

WHERE DOES PHOTOSYNTHESIS TAKE PLACE?

- Photosynthesis unfolds its green magic predominantly in the green leaves of plants and extends its transformative prowess to other green plant parts such as stems. Among the various green tissues, the mesophyll of leaves stands out as the epicenter of vibrant photosynthetic activity in higher plants. The mesophyll cells take the lead, boasting numerous chloroplasts that house the specialized light-absorbing pigments, the chlorophylls.

Chloroplasts: The Powerhouses of Photosynthesis

- In eukaryotic organisms engaging in photosynthesis, the molecular ballet takes place within the chloroplast, a subcellular organelle encased by a double membrane. This remarkable organelle features a distinct set of membranes known as thylakoids. The thylakoids organize themselves into stacks, forming structures termed grana. Connecting these adjacent grana are unstacked membranes named stroma lamellae. Encompassing the thylakoids is the fluid compartment designated as the stroma.

Within the chloroplast, a division of labor unfolds:

- **Thylakoid Membrane:** This membrane hosts proteins and pigments, including chlorophylls and carotenoids. These components play a pivotal role in the photochemical events of photosynthesis. Their responsibilities span trapping light energy and orchestrating the synthesis of ATP and NADPH.
- **Stroma:** This region acts as the stage for enzymatic reactions that lead to the synthesis of sugars, ultimately culminating in starch formation. While the former set of reactions, directly fueled by light, earns the title of light reactions, the latter, reliant on the products of light reactions (ATP and NADPH), is conventionally referred to as dark reactions or carbon reactions. It's crucial to note that the term "dark reactions" doesn't imply their occurrence in darkness; instead, it signifies their independence from direct light stimulation.

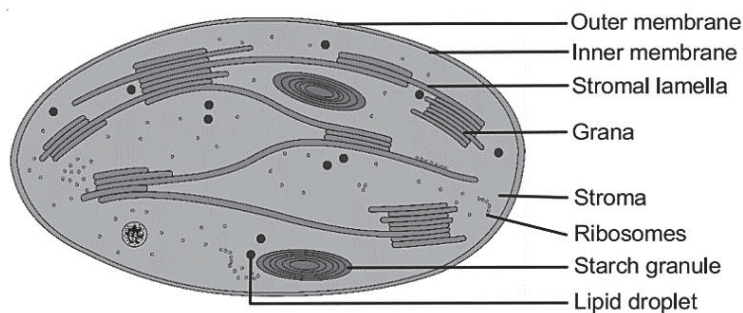


Fig. : Diagrammatic representation of an electron micrograph of a section of chloroplast