

## **GCSE Biology – Plant Organisation - Transcript**

Plant organisation is how a plant is built. How the organs and tissues are organised to perform essential life processes, like photosynthesis.

Let's see how this works, by taking a closer look at this leaf. All the green parts of a plant that are above ground and exposed to light can photosynthesise, but the leaves are the main site of photosynthesis.

The structures of these plant organs are adapted to allow efficient gas exchange and maximum light absorption.

Leaves have a large surface area. This allows them to absorb as much light as possible and also provides a greater area for gases to enter. They are also thin and flat.

This makes diffusion quick and efficient as the gases only need to move over a short distance. In the midrib and veins are vascular tissue.

These are the xylem vessels which carry water and minerals up from the roots to the leaves and the phloem which carries dissolved sugars to other parts of the plant.

Although they are thin, leaves are made up of a number of layers of different plant tissue.

Each type of tissue has a structure that's perfectly suited to its function. Let's take a look.

The waxy layer of a leaf, called the cuticle, helps reduce water loss by preventing evaporation from the leaf's surface.

The epidermis of a leaf forms a protective outer layer that also prevents water loss, as well as providing a barrier against infections. Its transparent layer of cells allow light to reach the cells below.

The palisade mesophyll is the leaf's main site of photosynthesis. Here, palisade cells are tightly packed with chloroplasts to absorb light energy to make glucose from carbon dioxide and water, storing the energy it needs.

The spongy mesophyll contains loosely packed cells with air spaces that allow efficient gas exchange for photosynthesis and respiration within the leaf. To reach the spongy mesophyll, gasses enter and leave the leaf through small pores, called stomata, mostly found in the lower epidermis.

The opening and closing of these stomata is controlled by guard cells. When guard cells are turgid, or full of water, the stomata open, when they have less water, the cells are flaccid and the stomata close, reducing water loss.

So that's what makes up a leaf. And every part of the plant is organised to perform the essential life processes it needs to stay alive.