

Chloroplast

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- The Chloroplasts contain **chlorophyll** and carotenoid pigments which are responsible for trapping energy essential for photosynthesis.
- Majority of Chloroplasts in the green plants are found in the mesophyll cells of the leaves.
- These are lens-shaped, oval, spherical, discoid or even ribbon like organelles having variable length (5-10 μ m) and width (2-4 μ m).

- Chloroplast have variable length (5-10um) and width (2-4um).
- Their number varies from **1** per cell of the *Chlamydomonas*, a green alga to **20-40** per cell in the **Mesophyll**.

Structure of Chloroplast

- Chloroplast is the double membrane bound cell organelle, like mitochondria.
- The inner Chloroplast membrane is less permeable than the outer one.
- The space limited by the inner membrane of the Chloroplast is called the **stroma**.
- A number of organised flattened membranous sacs called the **thylakoids** are present in stroma.

- Thylakoids are arranged in stacks like the piles of coins called **grana** or the intergranal thylakoids.
- There are flat membranous tubules called the **stroma lamellae** connecting the thylakoids of different grana.
- The membrane of thylakoids enclose the space called **lumen**.
- The stroma of the Chloroplast contains enzymes required for the synthesis of Carbohydrates and proteins.

- Chloroplasts also contains small, double stranded **DNA, RNA, Ribosomes and proteins**, thus Chloroplasts are called as **semiautonomous organelle** of cell.
- Ribosomes of the Chloroplasts are smaller (70S) than the cytoplasmic ribosomes (80S)
- Chlorophyll pigment are present in the thylakoids.

Functions of Chloroplast

1. **Photosynthesis** : The Chloroplasts trap the light energy of sun and transform it into the chemical energy in the form of glucose.
2. Balancing O_2 & CO_2 in nature.
3. Chloroplasts can be changed to Chromoplasts during ripening of fruits.
4. Chloroplasts impart in **cytoplasmic inheritance**.

5. Chloroplasts impart the pleasing greenery to the earth.

6. Chloroplasts store vitamin K, E, Rubisco protein and Fe etc.

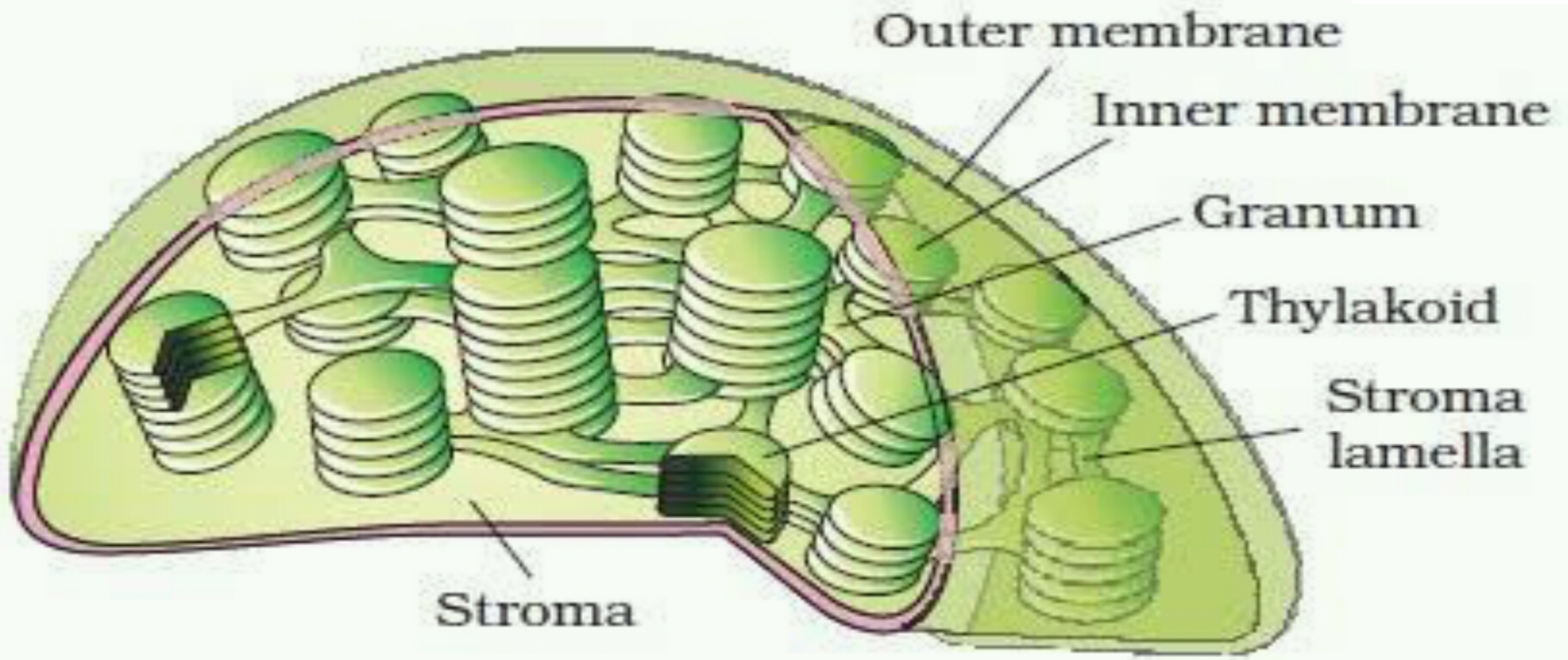


Figure 8.8 Sectional view of chloroplast

