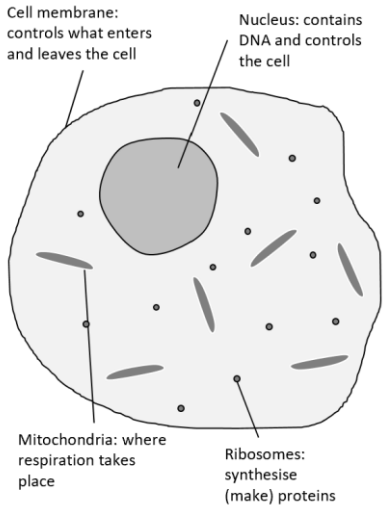
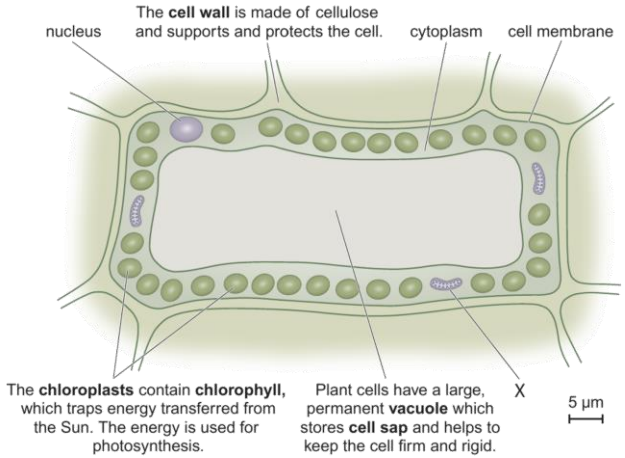
St Michael's CE High

Knowledge Organiser: Biology, SB1a

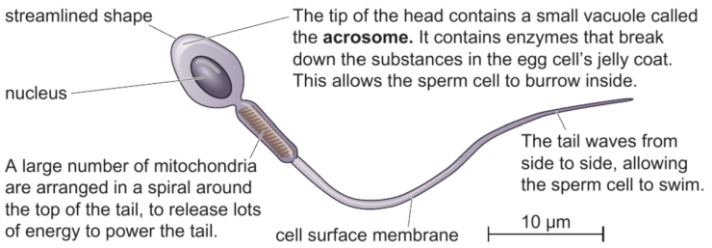
Jesus grew in wisdom and stature" Luke 2:52

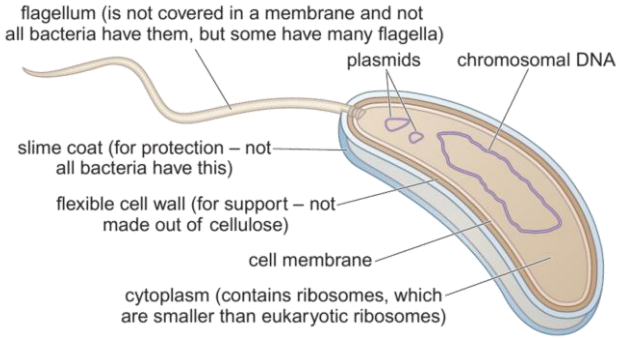
1	**Magnification** is the number of times larger an image is than the initial object that produced it.
2	**Resolution** is the smallest distance between two points that can still be seen as two points.
3	**Eukaryotic cell** is one which contains a nucleus.
4	**Prokaryotic cell** is one which does not contain a nucleus
5	The **field of view** is the circular area you see in a light microscope
6	**Specialised cells** are adapted to suit a particular function
7	Examples of specialised cells are the **egg cell, sperm cell, ciliated epithelial cells** and **small intestine cells**
8	**Plasmids** are small circular rings of DNA in bacterial cells
9	Small intestine cells have membranes with many folds **(villi)** to increase their surface area for faster absorption of molecules
10	Sperm cells and egg cells are **haploid**, which means they only have one full set of chromosomes.
11	**Ciliated epithelial cells** have hair like cilia that wave from side to side and sweep substances along like mucus in airways or an egg cell in an oviduct
12	**Digestive enzymes** break down large insoluble molecules into smaller soluble molecules
13	The enzyme for breaking down protein is **protease**
14	The enzyme for breaking down carbohydrate is called **amylase**
15	The enzyme for breaking down fats and lipids is called **lipase**
16	An **enzyme** is a biological catalyst
17	The substances that enzymes work on are called **substrates**

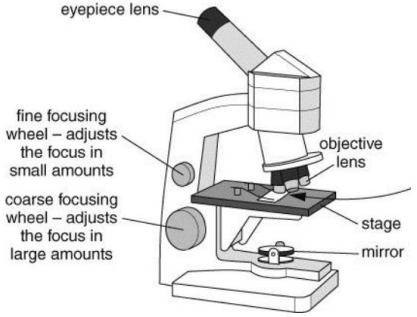




$$\text{Mag} = \frac{\text{Size of image}}{\text{Size of object}}$$







St Michael's CE High

Knowledge Organiser: Biology, SB1b

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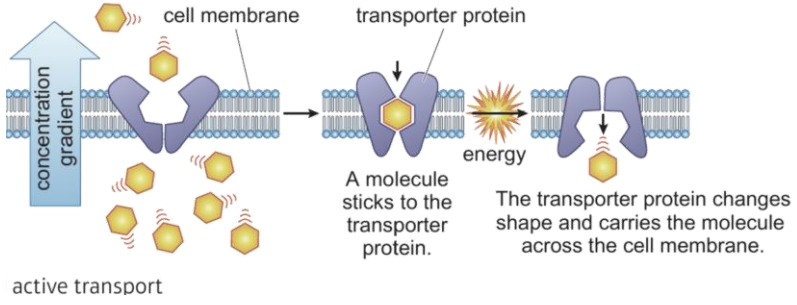
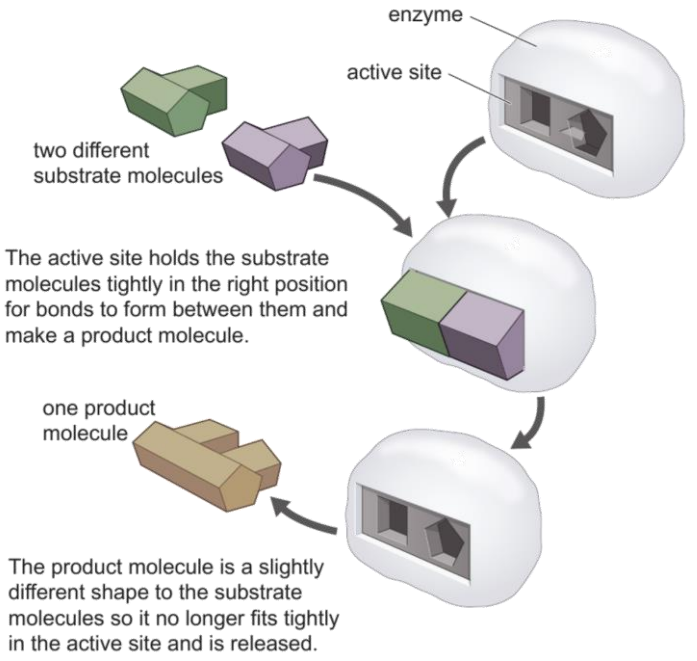
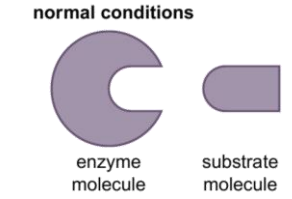
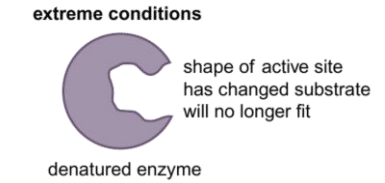
1	**Diffusion** is the movement of particles from an area of high concentration to an area of low concentration
2	**Osmosis** is the movement of water particles from an area of high concentration of water particles to an area of low concentration of water particles across a semi permeable membrane
3	The difference in concentration between two areas is known as the **concentration gradient**
4	**Active transport** is the movement of particles against the concentration gradient and requires energy to do so
5	Diffusion and osmosis are **passive process** which means they do not require energy to take place.
6	**Active site** is the space in an enzyme where the substrate fits during an enzyme catalysed reaction
7	When the shape of an enzymes active site has changed shape due to heat or ph so will no longer fit the substrate, we say it is **denatured**
8	**Lock and key model** describes the way an enzyme catalyses a reaction when a substrate fits withing the active site of the enzyme

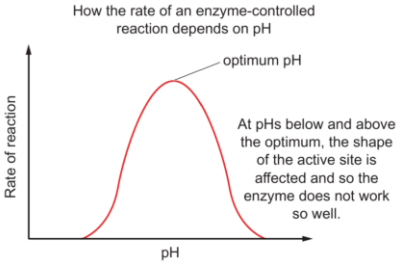


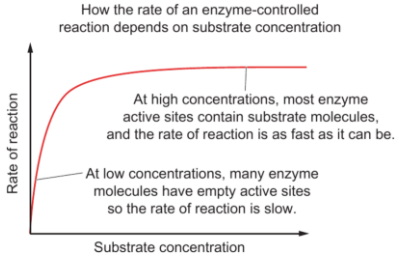
Enzyme	Where found	Reaction Catalysed
Amylase	Saliva and small intestine	Breaking down starch into small sugars such as maltose
Catalase	Most cells but especially liver cells	Breaking down hydrogen peroxide that is made in many cells reactions into water and oxygen
Starch synthase	Plants	Synthesis of starch from glucose
DNA polymerase	Nucleus	Synthesis of DNA from its monomers

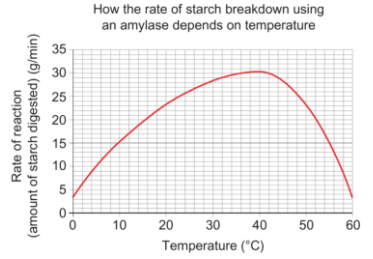








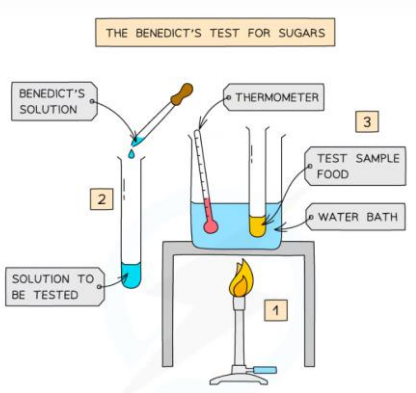


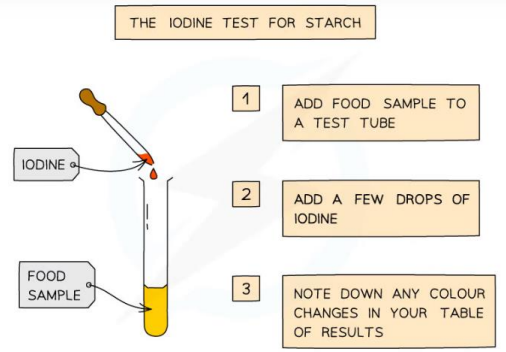


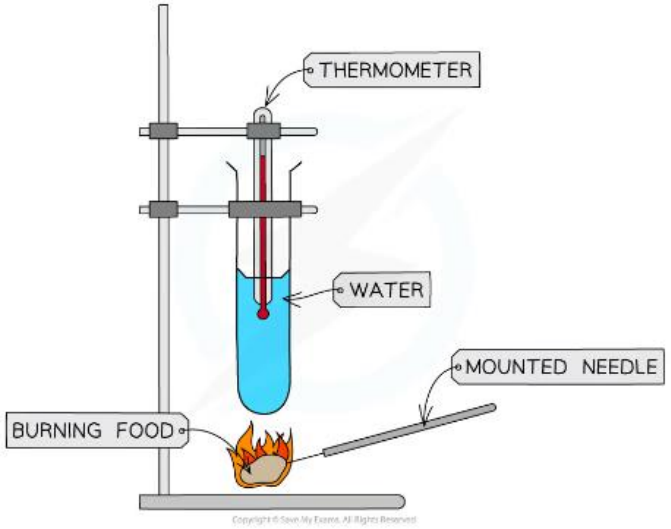
Knowledge Organiser: Biology, SB1c Separate content

Jesus grew in wisdom and stature" Luke 2:52

Food Test	Colour of reagent	Positive test result	Negative test result
Iodine for starch	orange–brown	blue–black	orange–brown (no change)
Benedict's for sugar	light blue	green to brick–red	light blue (no change)
Ethanol for lipid	colourless	cloudy emulsion	colourless (no change)
Biuret for protein	blue	lilac–purple	blue (no change)







- A **larger increase** in **water temperature** indicates a **larger amount of energy** contained by the sample
- We can calculate the energy in each food sample using the following equation:

Energy transferred (J) =

(mass of water (g) x 4.2 x temperature increase (°C)) ÷ (mass of food (g))