

## Tropism:

→ The orientations in the organisms that lack nervous system are termed tropism.

→ Growth movement → Released to directional stimuli.

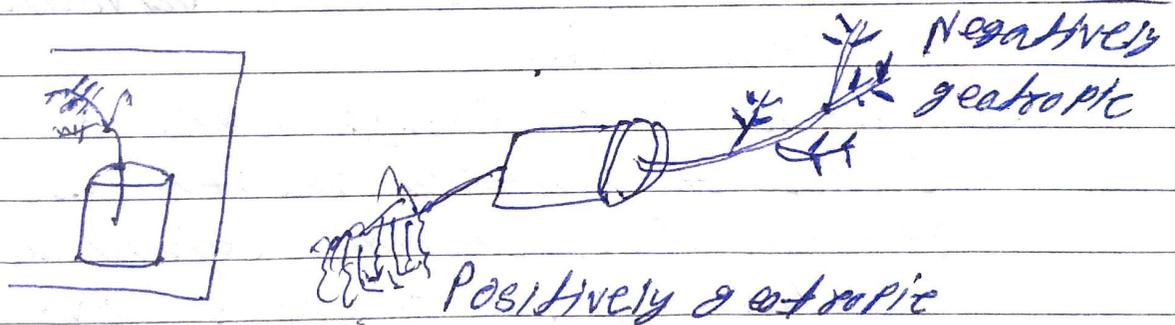
→ Depending upon the kind of source of stimuli, it is

→ Ex- The turning of the sun flower to face the sun and the movement only in the part of the sessile animals towards the light by differential growth, are called Phototropism.

→ The vertical orientation of leaves of trees on a hot sunny day is called heliotropism.

→ The downward movement of roots is called geotropism.

Light  
(sun)



→ The movement of tentacles of Hydra towards mouth as well as widening of mouth of Hydra in response to glutathione (chemical) secreted by the punctured prey (पंचर मत्तक) is called chemotropism.

→ A response which brings the animal closer to the source of stimulation is called positive while which causes withdrawal from the source is called negative.

→ The co-ordinating mechanism in tropism is provided mainly by the hormones and it generally involves the part of the body of the organism.

### → Kinesis :-

→ The movement in the body in response to stimuli.

→ non ~~the~~ directional movements.

→ Some organisms will move faster under unfavourable conditions and slow down in a more favourable environment.

→ Kinesis is nothing more than a series of random movements in response to a specific stimulus, coupled with occasional avoidance or approach movements.

→ The kinesis is divided into two types :-

(a) Orthokinesis

(b) Klinokinesis

### (a) Orthokinesis:-

→ When the linear velocity of the organisms movement is affected it is called orthokinesis.  
→ When change in condition produces merely a retardation of movement it results in aggregation.

Ex - The swimming activity of ammocet larvae of the lamprey varies with the light intensity.

### (b) Klinokinesis:-

→ When the rate of turning is affected in response to stimuli, then it is called klinokinesis.

Ex - The Planarian, dendrocoelum lacteus tends to aggregate in the darker parts of its habitat. Although the locomotion continues yet animals tend to remain in darker areas.

### Example:-

- If a drop of water containing CO<sub>2</sub> is added at one edge of the slide.
- Whenever random movements bring backwards and turn and then swim forward again away from the bubble.
- This action is repeated over and over again with the result that most of the paramecia are situated at some distance from the bubble at any given time.

- Similarly the Paramecium will respond from a drop of 0.5% NaCl solution.
- This response is the result of avoiding reaction.
- The first response is probably not a result of swimming towards the chemical stimulus, but, rather, a matter of swimming about at random, slowing up, when near the region of lower pH and speeding up when away from it.



Fig:- Kinesis in Paramecium