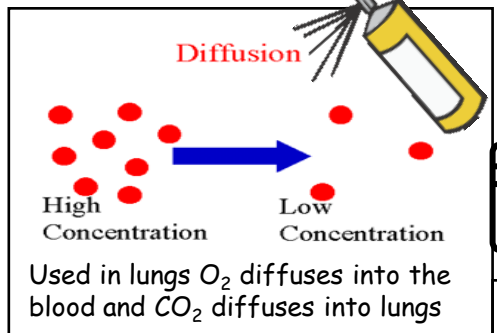
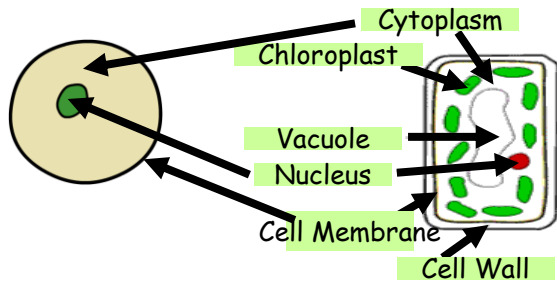
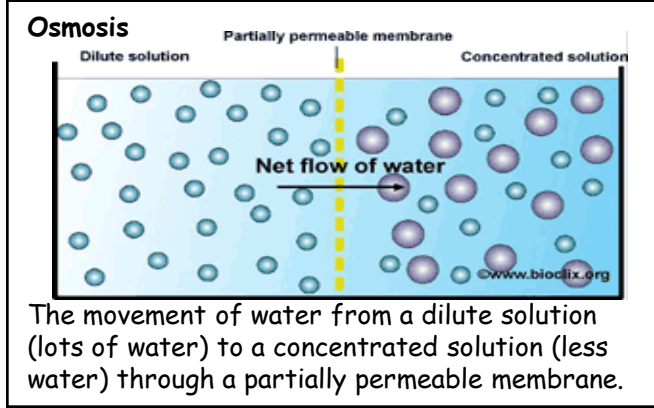
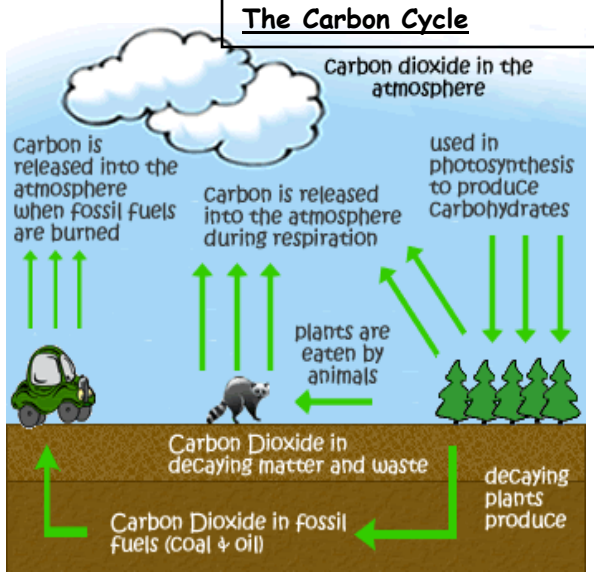


Keywords: Osmosis, Diffusion, Starch, Chloroplast, Vacuole, Cell wall, Nucleus, Biomass



A cell nucleus contains 46 Chromosomes, which carry genes. Different versions of genes are called alleles.



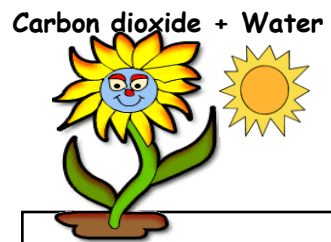
B2) Biology

Plant Nutrients

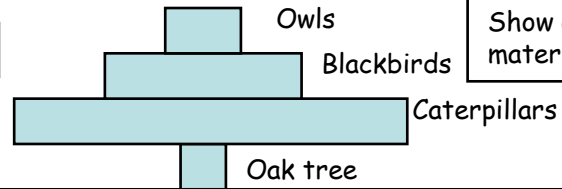
Nitrates-to make proteins

Magnesium-to make chlorophyll

Photosynthesis

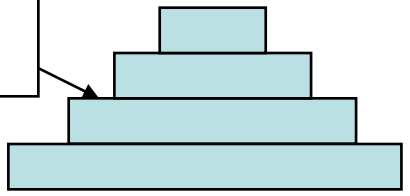


Stored as starch



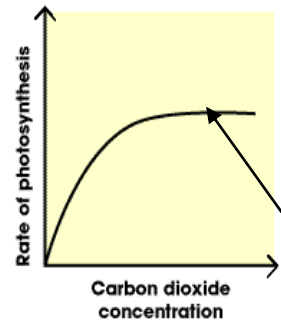
Pyramids of Biomass

Show amount of material at each stage



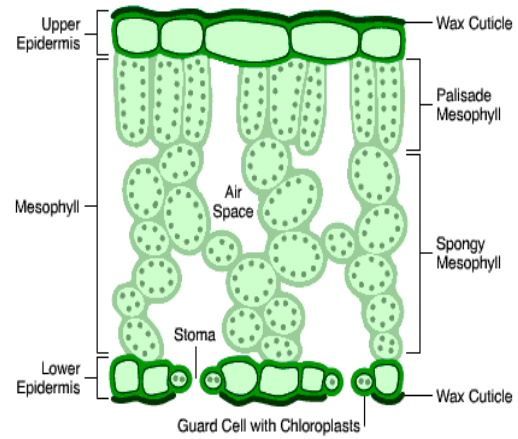
Pyramids of numbers show the number of organisms at each level **not** always a pyramid shape

- 3 Limiting factors**
- light
 - temperature
 - CO₂



At first as CO₂ increases so does photosynthesis but only up to a certain point

Here light or temperature is the limiting factor.



Leaves

Waxy cuticle-keeps water in

Palisade layer-cells contain lots of chloroplasts to capture light

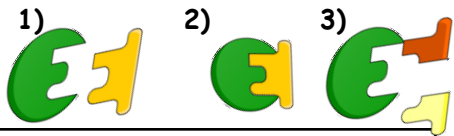
Stomata on lower surface to allow gases in/out

Spongy mesophyll layer has air spaces to allow gases to move between cells

Always a pyramid shape as...

- some is used for respiration to move/grow
- some is lost as heat
- some material is not digested
- some is lost as faeces

Keywords: Allele, Dominant, Recessive, Mitosis, Meiosis, Insulin, Pancreas, Enzyme, Substrate, Active Site, Denatured, pH

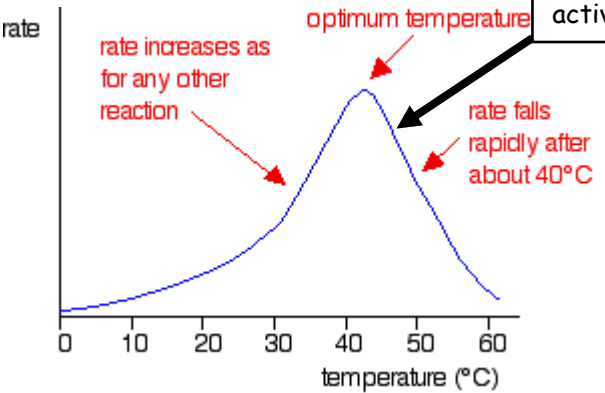


Enzymes -biological catalysts that speed up reactions e.g. respiration in the mitochondria

- 1) Enzyme and substrate
- 2) Substrate binds to active site
- 3) Substrate is broken down

Controlling Blood Sugar
Controlled by the pancreas, diabetics do not produce enough insulin
Treatments
Injections or monitoring aiet

Enzymes have an optimum temperature and pH. Changes in pH/temp can **denature** the enzyme so its shape changes and the substrate can't bind to the active site



Uses of Enzymes

- Biological washing powders
- In baby foods
- In slimming foods- fructose is made using isomerases. Fructose is sweeter than glucose so less is needed.



Cystic Fibrosis
Caused by **recessive allele** (so two copies of allele are needed).
A thick sticky mucus is produced affecting air and digestive systems

Huntingtons-Caused by **dominant allele** (so only one of allele are needed). Affects nervous system, shaking, erratic movements and mental deterioration

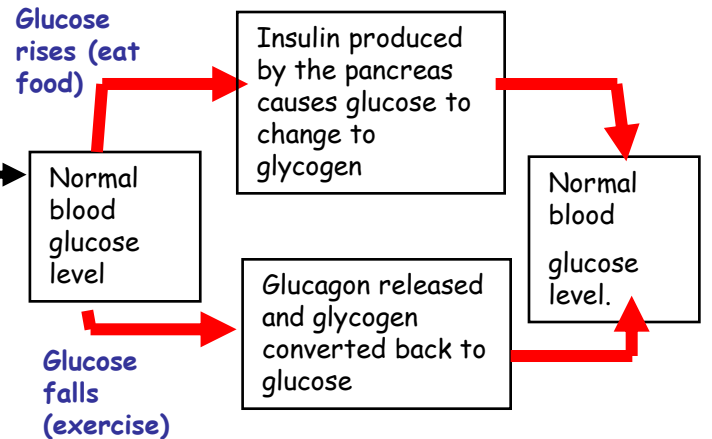
Enzymes and digestion
Large molecules are broken down so they can be absorbed.

- Amylase breaks down starch into sugars in the mouth and small intestine.
- Proteases breakdown proteins into amino acids in the stomach and small intestine.
- Lipases breakdown fats into fatty acids and glycerol in the small intestine.

→

Starch → glucose

46=chromosomes in normal cell
23=chromosomes in sex cells



Temperature
Monitored by thermoregulatory centre in brain and receptors in skin.

Too Hot

- hair lies flat
- blood vessels dilate so heat lost through skin
- sweat produced

Too Cold

- goosebumps & hairs trap air
- blood vessels constrict
- no sweat
- shiver, respiration releases heat

Inheritance- Parents who are both carriers of the Cystic fibrosis allele (c).

Parents	Cc	x	Cc				
Gametes	C or c	x	C or c				
(egg/sperm)			C c				
Possible Outcomes	C		<table border="1"><tr><td>CC</td><td>Cc</td></tr><tr><td>Cc</td><td>cc</td></tr></table>	CC	Cc	Cc	cc
CC	Cc						
Cc	cc						
75% Normal	c						
25% sufferers							

Mitosis-used for normal cell growth

- 1) Parent cell
- 2) Chromosomes make identical copies of themselves
- 3) They line up along the centre
- 4) They move apart
- 5) Two daughter cells form each with 46 identical chromosomes to the parent cell

