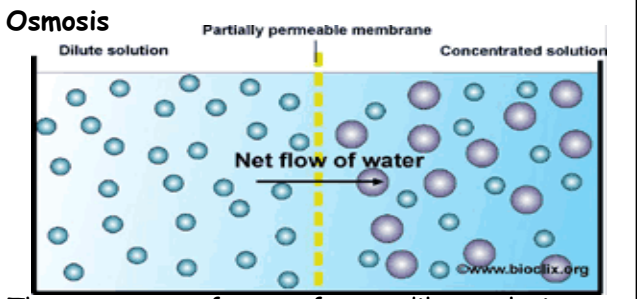
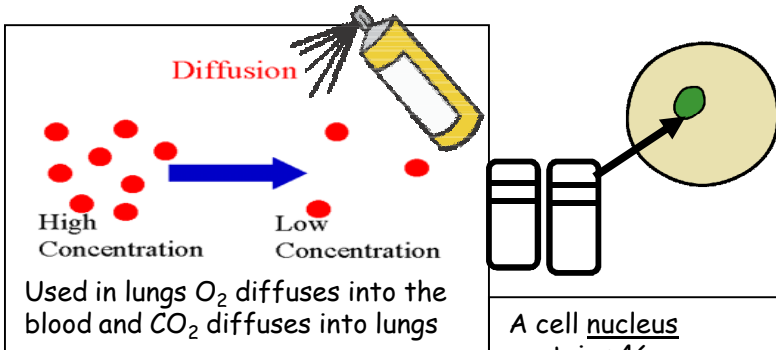
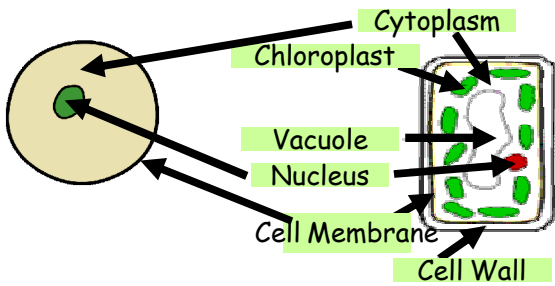


Keywords: Osmosis, Diffusion, Starch, Chloroplast, Vacuole, Cell wall, Nucleus, Biomass

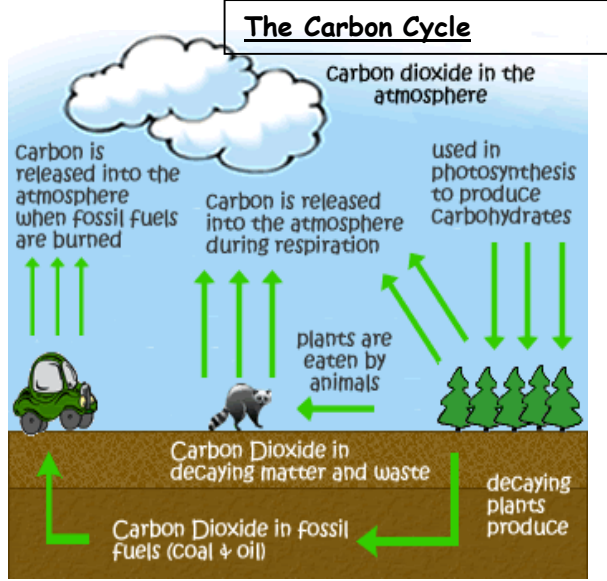


The movement of water from a dilute solution (lots of water) to a concentrated solution (less water) through a partially permeable membrane.

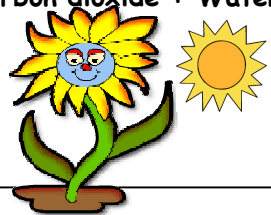
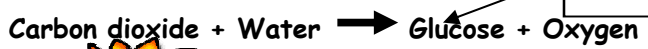
B2) Biology

Plant Nutrients
 Nitrates-to make proteins
 Magnesium-to make chlorophyll

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



Photosynthesis



Light and chlorophyll are also needed

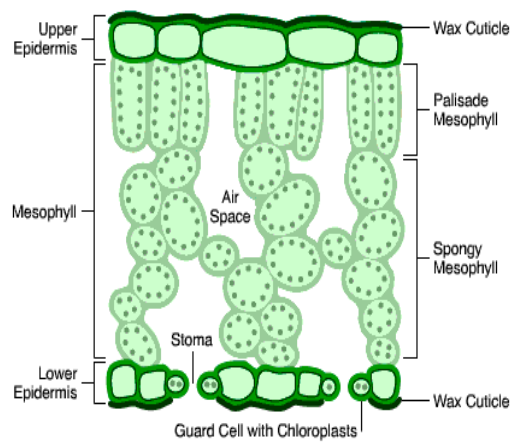
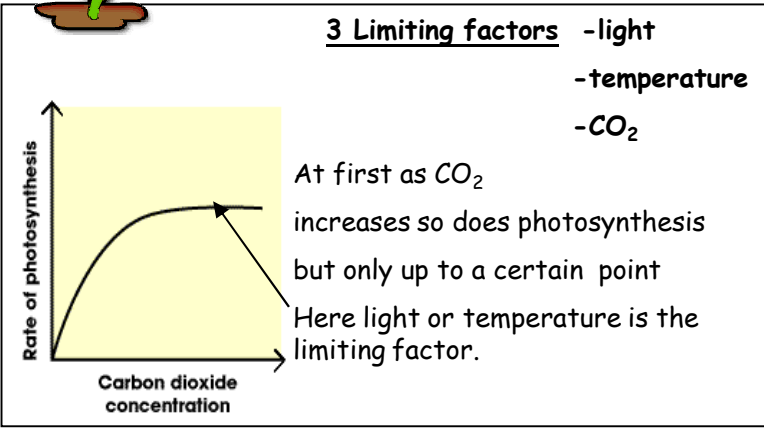
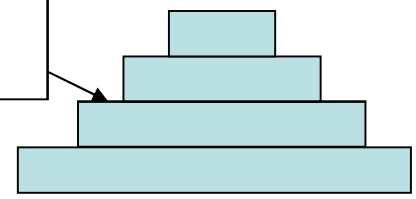
Stored as starch



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

Pyramids of Biomass

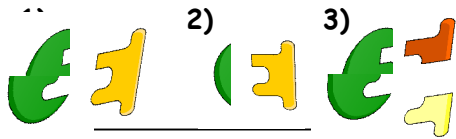
Show amount of material at each stage



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 a1c2



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.



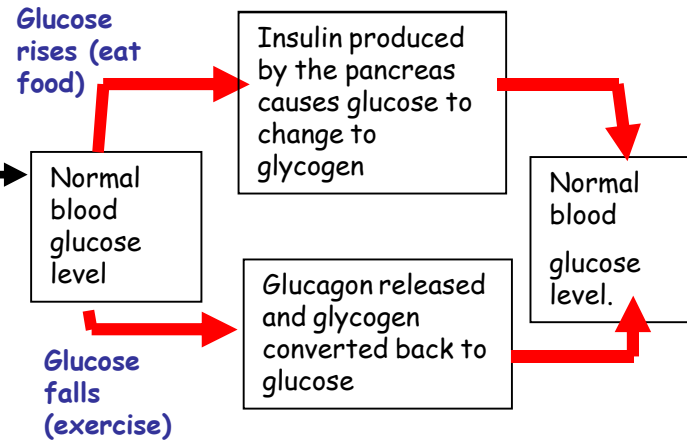
Cystic Fibrosis

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



Temperature

Monitored by thermoregulatory centre in brain and receptors in skin.

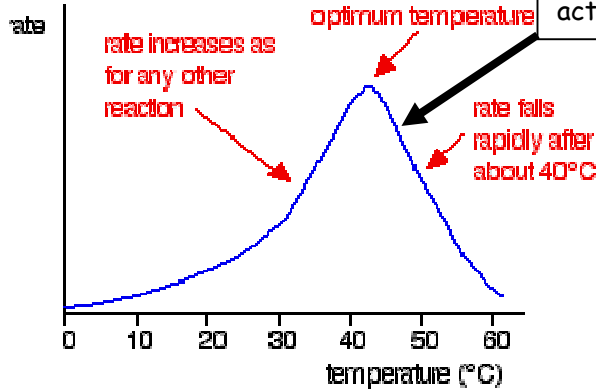
Too Hot

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



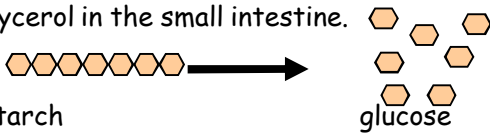
Too Cold

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



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.



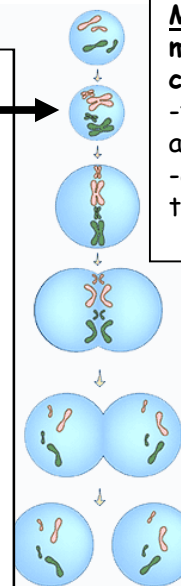
46=chromosomes in normal cell
23=chromosomes in sex cells

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

Parents	Cc	x	Cc
Gametes (egg/sperm)	C or c	x	C or c
Possible Outcomes	C	Cc	Cc
75% Normal	c	Cc	cc
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



Meiosis-used to make the sex cells (gametes)

-the chromosomes are copied
-cell divides twice to give four cells

