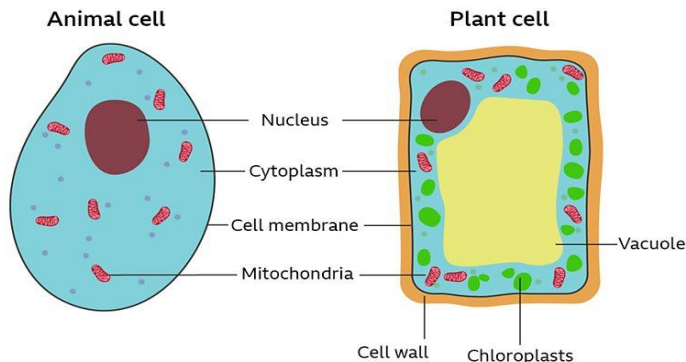


Cells, tissues, organs and organ systems

All organisms carry out seven **life processes** (movement, reproduction, sensitivity, growth, respiration, excretion, nutrition).

All organisms are made from cells:

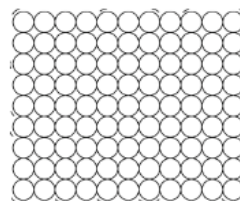


Cell part	Function
cell surface membrane	keeps cell together and controls what goes into and out of the cell
nucleus	controls the cell
cytoplasm	where activities happen, including respiration (which occurs in mitochondria)
chloroplast	contains chlorophyll to trap sunlight for photosynthesis
cell wall	made of cellulose and provides support
vacuole	storage space

A group of cells that are the same, all doing the same job, is called a **tissue** (e.g. muscle tissue). A group of different tissues working together to do an important job is an **organ**. For example, the heart is an organ and is made of muscle tissue and nerve tissue.

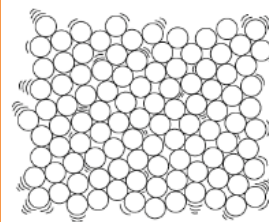
A **microscope** is used to magnify tiny things such as cells. The object you look at is the **specimen**. It has to be **thin** to let light get through it. A **coverslip** is carefully lowered on top, to stop the specimen drying out, hold it flat and stop it moving. A **stain** can be used to help you see parts of the cell.

The Particle Model



Solids

- Solids are made up of particles that are very close together. (Strong forces of attraction hold the particles together.)
- The particles in solids vibrate in fixed positions.
- The shape and volume of solids do not change.
- Solids cannot be squashed and do not flow.



Liquids

- Liquids are made up of particles that are fairly close together. (Quite strong forces of attraction hold the particles together.)
- The particles in liquids are able to move past each other.
- Liquids have a fixed volume but their shape can change to fit the container as they flow easily.
- Liquids cannot be easily compressed (squashed).



Gases

- Gases are made up of particles that are well spread out. (There are only weak forces of attraction between the particles.)
- The particles in gases move about freely in all directions.
- The shape and the volume of gases can change as they flow very easily and spread out.
- Gases can be compressed (squashed) quite easily.

Diffusion

Diffusion is the movement of particles from a higher concentration to a lower concentration. Diffusion occurs because particles in a substance are always moving around. Diffusion is fastest in gases, and slower in liquids.

Pressure in gases

Pressure is caused by particles hitting the walls of the container they are in.

Key vocabulary:

7A

Magnification – How much bigger a microscope makes something appear.

Cell – Basic unit of all life.

Tissue – A part of an organ that does an important job.

Organ – A large part of a plant or animal that does a very important job.

Organ system – More than one organ working together to perform a similar function.

Nucleus – controls the activities of the cell.

Cytoplasm – where the chemical reactions take place.

Cell membrane – controls what goes in and out of the cell.

Cell wall – for plant cell support

Chloroplast – Where photosynthesis takes place.

Vacuole – storage space in plant cells.

Mitochondria – where respiration takes place.

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Gas – Something that does not have a fixed shape and volume.

Liquid – Something with a fixed volume and no fixed shape.

Solid – Something with a fixed volume and fixed shape.

Property – a description on how a material behaves.

States of matter – the different forms a substance can be in.

Particle theory – The different properties and observations of solids, liquids and gases.

Random – no regular pattern

Hypothesis – An idea that explains how or why something happens.

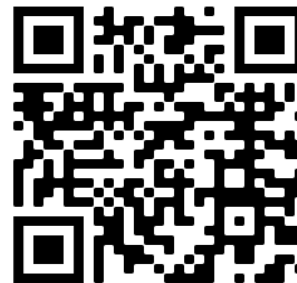
Brownian motion – Erratic movement of small specks of matter.

Air pressure – The force on a certain area caused by air molecules hitting it.

Diffusion - movement of particles from high to low concentration.

Vacuum – a completely empty space, containing no particles.

Videos



Quizzes

