# 3.2.1 THE PLACE/SITE OF PHOTOSYNTHESIS

## Introduction

Photosynthesis takes place mainly inside the chloroplasts of green plant cells. Leaves are the primary organs where this process occurs because they contain numerous chloroplasts.

## Chloroplast Structure

A chloroplast is a green organelle surrounded by a double membrane. Inside the chloroplast are structures called thylakoids arranged into stacks known as grana. Chlorophyll pigments are found within these membranes.

## Role of Chlorophyll

Chlorophyll absorbs sunlight energy required for food production. The pigment gives plants their characteristic green color.

## Importance of Leaves

Leaves provide a broad surface area for capturing sunlight. They also contain stomata that allow carbon dioxide to enter during photosynthesis.

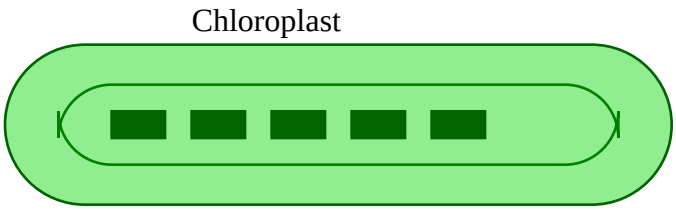
## Stomata Function

Stomata are tiny pores located mostly on the lower surface of leaves. These openings regulate gas exchange and water loss.

## Adaptations for Photosynthesis

Plants possess thin leaves, abundant chloroplasts, and vascular tissues that transport water and food efficiently.

## Figure: Structure of Chloroplast



Stacks of thylakoids contain chlorophyll pigments

## Important Concepts

| Part | Function |
|---|---|
| Chloroplast | Organelle where photosynthesis occurs |
| Chlorophyll | Pigment that absorbs sunlight |
| Grana | Stacks containing thylakoid membranes |
| Stomata | Openings for gas exchange |
| Leaf | Main photosynthetic organ |

## Summary

The chloroplast is the major site of photosynthesis in green plants. Chlorophyll pigments inside thylakoid membranes absorb solar energy. Leaves and stomata support efficient photosynthesis through gas exchange and light absorption.

## Questions and Answers

**Where does photosynthesis mainly occur?**

It mainly occurs inside chloroplasts.

**Which pigment absorbs sunlight?**

Chlorophyll absorbs light energy.

**What are grana?**

Grana are stacks of thylakoids inside chloroplasts.

**What is the function of stomata?**

Stomata allow gas exchange.

**Why are leaves suitable for photosynthesis?**

They contain many chloroplasts and have broad surfaces.

## Study Notes

- Chloroplasts are found mainly in leaf cells.
- Chlorophyll captures solar energy.
- Grana contain stacked thylakoids.
- Leaves maximize light absorption.
- Stomata regulate gas movement.
- Water reaches leaves through xylem tissues.
- Photosynthesis depends on healthy chloroplasts.
- Green color in plants comes from chlorophyll pigments.