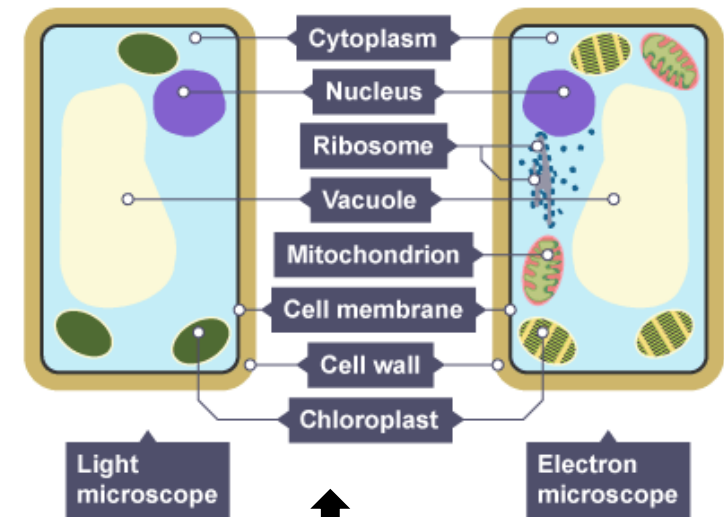


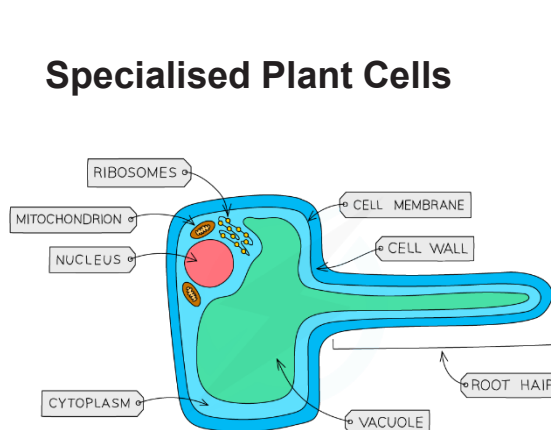
# Knowledge Organiser: Y7 Plant Cells and Plant Reproduction

## Plant Cell Structure

Structure	Function
<b>Nucleus</b>	Contains <b>DNA</b> . Controls the cells activities.
<b>Cell Membrane</b>	Controls the <b>movement</b> of substances into and out of the cell.
<b>Cytoplasm</b>	Where most <b>chemical reactions</b> take place.
<b>Mitochondria</b>	Where <b>aerobic respiration</b> takes place.
<b>Ribosomes</b>	Where <b>proteins</b> are made.
<b>Cell Wall</b>	Made of <b>cellulose</b> , provides <b>strength</b> and <b>support</b> to the plant.
<b>Vacuole</b>	Filled with <b>cell sap</b> to keep the cell turgid (firm).
<b>Chloroplasts</b>	Contains a green pigment called <b>chlorophyll</b> which absorbs light for photosynthesis.



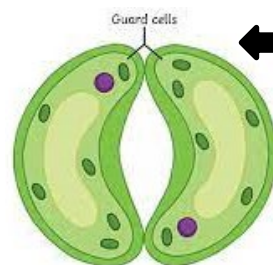
## Specialised Plant Cells



The **roots** are where most water absorption happens. Root hair cells have long projections, this increases **surface area** so more water can be absorbed.



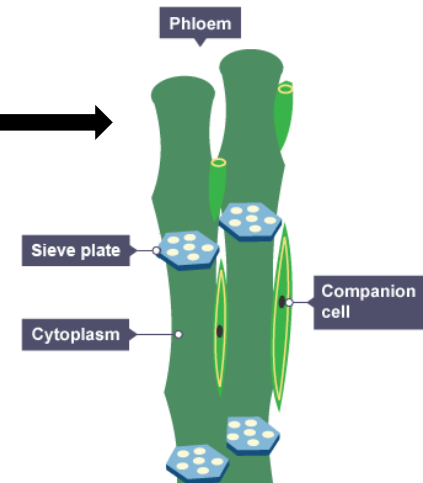
Xylem cells join to form **xylem vessels** (a type of tissue). Xylem vessels are **long hollow tubes** that transport **water** and minerals from the roots, up the plant stem, and into the leaves. They become strengthened by a chemical called **lignin**.



Guard cells are found on the underside of a leaf. They control the opening and closing of the **stomata** (tiny holes that allow the exchange of gases).

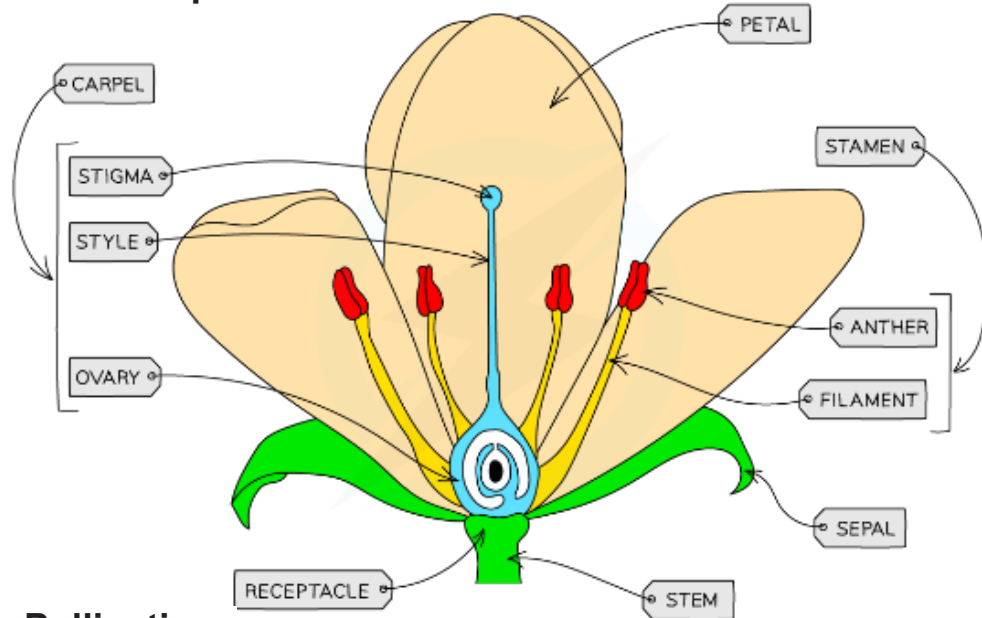
**Palisade cells** are mainly found in the leaves of plants, they contain many **chloroplasts** as this is where most photosynthesis takes place.

**Phloem cells** join to form phloem vessels. They transport glucose and other dissolved food molecules to where they are needed in the plant. Like xylem, they are also hollow tubes.



# Knowledge Organiser: Y7 Plant Cells and Plant Reproduction

## Plant Reproduction



STRUCTURE	DESCRIPTION
SEPAL	PROTECTS UNOPENED FLOWER
PETALS	BRIGHTLY COLOURED IN INSECT – POLLINATED FLOWERS TO ATTRACT INSECTS
ANTHER	PRODUCES AND RELEASES THE MALE SEX CELL (POLLEN GRAIN)
STIGMA	TOP OF THE FEMALE PART OF THE FLOWER WHICH COLLECTS POLLEN GRAINS
OVARY	PRODUCES THE FEMALE SEX CELL (OVUM)
OVULE	CONTAINS THE FEMALE SEX CELLS (FOUND INSIDE THE OVARY)

## Fertilisation

The male gametes (sex cells) are contained in the **pollen grains** produced in the **anther**.

The female gametes (**egg cells or ovum**) are produced in the **ovule** found in the **ovary**.

In plants, **fertilisation** occurs when the **pollen grain** nucleus fuses with the **ovum (egg cell)** nucleus.

To reach the egg cell, the pollen grain grows a **pollen tube** down the style, towards the ovary.

**After fertilisation**, the **ovule** (that contains the fertilised egg cell) develops into the **seed**.

The parts of the flower surrounding the ovule (mainly the **ovary walls**) develop into the **fruit**, which contains the seeds.

## Pollination

**Pollination** is the act of transferring **pollen grains** from the male anther of a flower to the female **stigma**. This then allows fertilisation to take place.

There are two types of pollination:

**Self-pollination:** The pollen grain lands on the same flower it originated from.

**Cross-pollination:** The pollen grain lands on a different flower to the one it originated from.

The seeds produced by the plant must be **dispersed** (spread away) from each other and from the parent plant. This is to **reduce competition** (for light, water, minerals in the soil) between the parent plant and the new plants. Seeds can be dispersed by **wind**, **sticking to the fur of animals**, or by being **eaten by animals then dispersed in their droppings**.

**Germination** is a process in which the seed begins to develop into a new young plant. The three main factors are needed for successful germination are **water, oxygen and warmth**.