

# **Lecture Notes of Basic Life Science**

**3rd Semester**

**by**

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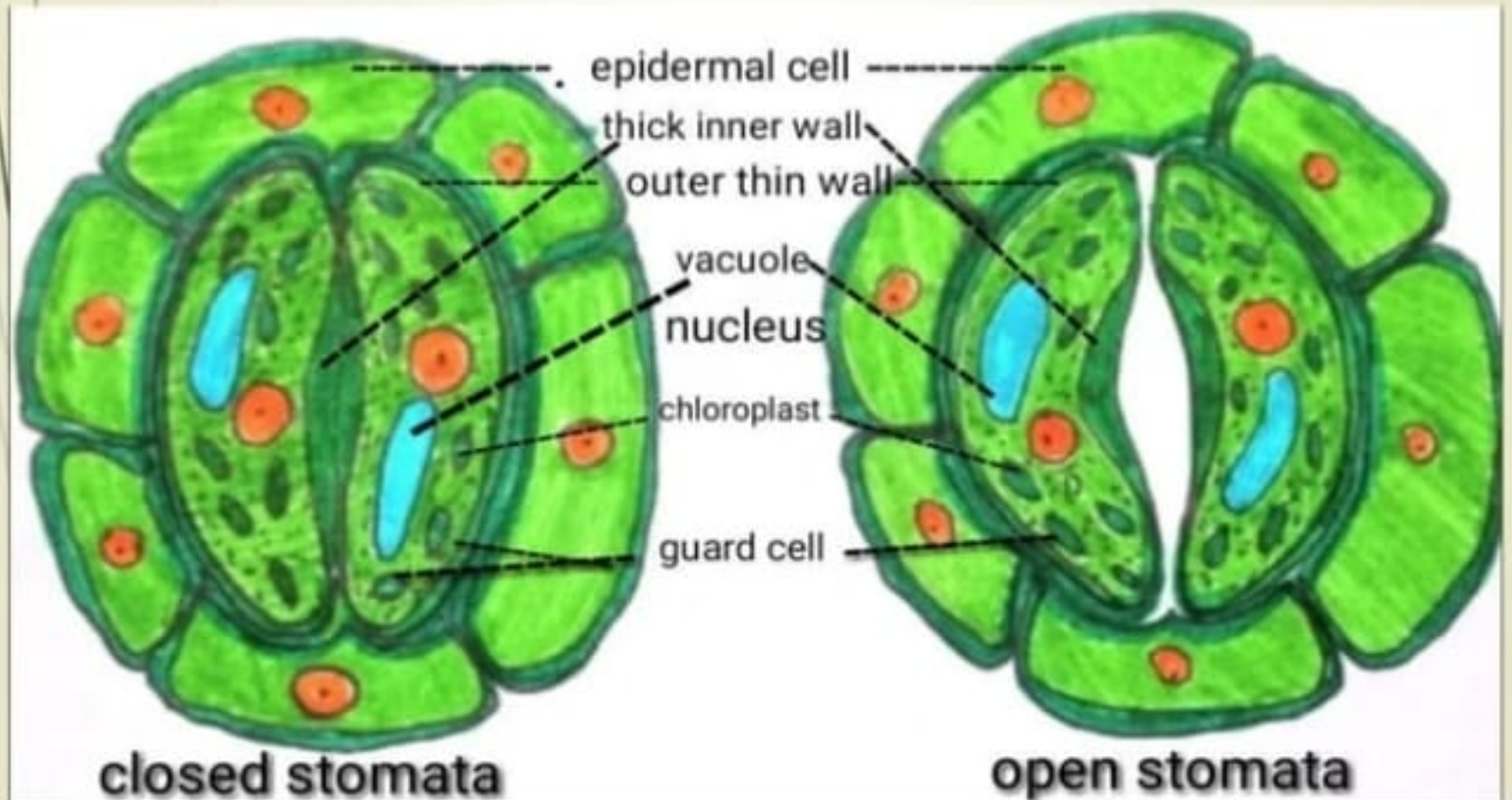
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# Stomata

- Stomata are pore in a plants skin through which water and gases are exchanged the plant and the atmosphere.



## Theory # 4. Active K<sup>+</sup> Transport theory

- Also called as Potassium Pump Theory and Role of Abscisic Acid. Or Active Potassium Pump Theory or Active K<sup>+</sup> ion Transport (K<sup>+</sup> ion Pump) Mechanism
- The concept of K<sup>+</sup> ion transport was given by **Fujino**.
- It was supported and elaborated by **Levitt & Rashke** in **1975** It appears to be an active mechanism which needs ATP. It is based on recent observations and explains the mechanism.

## A. Opening of Stomata during Daytime (in presence of light):

Opening of stomata depends upon following conditions.

- Presence of light.
- Decrease in starch contents of guard cells.
- Increased concentration of malic acid in guard cells.
- Influx of  $K^+$  ions in guard cells.
- Efflux of  $H^+$  ions from guard cells.
- Intake of  $Cl^-$  ions by guard cells.
- Low  $CO_2$  concentration in an around guard cells.
- High pH (more than 7) in guard cells (hence, alkaline medium of the cell sap in guard cells).
- High T.P. in guard cells due to endosmosis, (turgidity of cells).
- TP more towards thin wall of guard cell & stomata open.

