# CLASS X/ BIOLOGY
# CONTROL AND COORDINATION

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- **PLANT HORMONES**:

## What are Phytohormones ?

The function of control and coordination in plants is performed by chemical substances known as Plant hormones or phytohormones.

Phytohormones are of 4 types :

1. **Auxin**
2. **Gibberellin**
3. **Cytokinin**
4. **Abscisic Acid**

# FUNCTIONS OF PLANT HORMONES

- **Auxins** : They promote cell enlargement and cell differentiation in plants. The also promote fruit growth.
- **Gibberellins** : It cause stem elongation and leaf expansions. They help in breaking the dormancy in seeds and buds, and also promote fruit growth .
- **Cytokinin** : They promote cell division in plants. They help in release of apical dominance. It enhance the opening of stomata and also stimulate leaf expansion resulting from cell enlargement.
- **Abscisic acid (ABA)** : It inhibits growth.
  It supports dormancy in seeds and buds. It supports closing of stomata. Its effect includes wilting and falling of leaves, floral parts, fruits etc.

# CONTROL AND COORDINATION IN ANIMALS

## HOW THE CONTROL AND COORDINATION IN PERFORMED IN ANIMALS

- There are two coordinating mechanisms :

i) **Nervous System** : It is formed of specialized nerve cells or neurons which control the activities of the body by sending nerve impulses.

ii) **Endocrine System** :It regulates the activities of cells in various parts of the body with the help of hormones. Its effect is slow but lasts for a long time

# SENSE ORGANS

All animals receive a variety of external information from the environment through specialized structures called sense organs. There are five major sense organs in our body- eyes, ears, nose, tongue and skin. These sense organs contain receptors

## What are receptors?

A receptor is a specialised cell or a group of cells in a sense organ that perceive a particular type of stimulus in the environment like light, heat, pressure etc. Receptors are either neuron endings or specialised cells that are in close contact with neuron endings to perceive information from external surroundings. Different sense organs have different receptors for detecting different stimuli.

| Name of Receptors | Stimulus | Location in our body | Sense organs |
|---|---|---|---|
| Photoreceptors | Light | Eyes |  |
| Phonoreceptors | Sound | Ears |  |
| Olfactory receptors | Smell | Nose |  |
| Gustatory receptors | Taste | Tongue |  |
| Thermo receptors | Heat/Cold | Skin |  |
| Tango receptors | Touch | Skin | |

# What are effectors?

- It is a part of the body that responds to stimulus sent from brain and spinal cord. E.g. Muscles and Glands
- All these  organs respond to stimulus

# What is reflex action?

Reflex action is an automatic motor response to a sensory stimulus without the involvement of the brain. Responses which occur without our awareness are called reflex.

It is controlled by the spinal cord.

Reflexes are of two types :

i) Unconditioned reflex :
ii) Conditioned reflex

- i) **Unconditioned reflex** : This is a simple reflex which is an inborn response to a stimulus. E.g. Quick closing of eye lid when an object suddenly comes in front of the eyes.

- ii) **Conditioned reflex**: Conditioned reflexes are not inborn. They are acquired by experience , training and learning. E.g. Driving and swimming.

# REFLEX ARC

- The path followed by a nerve impulse from the receptor to the effector organ involving sensory, associations and motor neurons form a reflex arc.