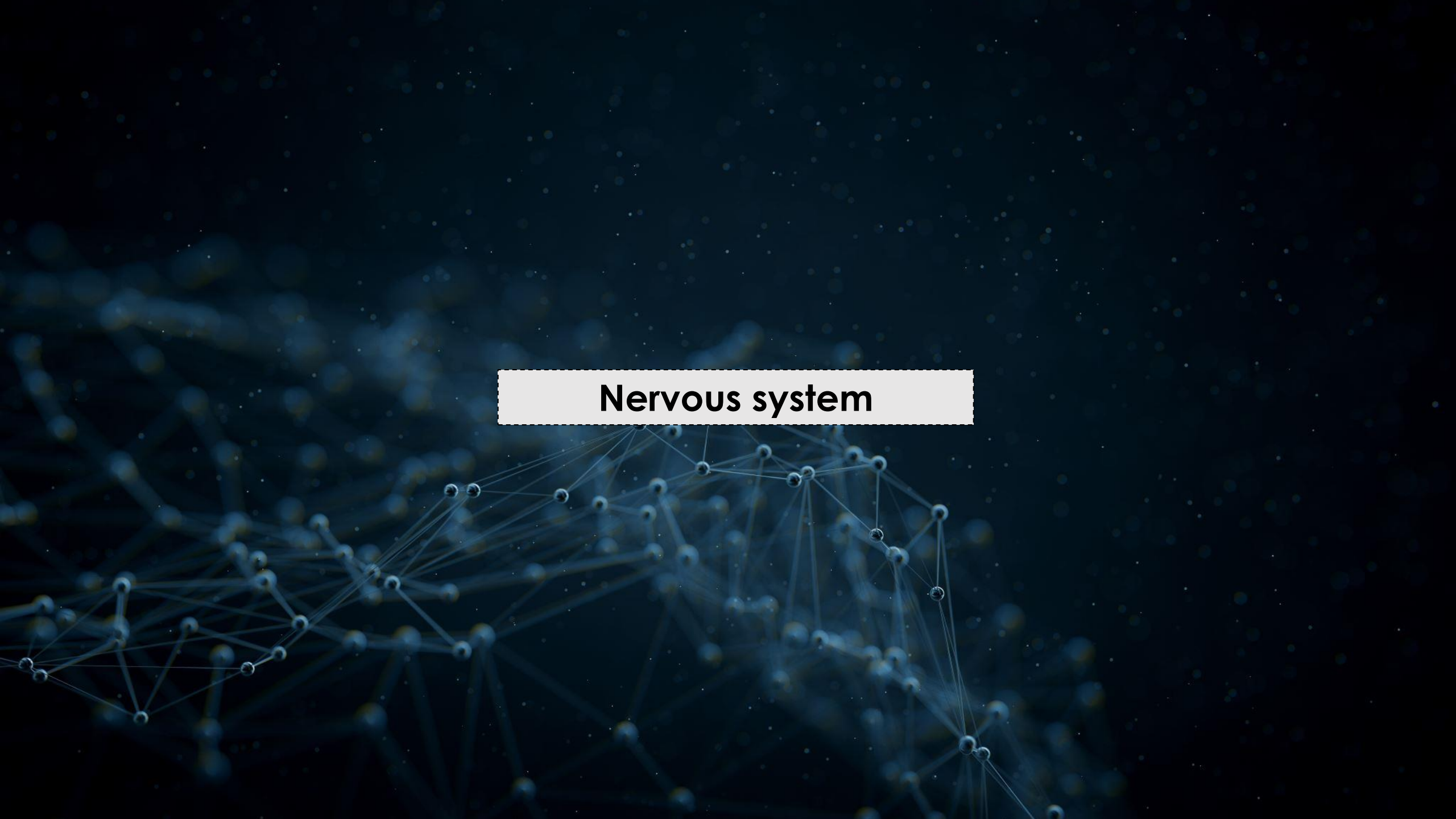
What are electrical impulses?

- An electrical impulse refers to a sudden and rapid movement of electrical charges within a living organism's cells or tissues

- They are primarily generated by the movement of ions, which are electrically charged particles, across cell membranes.


Unicellular organisms
Simple multicellular organisms
Complex multicellular organisms


Complex organisms
Endocrine system
Nervous system



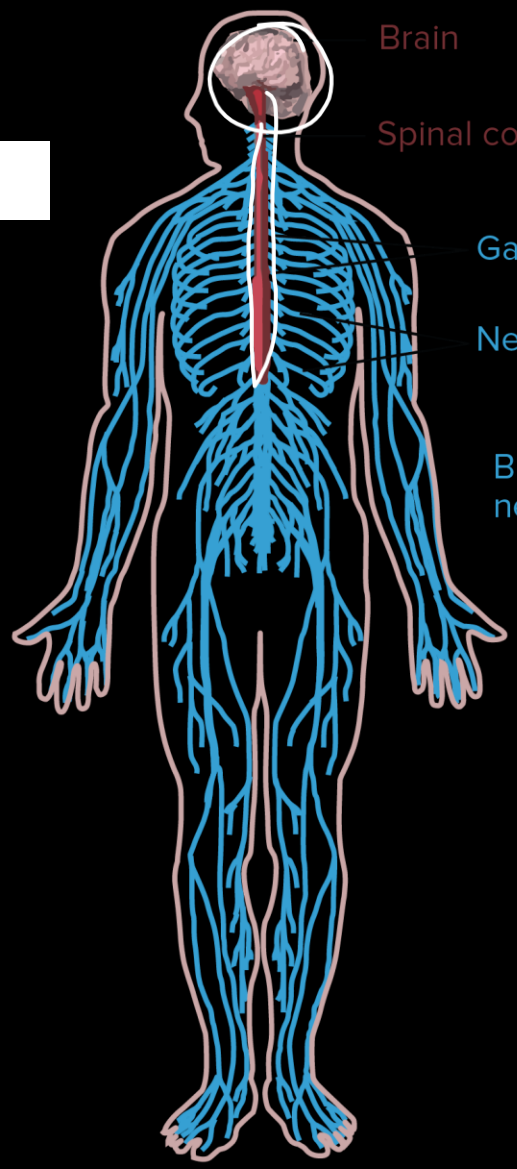
Nervous system

Nervous system

Central Nervous system

Brain

Spinal cord



Peripheral nervous system

Carries impulses to and from the CNS

Cranial Nerves (12 pairs)

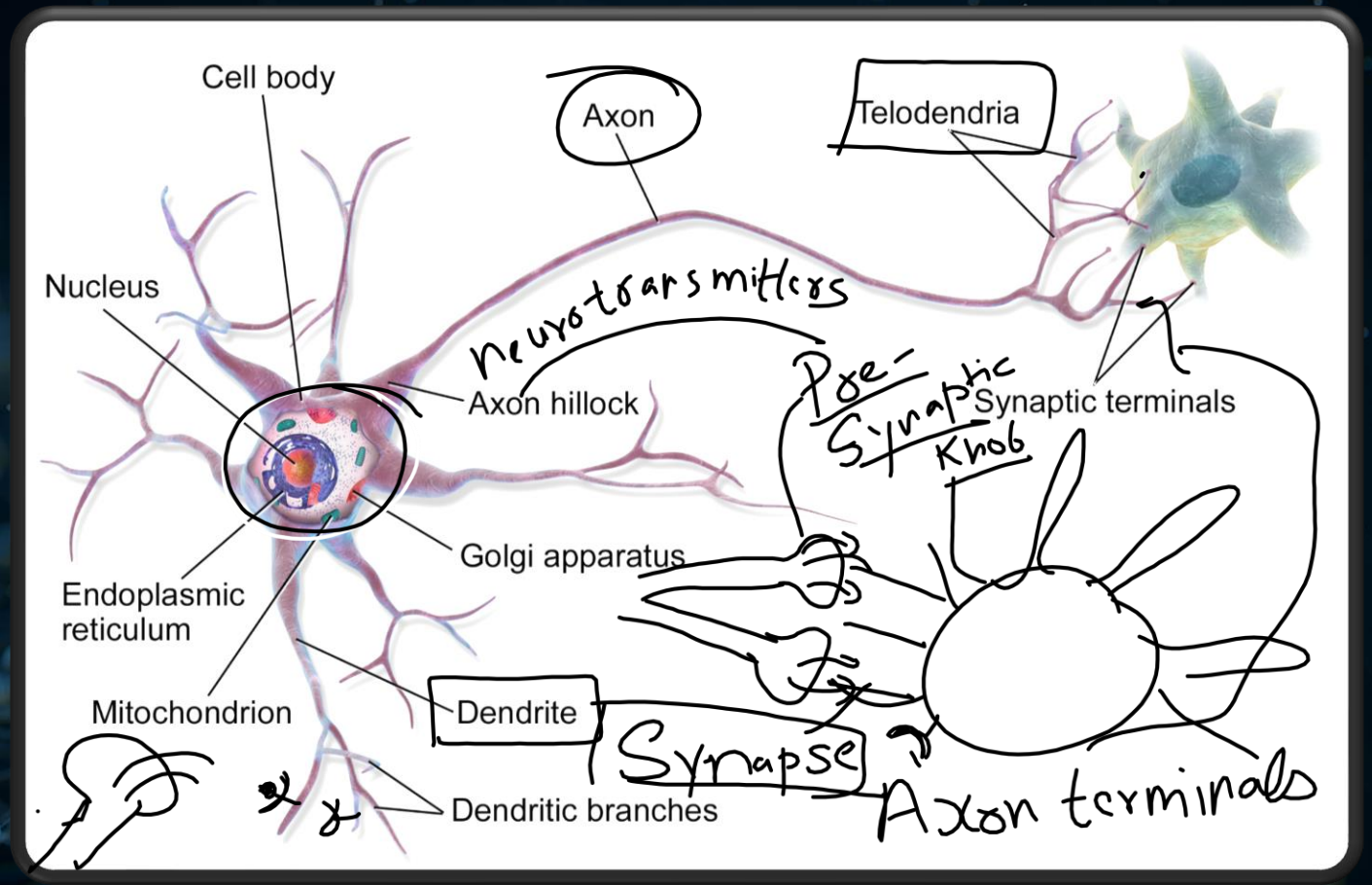
Spinal Nerves (31 pairs)

Neuron

What is an electrical impulse?

What is an electrical impulse?

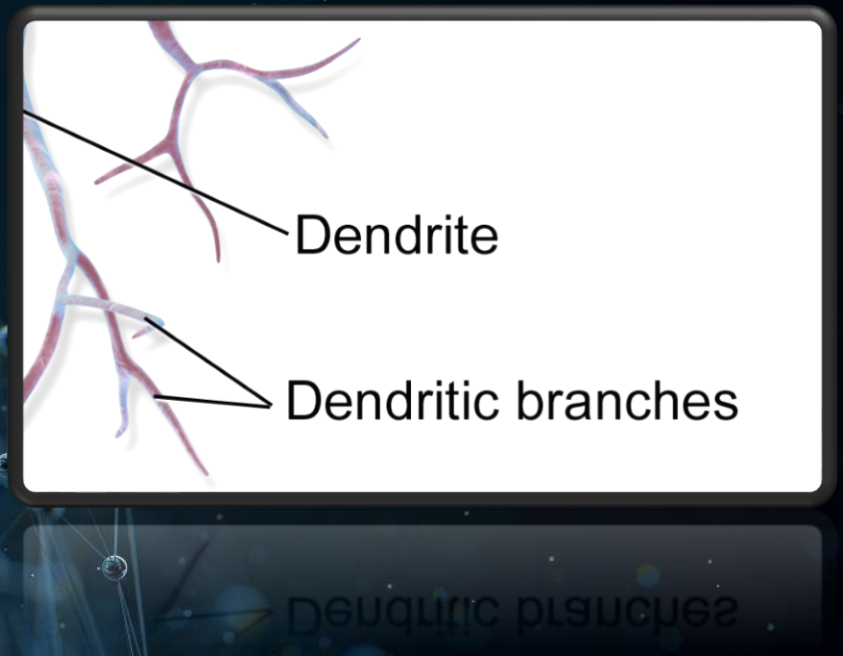
An electrical impulse, also known as an action potential, is a brief and rapid change in the electrical potential (voltage) across the cell membrane of a neuron due to movement of ions.


Cell body
Axon
Telodendria
Nucleus
neurotransmitters
Axon hillock
Pre-Synaptic Knob
Synaptic terminals
Golgi apparatus
Endoplasmic reticulum
Mitochondrion
Dendrite
Synapse
Axon terminals
Dendritic branches

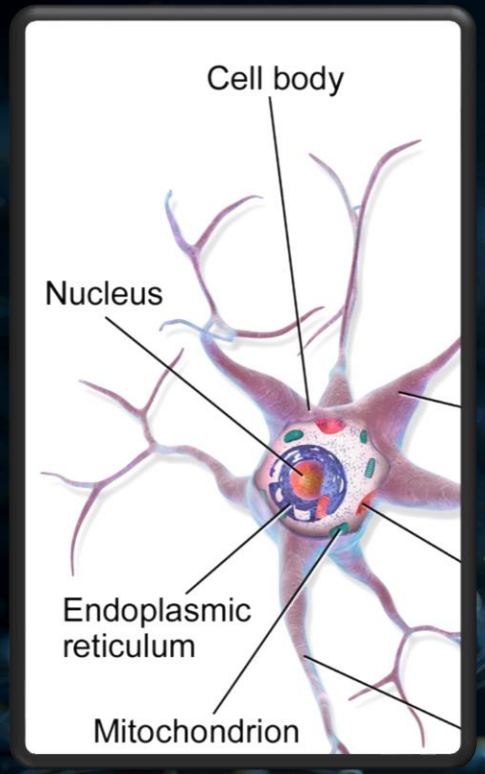
Dendrites

- They are the protoplasmic projections of the cell body.

- Dendrites contain receptor sites for neurotransmitters, allowing them to receive and transmit signals to the cell body.



Cyton /Cell Body/Soma



- It is the central part of the neuron that contains the nucleus and various organelles(They do not have centrioles)

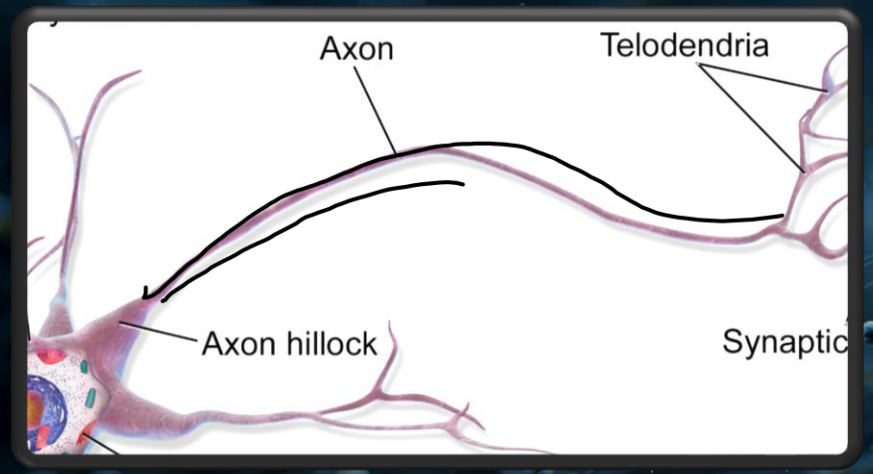
(Cell division)

- It is responsible for receiving the signal from the dendrites and transmitting them to the axon in the form of "Action Potential/Nerve Impulse", if the signals are strong.

- And It is also responsible for maintaining the cell's metabolic functions since it has the nucleus and the organelles.

$-70mV = -55mV$

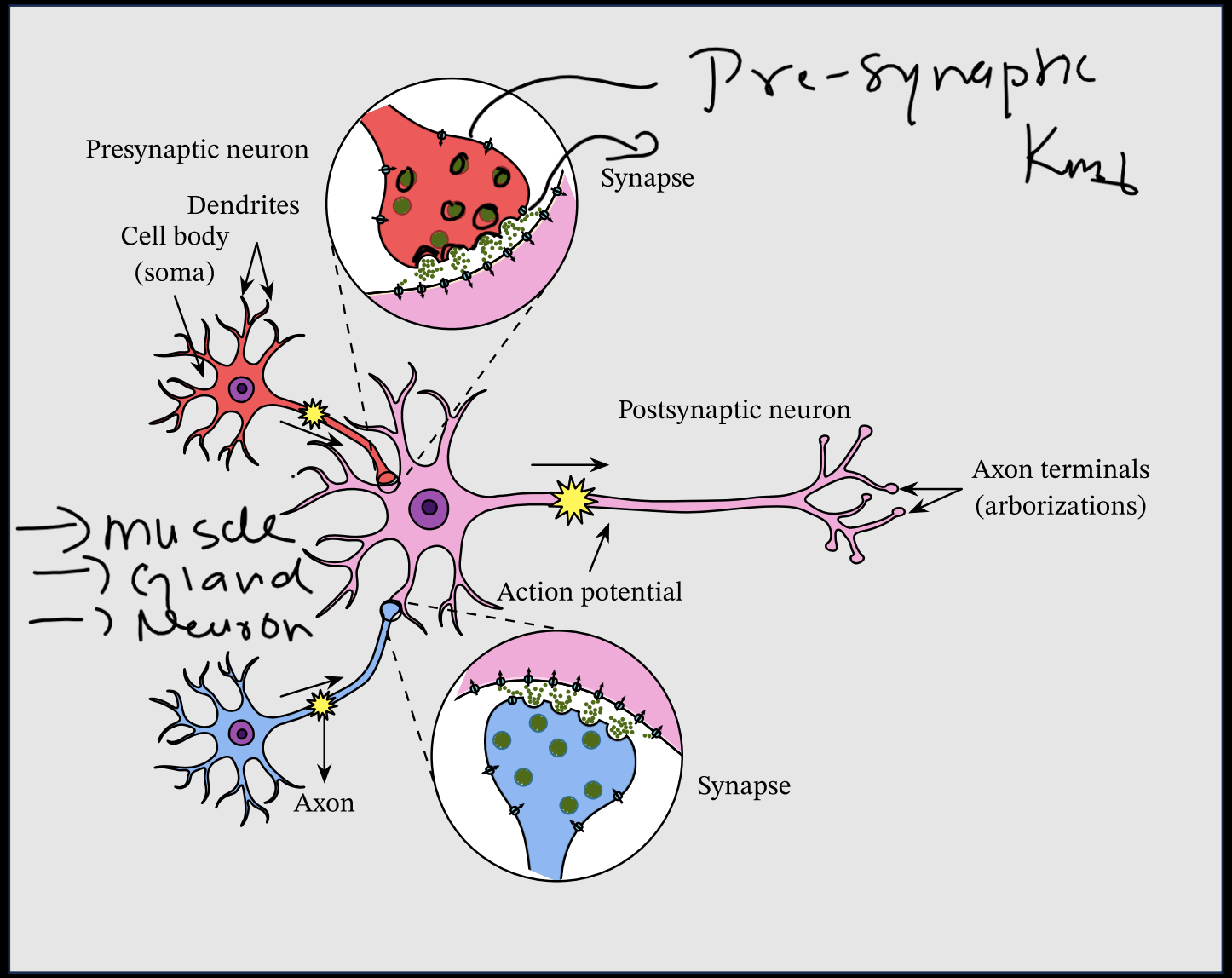
Axon



- The axon is a long, slender projection with usually knob like terminal ends.
- The cell membrane of axon is known as axolemma and its cytoplasm is axoplasm
- They carry electrical impulses (action potentials) away from the cell body to the axon terminals causing the release of neurotransmitters contained in the pre- synaptic knobs of the axon terminal.

Synapse

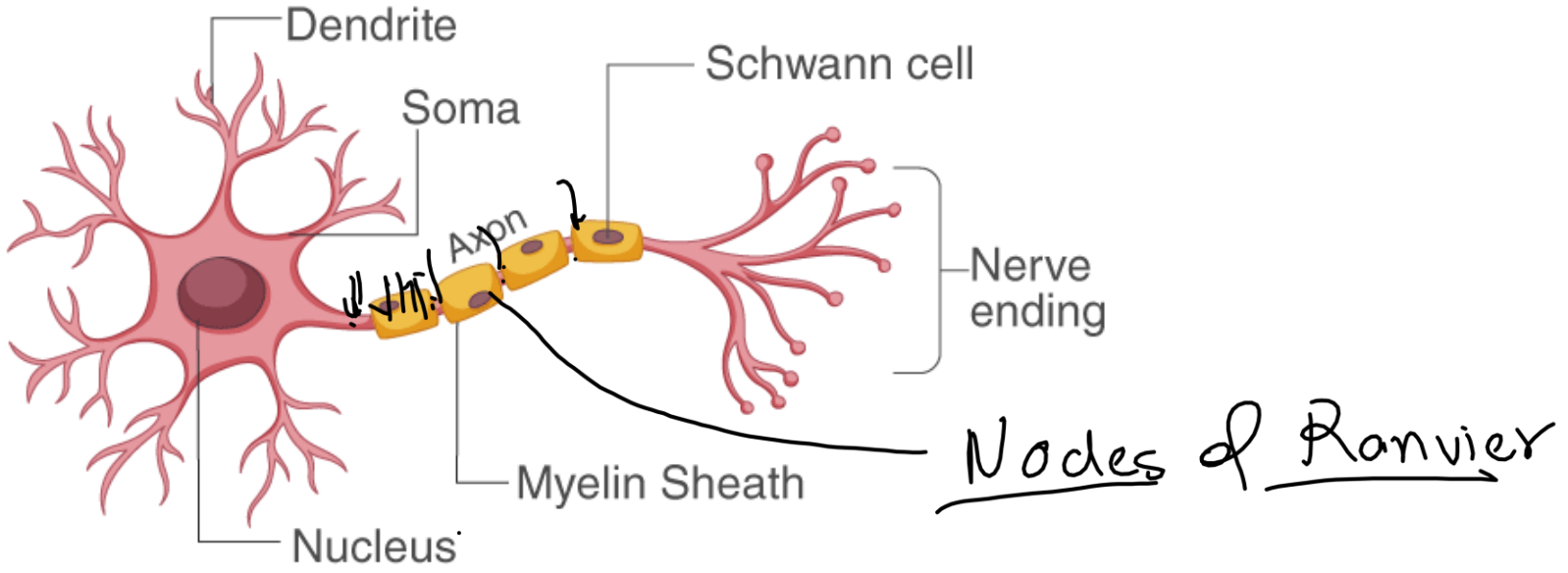
- It is the minute gap between terminal portion of axon of one neuron and the dendrite of the next neuron.
- The neurotransmitter passes through this space to move to the next neuron.



What are neurotransmitters?

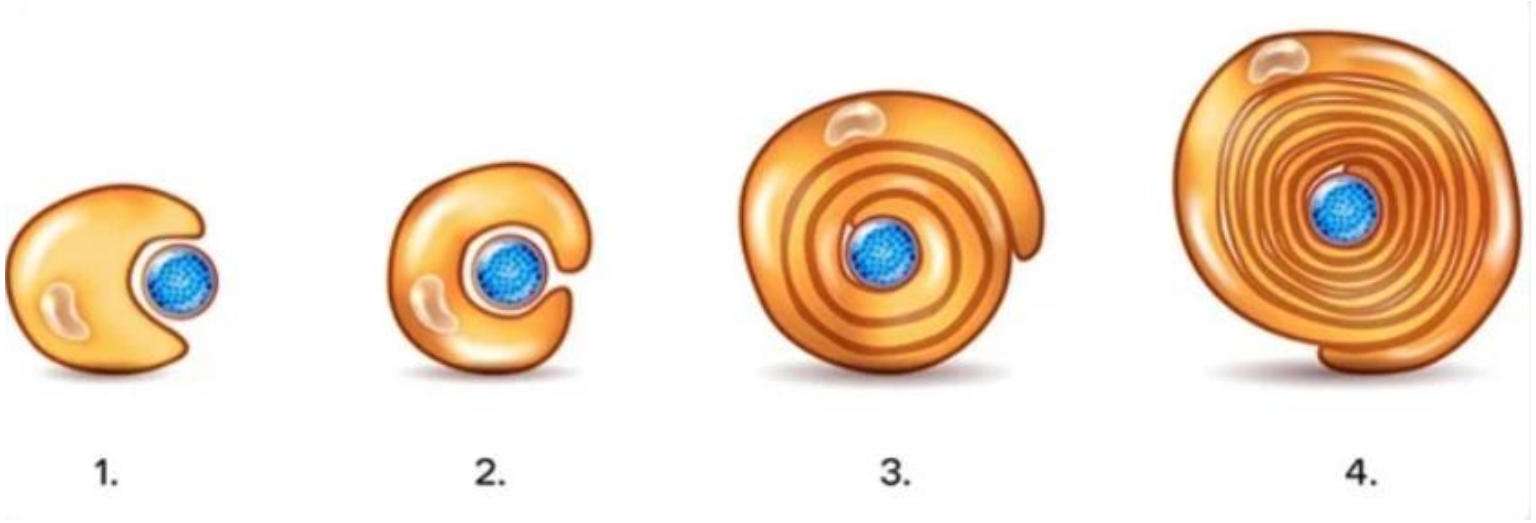
What are neurotransmitters?-

Neurotransmitters are chemical messengers that transmit signals between neurons (nerve cells) or from neurons to other target cells, such as muscle cells or gland cells.



Schwann cells and Myelin sheath

- There is a single sheath present over the axon made up of schwann cells.
- The axon may have an additional insulating and protective sheath known as myelin sheath. The myelin sheath is a fatty and proteinaceous, insulating covering that surrounds and protects axons, the long projections of nerve cells (neurons).
- Myelinated nerve fibres posses unmyelinated areas called nodes of ranvier .



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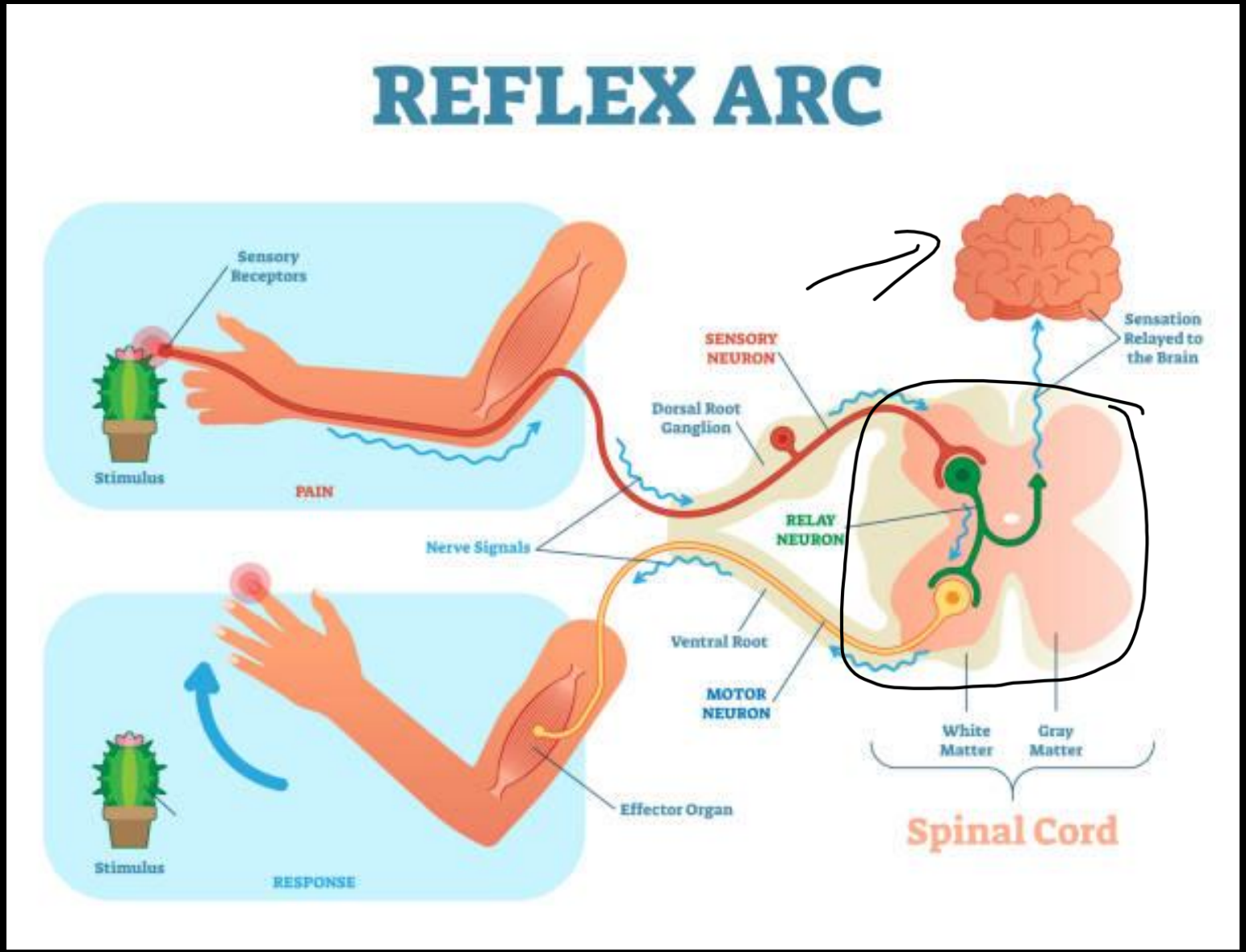
Reflex action

Involuntary

A reflex action, also known simply as a reflex, is an automatic and rapid response to a stimulus without the will of an animal.

Reflex arc

Reflex arc is the nerve pathway involved in a **reflex action**


REFLEX ARC
Sensory Receptors
Stimulus
PAIN
Nerve Signals
SENSORY NEURON
Dorsal Root Ganglion
RELAY NEURON
Sensation Relayed to the Brain
Ventral Root
MOTOR NEURON
White Matter
Gray Matter
Spinal Cord
Effector Organ
Stimulus
RESPONSE

Reflex arc - The parts

Receptor

Receptor, molecule, generally is a protein, that receives signals for a ~~cell~~.
There are different type of receptors depending upon the sense organs:

Photoreceptors: It detects light

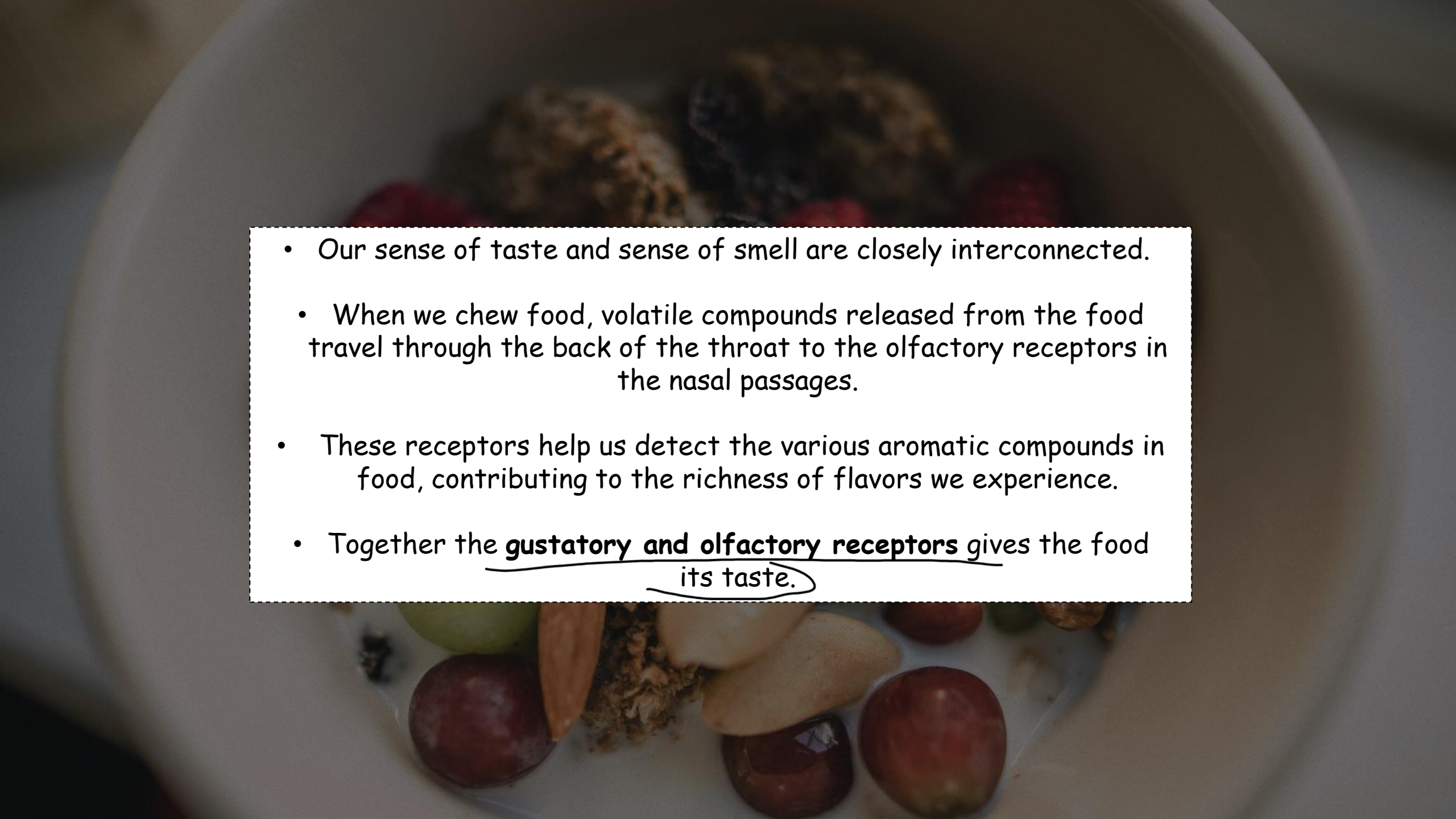
Mechanoreceptors: It detects mechanical stimuli such as pressure, touch, vibration, and stretch.

Thermoreceptors : It detect temperature changes and are found in the skin and internal organs.

Gustatory Receptors: It detects taste

Olfactory Receptors: It detects smell

Phonoreceptors: It detects sound



- Our sense of taste and sense of smell are closely interconnected.
- When we chew food, volatile compounds released from the food travel through the back of the throat to the olfactory receptors in the nasal passages.
- These receptors help us detect the various aromatic compounds in food, contributing to the richness of flavors we experience.
- Together the **gustatory and olfactory receptors** gives the food its taste.

Reflex arc – The parts

Sensory neuron → **Interneuron** → **Motor neuron**

- Also known as an **afferent neuron**, this type of neuron detects a stimulus (such as touch, pain, or temperature).
- It transmits the sensory information from a sensory receptor to the central nervous system (CNS).

Is connected to a receptor

- Also called an **relay neuron**, this neuron is located entirely within the CNS.
- It receives the sensory information from the sensory neuron and processes it.

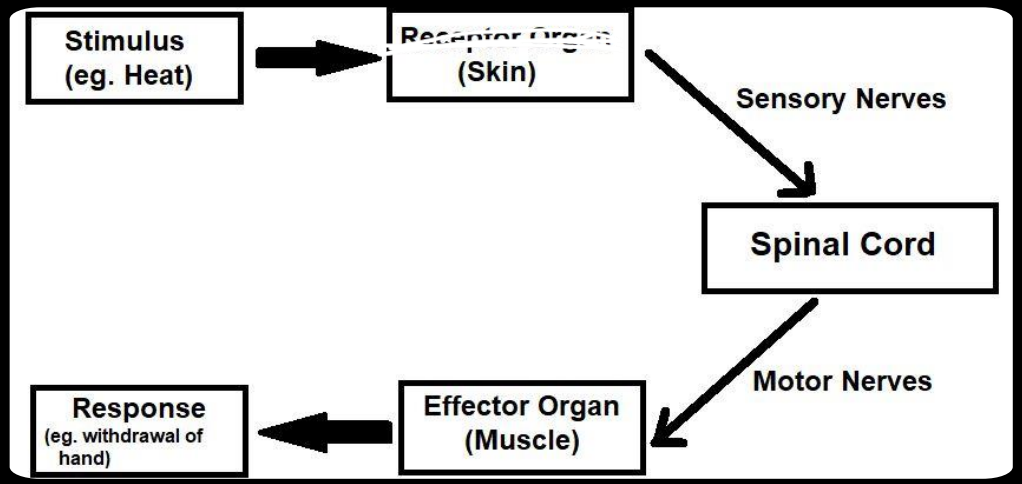
- Also known as an efferent neuron, this neuron receives signals from the interneuron
- It transmits the appropriate response to an effector, typically a muscle or a gland, causing a reflex action to occur.

Reflex arc – The parts

Effector cells are cells that respond to signals from the nervous system. These cells could be muscle cells or gland cells.

Steps involved in the Reflex arc

- Sensory neuron sends electrical impulses to a relay neuron, which is located in the spinal cord of the CNS.
- Relay neurons connect sensory neurons to motor neurons.
- Motor neuron sends electrical impulses to an effector.
- Effector produces a response, such as contraction of a muscle.

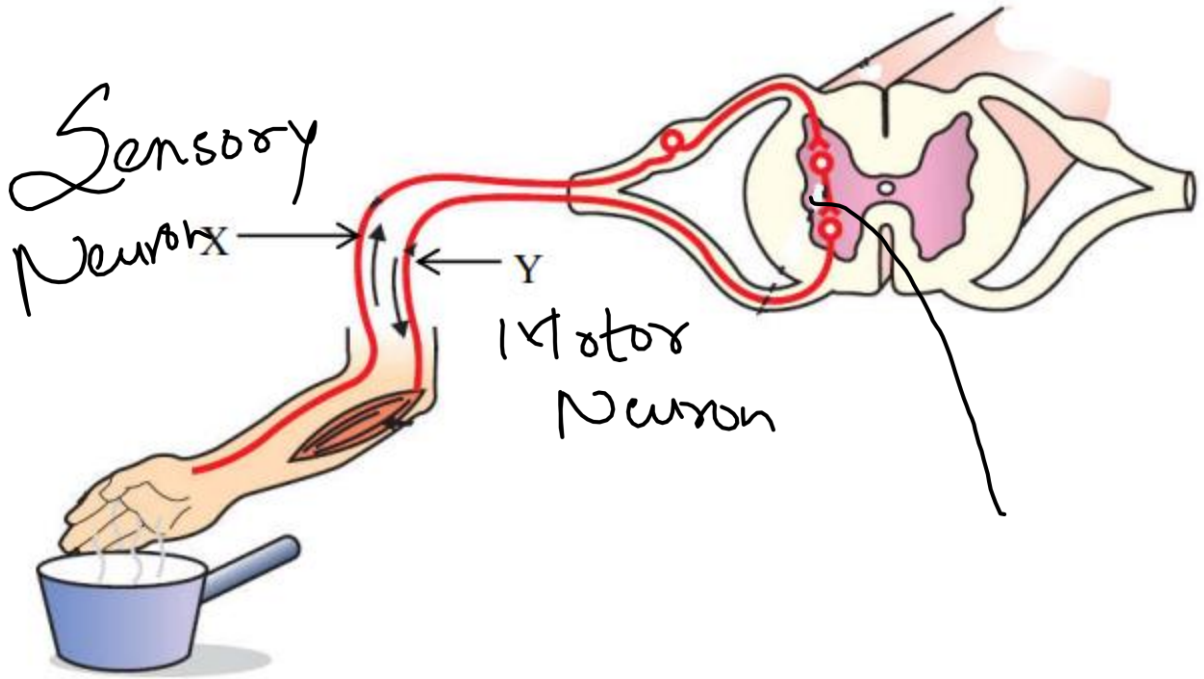


Significance of reflex action

- It helps in initiating an Immediate response.
- It helps in increasing the Survival Mechanism: Reflex actions are evolutionary adaptations that have developed to increase an organism's chances of survival.

Inborn

(a) In the diagram given below, name the labelled parts X and Y. Mention one function for each. *2*



Time for PYQ Practice

Which of the following statements is/are true about a neuron ?

I. Dendrites of neuron pass the impulse to the ~~axon.~~ cell body

II. Axon of neuron carries the impulse from the cell body.

III. Sensory neuron carries the impulse to the specific effectors.

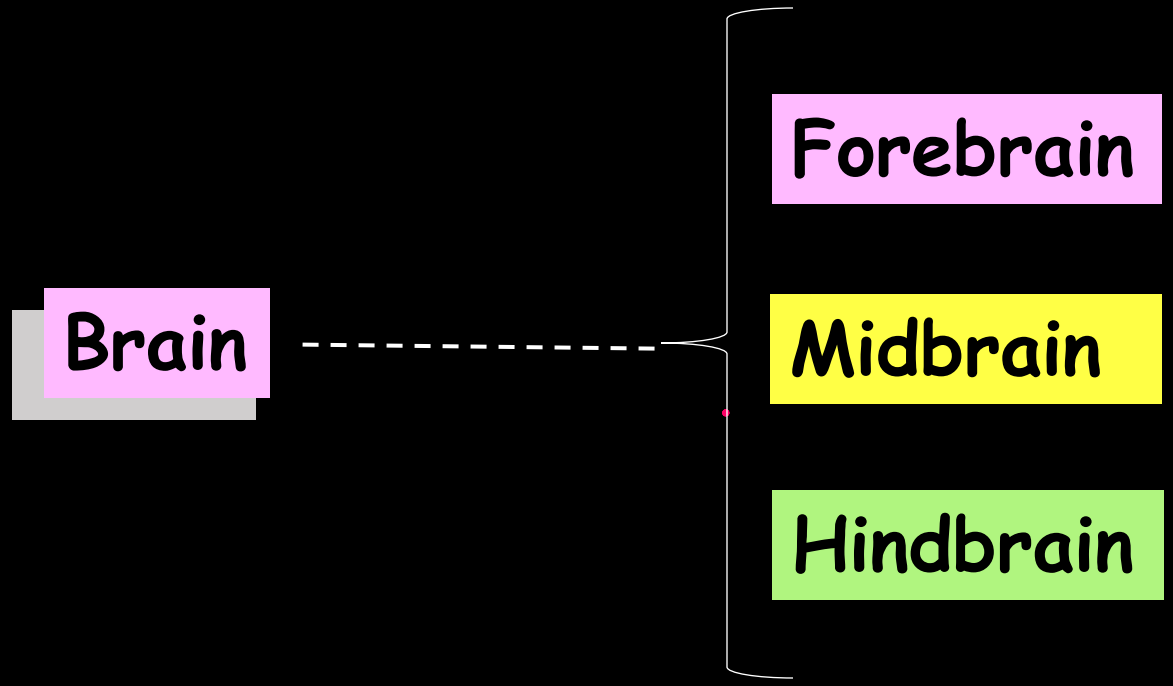
IV. Transmission of impulse from a neuron to a muscle fibre occurs through neuro-muscular junction.

(A) I only

(B) I and III

(C) II and III

(D) II and IV


Brain
Forebrain
Midbrain
Hindbrain

Forebrain

Midbrain

Hindbrain

Forebrain

Cerebrum

- The outermost layer of the forebrain, it is the largest and **main thinking part of the brain.**
- Responsible for complex cognitive functions, **including thinking, problem-solving, language, and conscious awareness.** Voluntary
- It is made up of two hemispheres known as **cerebral hemispheres.**

Thalamus

- Located near the center of the brain.
- Acts as a **relay station for sensory information** coming from various sensory receptors (except olfaction) to different areas of the cerebral cortex for processing.

Hypothalamus

Pituitary Olfactory lobe — olfactory receptors

- Located below the thalamus.
- **Regulates various physiological processes**, including body temperature, hunger, thirst, sleep, and the release of hormones from the pituitary gland.

Midbrain

- It provides a passage for the different neurons going in and coming out of the cerebrum.

- Pain perception, reflex action etc.

Hind Brain

Cerebellum

- It is the **second largest part of the brain and largest part of hindbrain.**
- The cerebellum is essential for **coordinating and regulating movement, balance, posture, and other motor functions.**
- It helps in fine-tuning the voluntary movements.

Pons

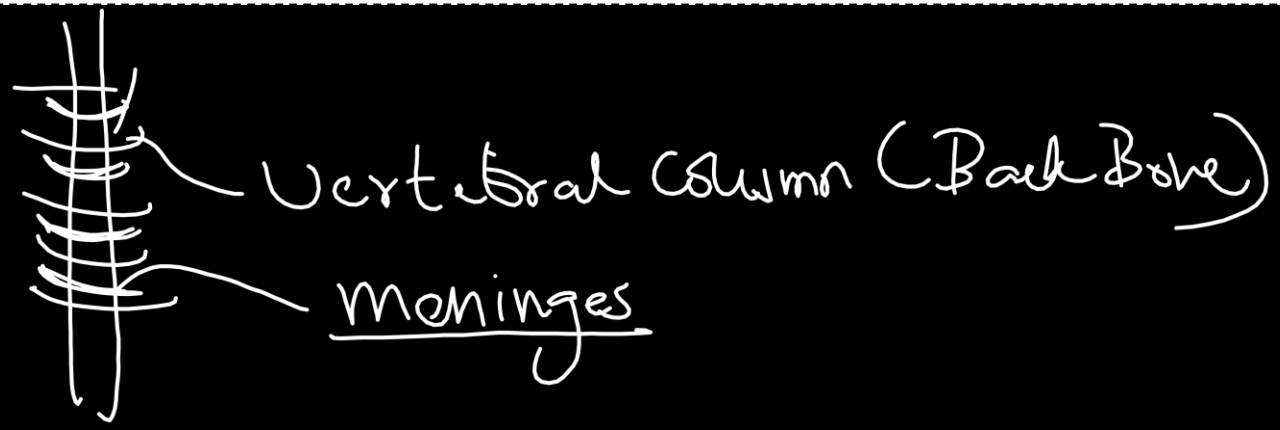
- It controls breathing
- **The pons contains important respiratory centers that help regulate the rhythm and depth of breathing.** It works in conjunction with the medulla oblongata to ensure the automatic and rhythmic nature of breathing.

Medulla oblongata

- The medulla **coordinates various reflexes, including coughing, sneezing, swallowing, and vomiting.**
- It controls b**oth breathing and cardiovascular activities**(controls the rate of heart beat and expansion and contraction of blood vessels)

"Cranium" refers to the skull, the bony structure that encases and protects the brain and other important organs within the head.

The meninges are a set of three protective membranes that surround and support the brain and spinal cord within the cranial cavity (skull) and the vertebral column(spinal column).



Spinal Cord

•The spinal cord is a long, thin, tubular bundle of nerve tissue that extends from the brainstem down through the vertebral column.

Functions:

• It helps in relaying sensory signals that allow us to perceive the environment.
• Controlling voluntary and involuntary movements.
•It helps in facilitating the reflex responses.

What is endocrine system?

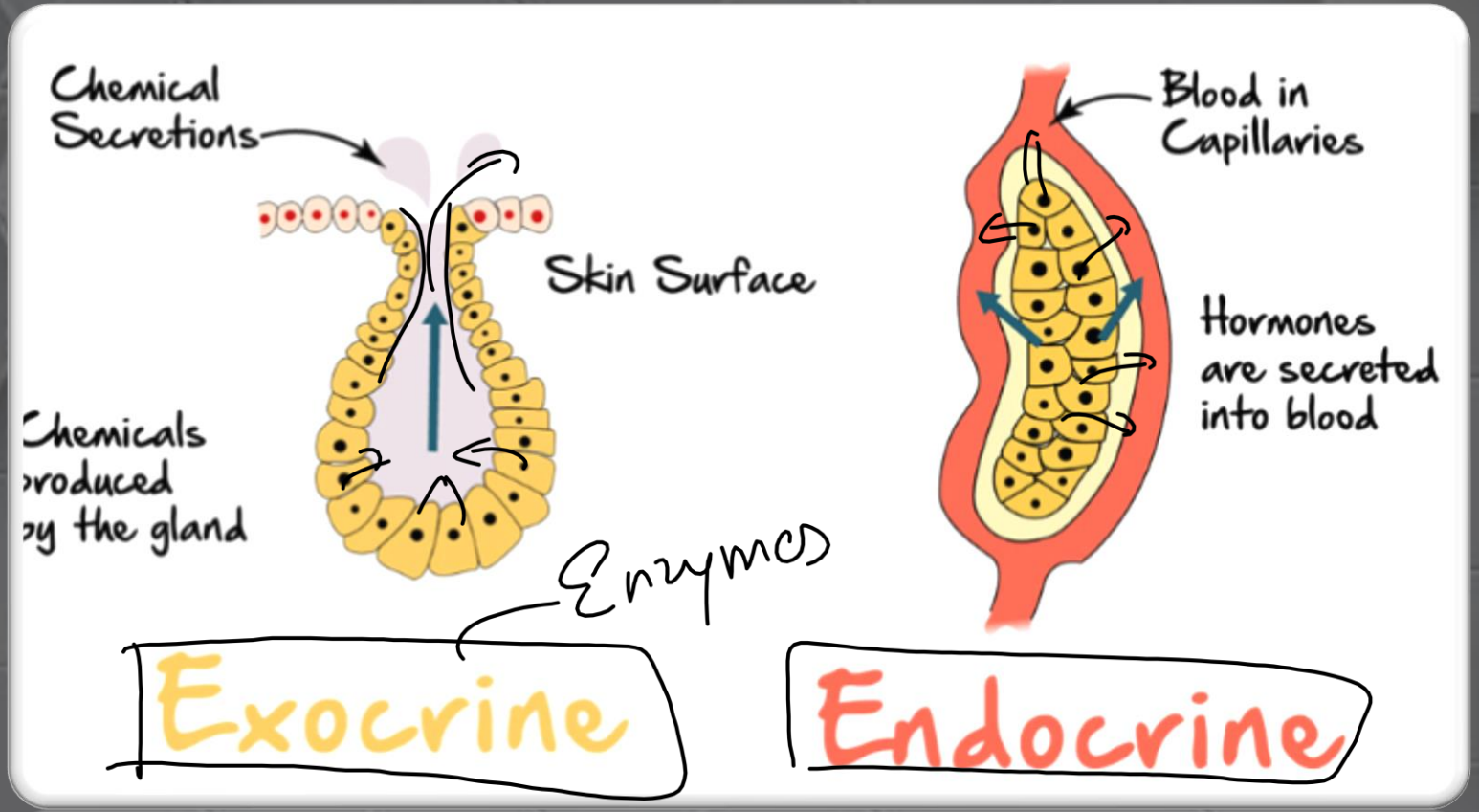
What is endocrine system?

It consists of endocrine glands that controls the body by releasing the chemical messengers known as ***hormones***.

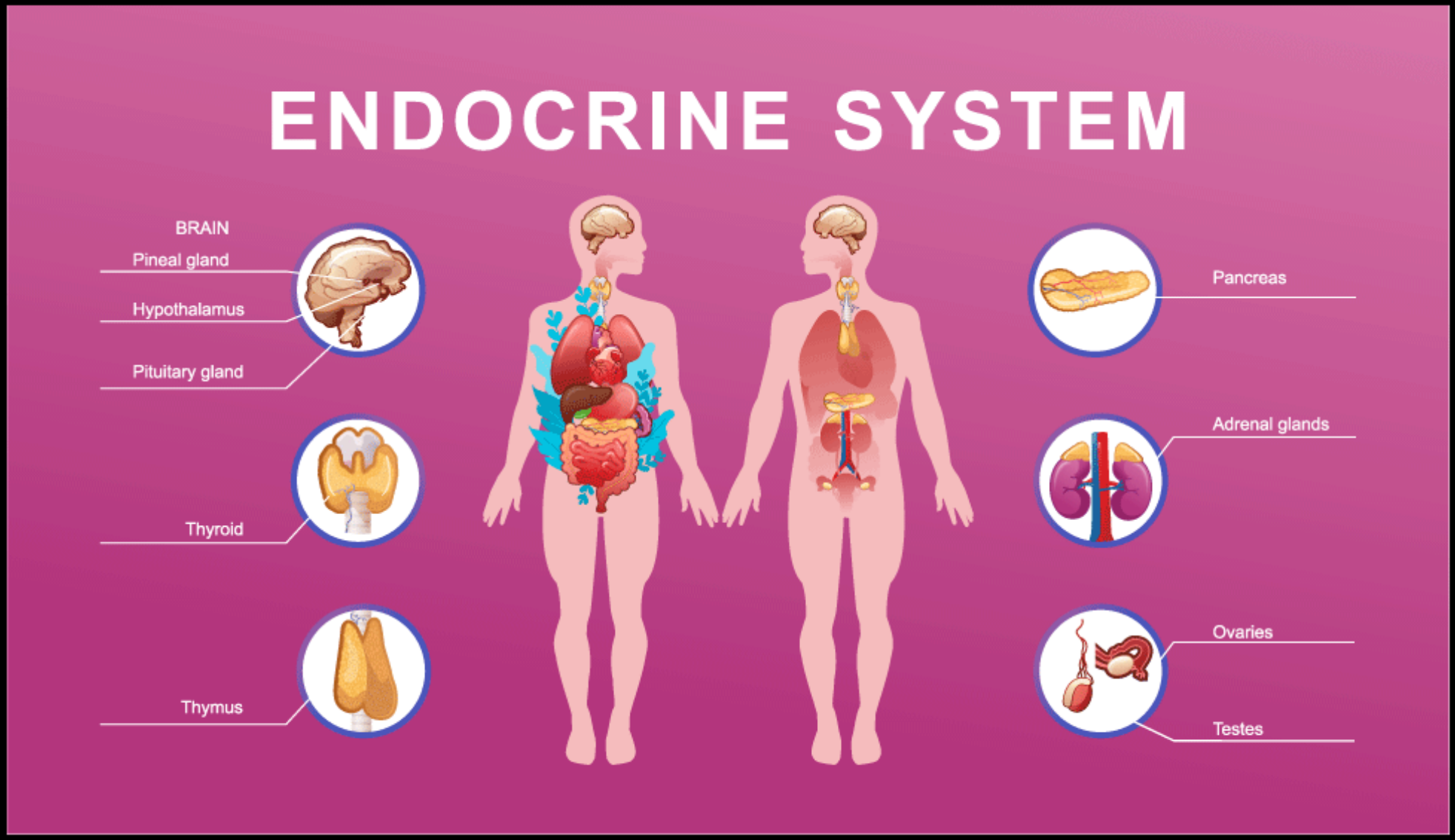
They are ***ductless glands***, which secrete hormones directly into the blood rather than the ducts.

The site that responds to these hormones are known as *Target sites*.

What is endocrine system?



ENDOCRINE SYSTEM



Dictatorship

Hypothalamus

It controls the secretion of hormones from the anterior and posterior lobes of the pituitary gland.

Releasing Hormones

Inhibiting Hormones

Pituitary Gland

Anterior pituitary produces:

Growth Hormones-
Promotes and regulates the growth
Deficiency: Dwarfism
Over secretion: Gigantism

Thyroid stimulating hormone-
It controls the functioning of thyroid glands

Follicle stimulating hormone(FSH) and Luteinizing hormone(LH)
It primarily helps in release of the egg

Hypothalamus

It produces hormones that control the secretion of hormones from the anterior and posterior lobes of the pituitary gland.

Releasing Hormones

Inhibiting Hormones

Pituitary Gland

Posterior pituitary produces:

Vasopressin/Antidiuretic Hormone- ADH

When the body needs to conserve water, such as during periods of dehydration or low fluid intake, vasopressin levels rise. This hormone prompts the kidneys to reabsorb more water from the urine back into the bloodstream, reducing urine output and helping to prevent excessive water loss

Oxytocin-

It stimulates uterine contraction.
It helps in ejection of milk

Pineal Gland

It helps in regulating the biological clock and the gonadal development.

testis

ovary

gametes

Thyroid Gland

- The two main thyroid hormones are thyroxine (T4) and triiodothyronine (T3)
  - It helps in the Metabolism Regulation, Growth and Development.

- Note: For the formation of thyroid hormone, we need iodine.

- Iodized salt is an effective and efficient way to prevent iodine deficiency and thereby helps in the production of the thyroid hormone.

- Deficiency of iodine leading to insufficient thyroid hormone production leads to : Goitre

Swelling of thyroid gland

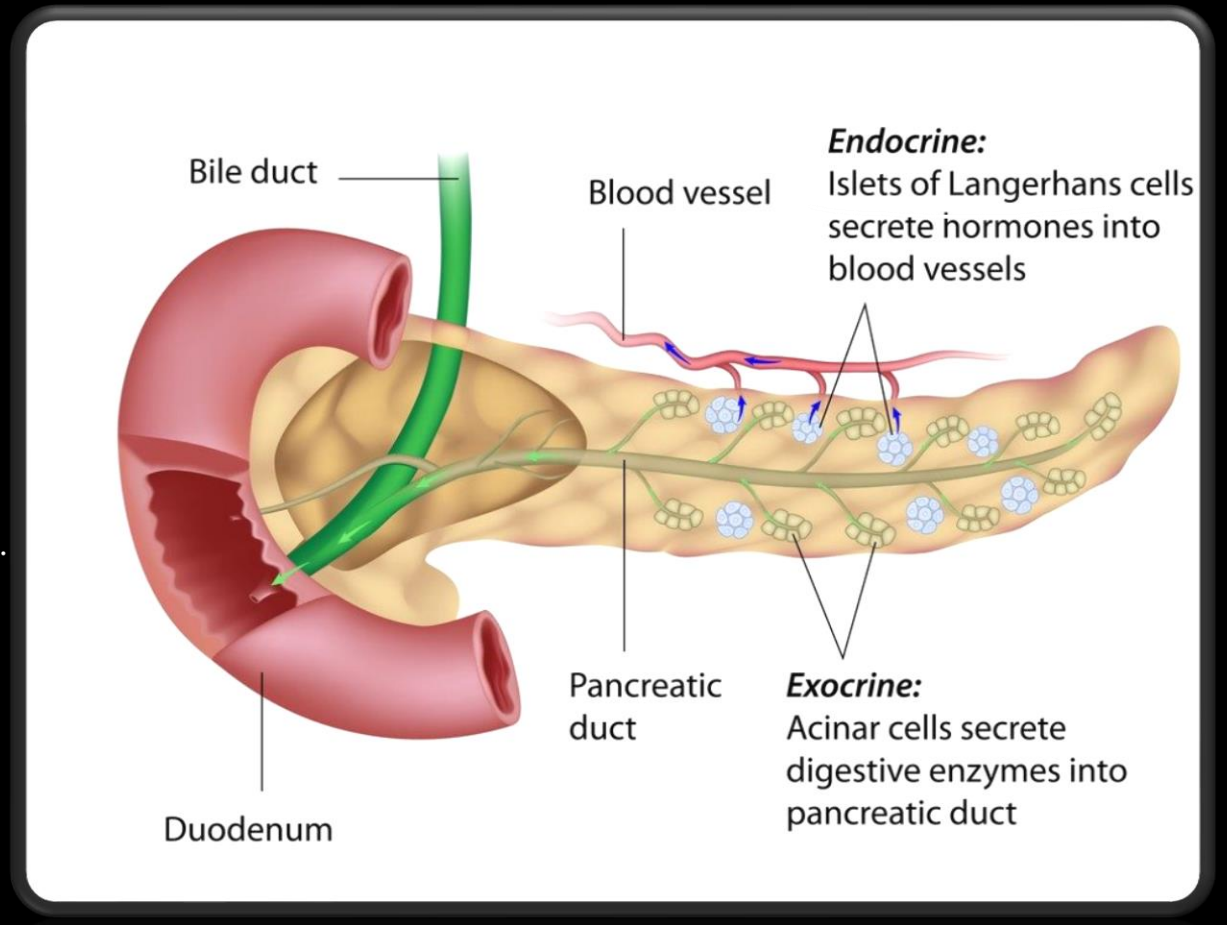
Adrenal glands

- The adrenal glands are a pair of small, triangular-shaped endocrine glands located on top of each kidney.

- The outer layer of the adrenal glands is known as the **adrenal cortex**. It produces:
-Cortisol(stress hormone) Aldosterone(maintenance of blood pressure) and the sex hormones.

- The inner layer of adrenal gland is known as **adrenal medulla** and it produces:
-**Adrenaline/Epinephrine:** It causes both vasoconstriction (narrowing of blood vessels) and vasodilation (widening of blood vessels) effects.
- **Noradrenaline/Norepinephrine:** It primarily induces vasoconstriction, leading to increased blood pressure and redirecting blood flow to critical areas like muscles and the brain.

Guess who?

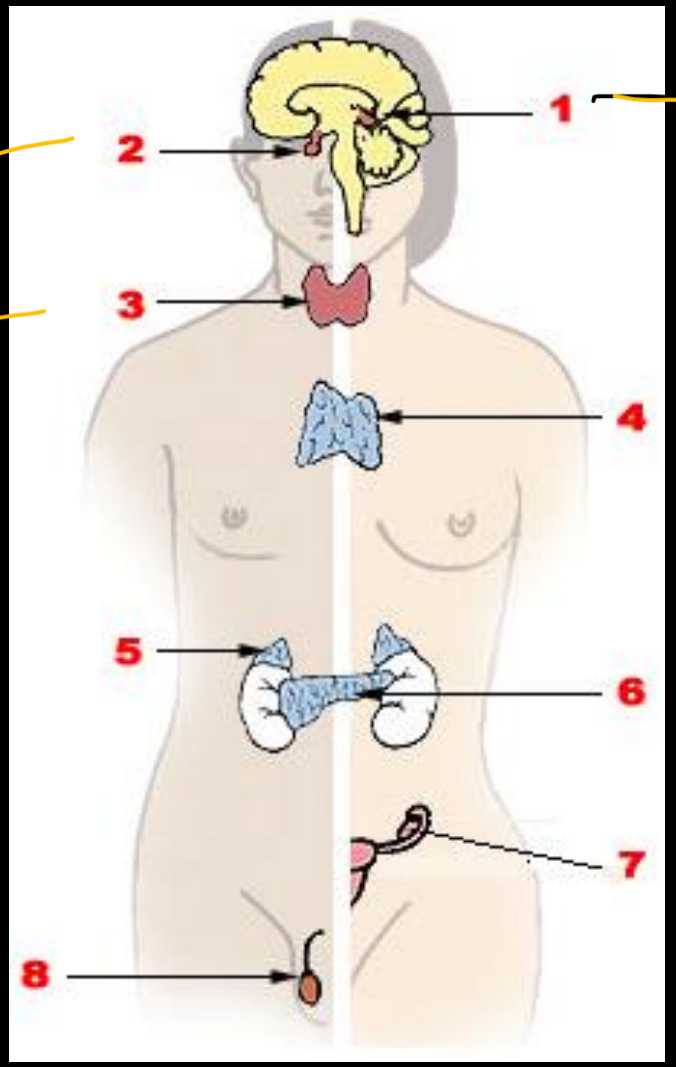


Heterocrine gland

Exocrine
Enzymes

Endocrine
Hormone

α, β, delta Islets of Langerhans



Pituitary

Pineal gland

Thyroid

thymus

Adrenal glands

Ovaries

[Ovarian hormones
Progesterone & Estrogen]

Testis

→ testicular hormones – Androgens – Testosterone]

Time for PYQ Practice

(i) Name the disorder which a person is likely to suffer from due to the following :

Pituitary Gland

(I) Over-secretion of growth hormone → Gigantism

Ovary

(II) Deficiency of oestrogen in females → Hypogonadal

Thyroid gland

(III) Less secretion of thyroxine → Goitre

Also name the gland that secretes each of the hormones mentioned above.

→ Feedback mechanism

(ii) How is the timing and amount of hormone released regulated ? Explain with the help of an example. 5

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Topic	PDF	Link
Real Numbers		
Life processes		

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KEY NEUROTRANSMITTERS AND THEIR MAIN FUNCTIONS

ADRENALINE/EPINEPHRINE

fight or flight
Produced in stressful situations. Increases heart rate and blood flow, leading to physical boost and hightened awareness.

NORADRENALINE/NOREPINEPHRINE

concentration
Affects attention and responding actions in the brain. Contract blood vessels, increasing blood flow.

DOPAMINE

pleasure
Feelings of pleasure, also addiction, movement and motivation. People repeat behaviors that lead to dopamine release.

SEROTONIN

mood
Contibutes to well-being and happiness. Helps sleep cycle and digestive system regulation. Affected by exercise.

GABA

calming
Calms firing nerves in the central nervous system. High levels improve focus, low levels cause anxiety. Also contributes to motor control and vision.

ACETYLCHOLINE

learning
Involved in thought, learning, and memory. Activates muscle action in the body. Also associated with attention and awakening.

GLUTAMATE

memory
Most common neurotransmitter. Involved in learning and memory, regulates development and creation of nerve contacts.

ENDORPHINS

euporia
Released during exercise, excitement and sex. Producing a sense of well-being and pain reduction.

Mindset Health
www.mindsethealth.com

Homework Time

The part of human brain which controls muscular coordination is :

(A) medulla
(B) pons
(C) cerebrum
(D) cerebellum

A doctor advised a person to take an injection of insulin because :

(A) his heart was beating slowly.
(B) his blood pressure was low.
(C) he was looking short in height.
(D) his pancreas was not secreting the required hormone in proper amounts.

Assertion (A) : Chemical co-ordination is seen in both plants and animals.

Reason (R) : Plant hormones control directional growth, whereas in animals, growth is never seen in one direction only.

Homework Time

Name the parts of the nervous system which are involved in the following activities : *2*

(i) Maintaining body posture

(ii) Salivation

(iii) Hunger

(iv) Answering a question

(i) List three points of difference between nervous and hormonal mechanisms for control and coordination in animals.

(ii) How are auxins related with the bending of plant shoot towards unidirectional light ? Explain. *5*

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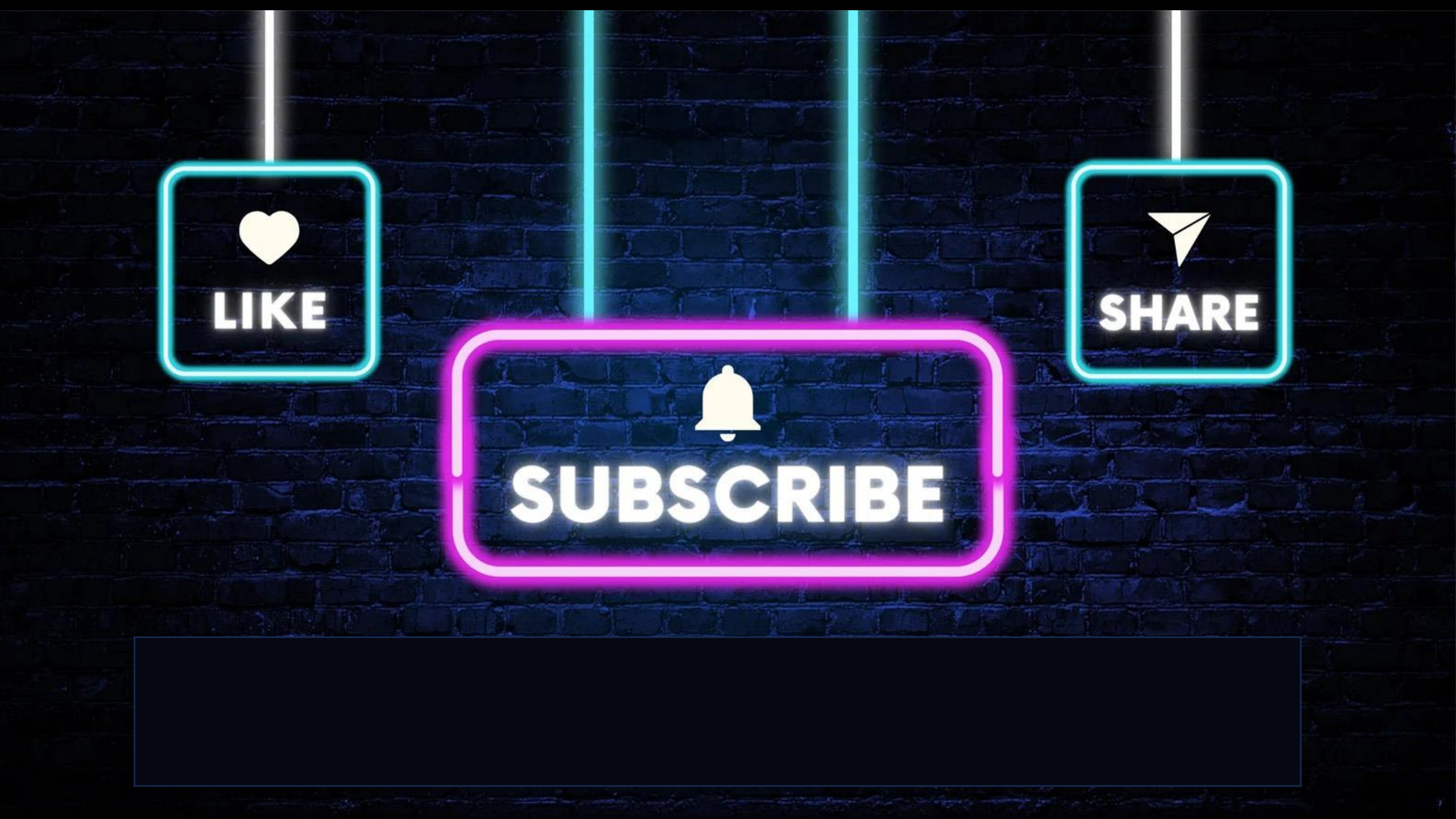
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