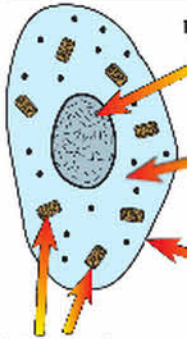
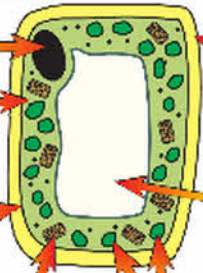
Animal and Plant Cells Have Similarities and Differences

An Animal Cell



A Plant Cell



BOTH have:

1) A **Nucleus**:
This **controls** what the cell **does**.

2) **Cytoplasm**:
This is a jelly-like stuff where most **chemical reactions** happen.

3) A **Cell Membrane**:
This is a thin skin around the cell — it **holds the cell together** and also **controls** what goes **in and out**.

4) **Mitochondria**:
These are tiny structures inside the cell where most of the reactions for **aerobic respiration** (see page 4) take place. Respiration **releases energy** for the cell.

ONLY PLANTS have:

1) A **Cell Wall**:
A rigid outer coating made of **cellulose** — it gives **support** to the cell.

2) A **Vacuole**:
This is filled with **cell sap** — a weak solution of sugar and salts.

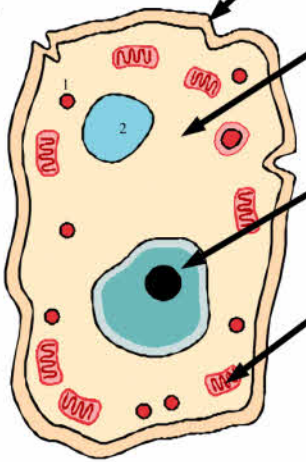
3) **Chloroplasts**:
These contain **chlorophyll** used for **photosynthesis** (see p. 19). Photosynthesis **makes food** for the plant.

Animal versus Plant Cells

Animal Cell Features:

Cytoplasm: Often denser in animal cells than plant cells.
Secretory vesicles (1): More common in animal cells such as cells producing digestive enzymes.
Vacuoles (2): Small and temporary.
Glycogen: Storage form of carbohydrates.

Lack of cell wall means that the animal cells are irregular in shape! Animal cells can be quite small (up to 25μm in diameter.



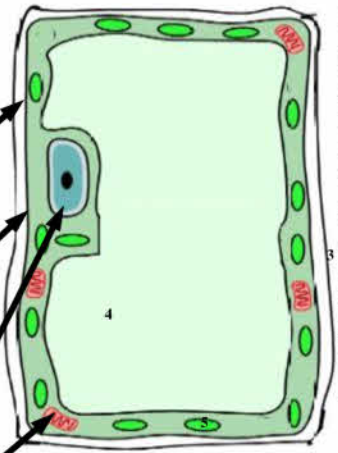
Common features of Plant and Animal Cells.

Cell membrane: This surrounds the cytoplasm. Controls what enters the cells and how they do this. Separates the cells contents from its surroundings.

Cytoplasm: Made up of water, which has substances such as amino-acids and sugars dissolved in it. Provides support for the organelles. Some reactions such as glycolysis take place in the cytoplasm.

Nucleus: Contains the genetic material - DNA making up genes which in turn make up chromosomes. Each gene codes for a protein. Chromosomes only become visible during division.

Mitochondria: These are the site of energy production from the Krebs cycle and electron transport chain.



Presence of cell wall means that the animal cells are regular in shape! Plant cells can be quite large (up to 60μm in diameter.

Plant Cell Features:

Cellulose cell wall (3): Provides support and prevents cells bursting when turgid. It is completely permeable to water and dissolved substances
Vacuole (4): Large and permanent. The water inside this is necessary for turgidity. It can also store ions and molecules.
Chloroplasts (5): Contains chlorophyll and is the site of photosynthesis.
Starch: Storage form of carbohydrates.