



# ST. LAWRENCE HIGH SCHOOL



A JESUIT CHRISTIAN MINORITY INSTITUTION

Sub: Life Science

Class: X

Date: 06.05.2020

CHAPTER: 1-CONTROL AND COORDINATION IN LIVING ORGANISMS

TOPIC: PLANT HORMONES

STUDY MATERIAL 3

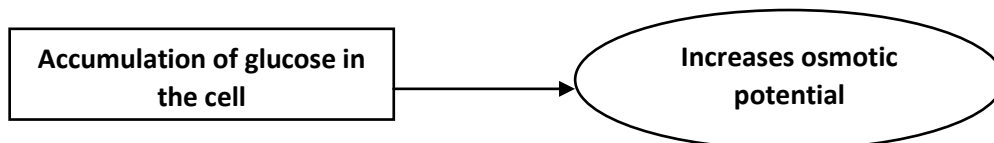
## FUNCTION OF PLANT HORMONES

### GIBBERELLIN:

➤ Breaking of seed dormancy:

In germinating barley and other cereal seeds, the embryo secretes gibberellins. Gibberellins diffuse through the endosperm to a surrounding tissue called the aleurone layer, which lies inside the seed coat. The gibberellins causes the aleurone layer synthesize and secrete HYDROLYTIC ENZYME ( $\alpha$ -amylase) that digest proteins and starch stored in the endosperm.

Insoluble starch ———→ soluble glucose



As osmotic potential (solute concentration) increases, water enters into the cells (endosmosis) which leads to swelling & rupture of seed coat causing seed germination.

**De-novo synthesis** – Means ‘**from the scratch**’-Synthesis of complex material (like proteins) from simpler form (amino acids).

- **COMMERCIAL USE: In brewing industry:** Commercially, gibberellins are used in the brewing industry to enhance the “malting” (germination) of barley and the breakdown of its endosperm, producing sugar that is fermented to alcohol.

**CYTKININ:** These hormones are derivatives of adenine (a purine base of DNA)

One of the most important function of cytokinin being –Delay of leaf senescence

- **Delay of leaf senescence:** The scientists Richmond & Lang applied cytokinin to a detached leaf of *Xanthium* plant which was seen to remain green in colour instead of becoming yellow. Thus the aging process (senescence) was delayed, the phenomenon being known as Richmond-Lang effect.

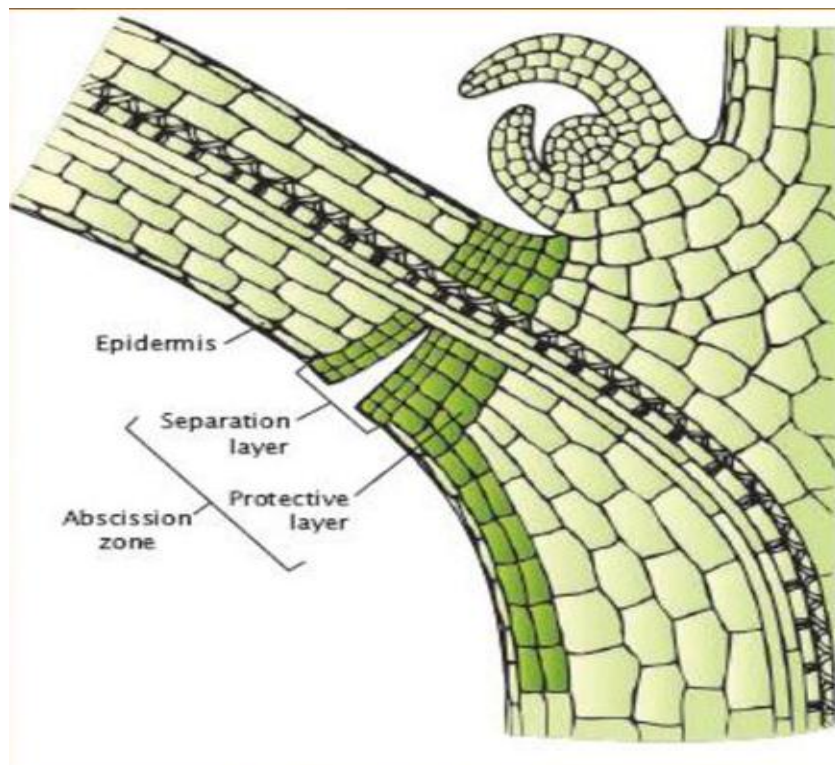
### Leaf senescence usually associated with:

1. Loss of chlorophyll in leaves.
2. Increase in protein degradation inside leaf cells.

### ETHYLENE:

- Gaseous hormone produced in almost all parts of plants specially tissues undergoing senescence and ripening fruits
- It is often called 'senescence hormone'
- Promotes senescence and abscission of plant organs specially leaves and flowers.
- Highly effective in fruit ripening & increases rate of respiration (The enzyme which makes ethylene, requires oxygen and thus the entire process of ripening mediated by ethylene is related to rate of respiration.)

### ABSCISSIC ACID:



**FORMATION OF ABSCISSION ZONE:** This hormone forms a zone called abscission zone which is a special layer of cells forming barrier between a leaf & the plant body. The zone marks where the leaf will get detached from the plant. The zone also forms a protective layer to prevent entry of parasites.