

# Photosynthesis

Class X Biology

IGCSE Board

# Topics to learn

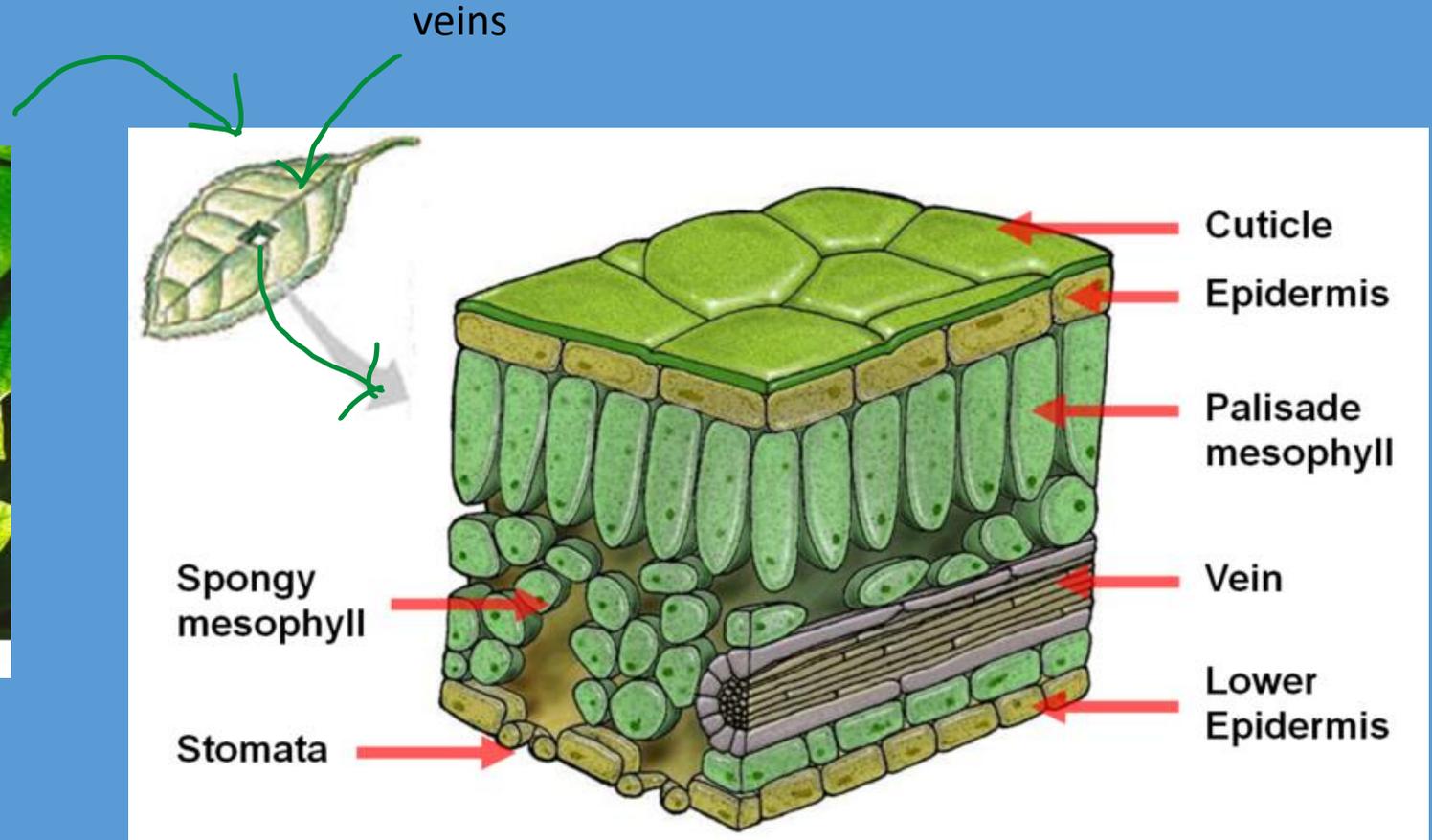
- What is photosynthesis?
- Where does it occur?
  - Structure of leaf
  - Adaptation of leaf
  - Structure of chloroplast
- How does it occur?
  - Equation of photosynthesis
- Environmental effects of photosynthesis

# What is photosynthesis?

- Photosynthesis is the process by which plants prepare their own food in the presence of sunlight.
  - Photo → light
  - Synthesis → make
  - Photosynthesis is the process of preparation of food in the presence of light
  - The light provides energy for conversion of inorganic substances into organic substances (food)
- In photosynthesis, inorganic substances (molecules) are combined together to form organic substances (molecules).
  - Inorganic substances → water, carbon dioxide
  - Organic substances → glucose, carbohydrate, amino acids

Where does it occur? In the leaves

# Structure of leaf



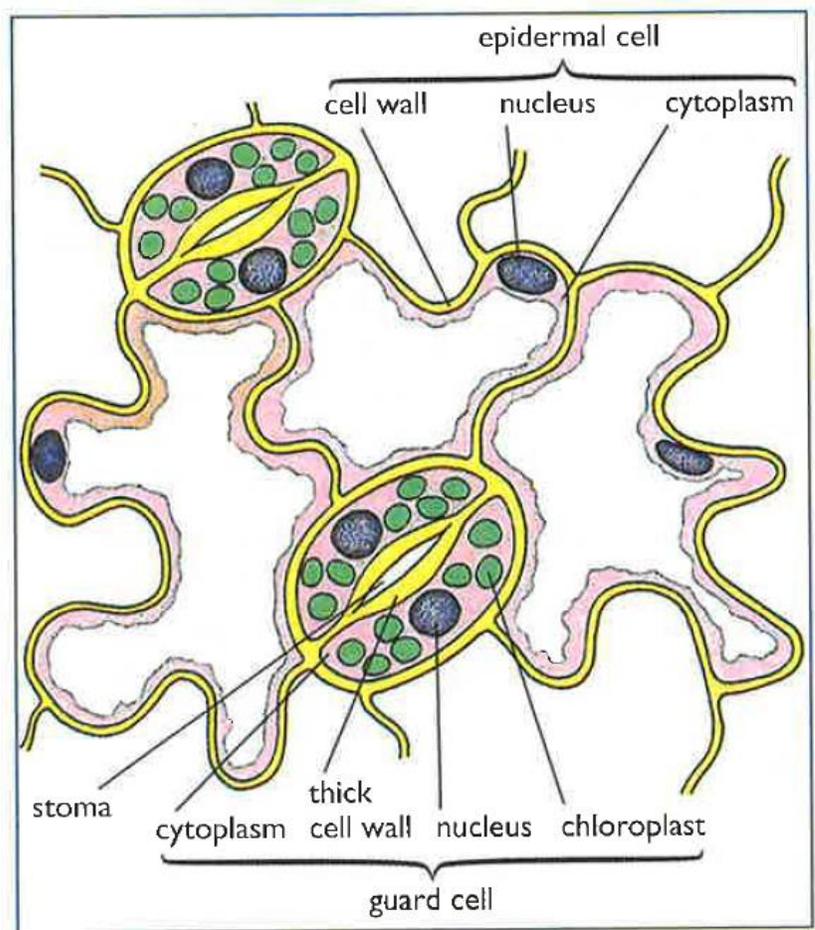
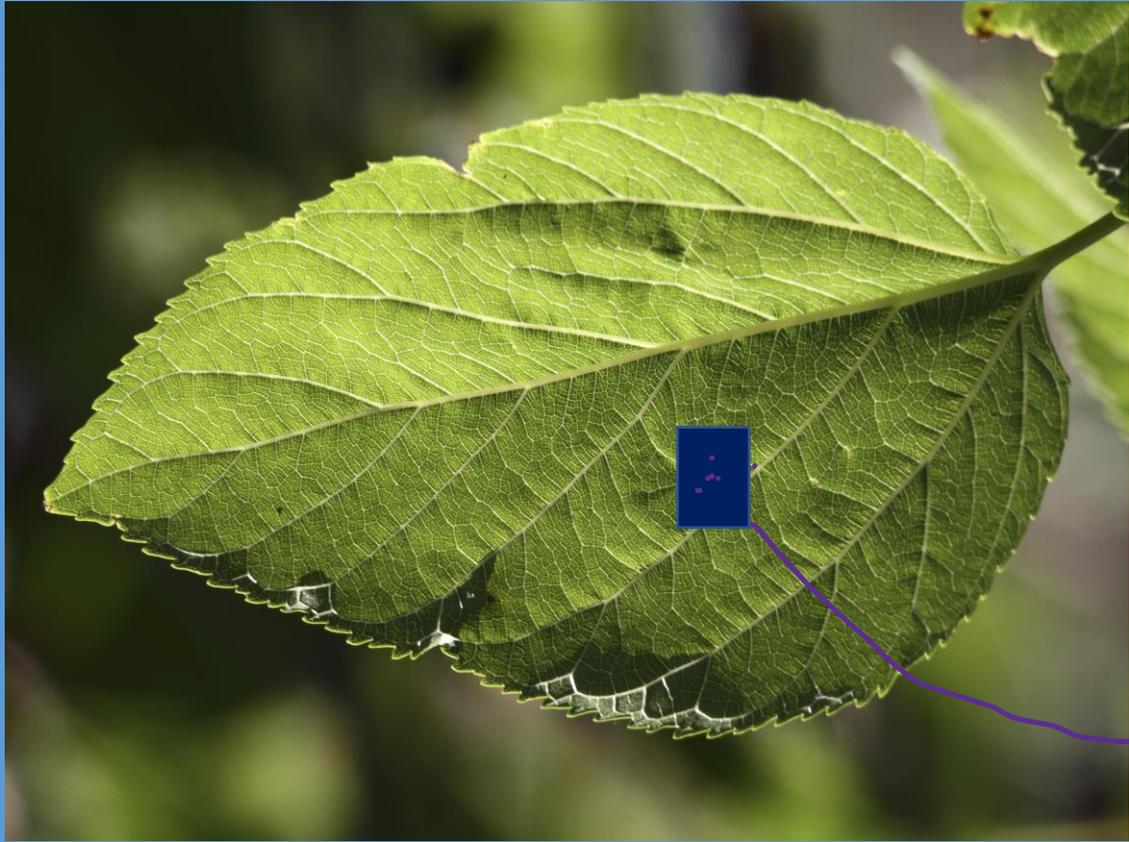
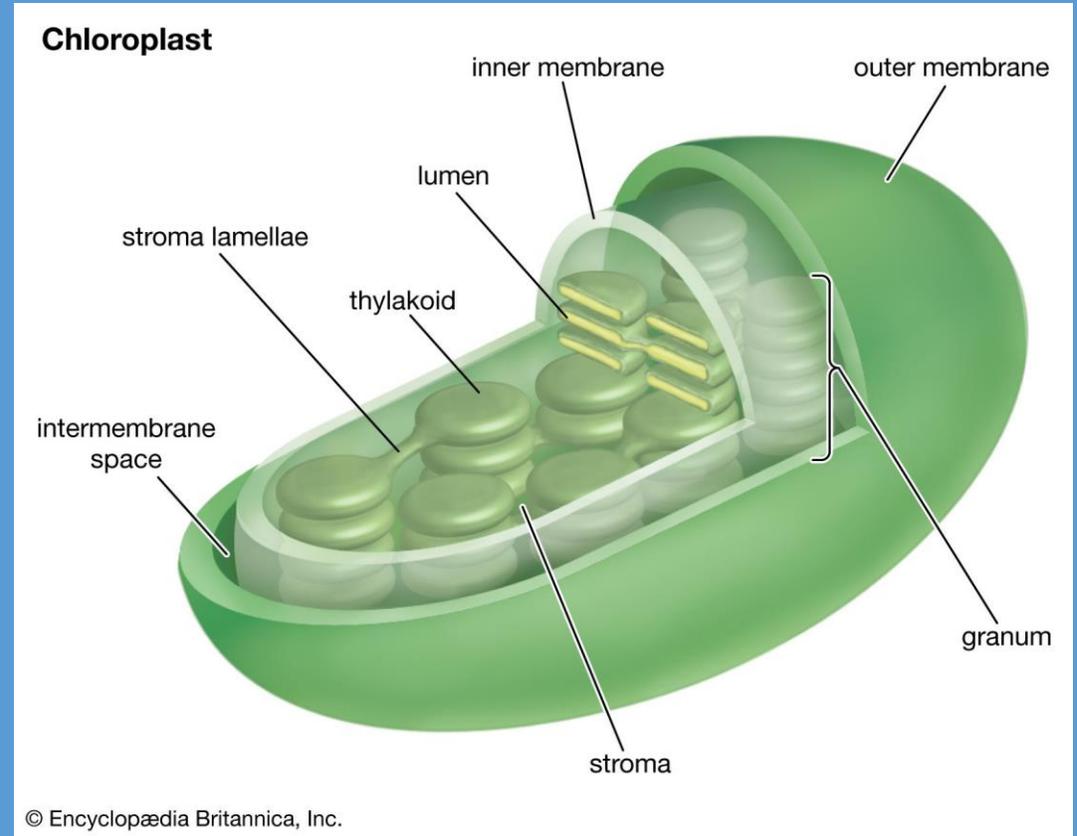
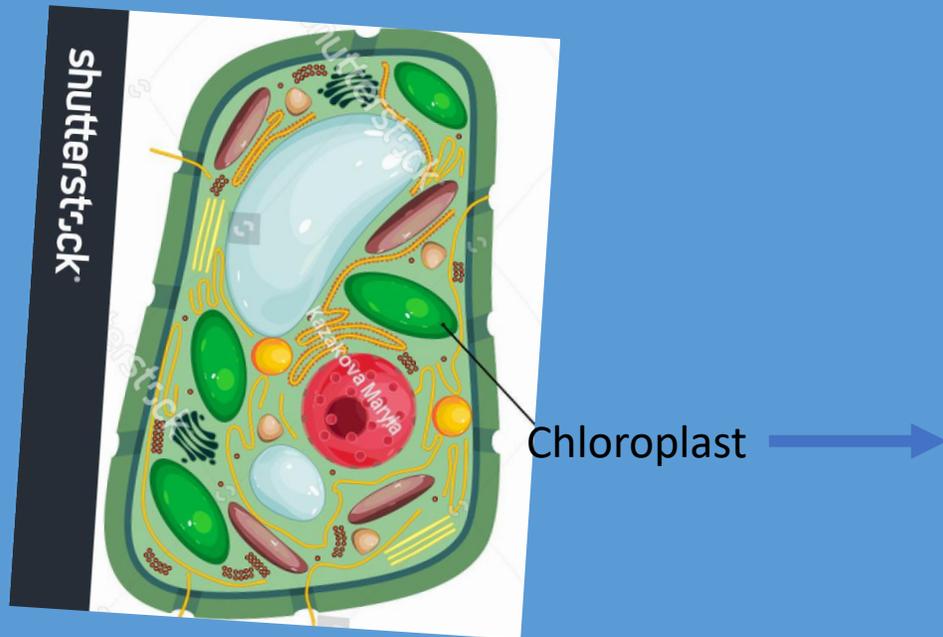


Figure 6.6 Surface view of the lower epidermis of a leaf.

# Where is the chloroplast?

# Structure of chloroplast



# Adaptation of leaf

- Leaves have stomata under the surface to take in air which has carbon dioxide
- Leaves have veins which bring water absorbed by the roots to the leaf cells
- Leaf cells have chloroplasts which have chlorophyll that trap energy from the sunlight which is used to turn inorganic substances into organic compounds.

# How does it occur?

- Carbon dioxide enters with the air through the stomata under the leaves
- Water reaches the cells of the leaves through the veins in the leaf
- Chlorophyll in the chloroplasts capture the energy of the sunlight and use it to cause the reaction →
- Carbon dioxide + water -----> glucose + oxygen
- Oxygen gas released as the product is released through the stomata and mixes with the air around.

# Equation of photosynthesis



# Environmental effects of photosynthesis

- Makes the air richer in oxygen
- Keeps the proportion of oxygen in air constant