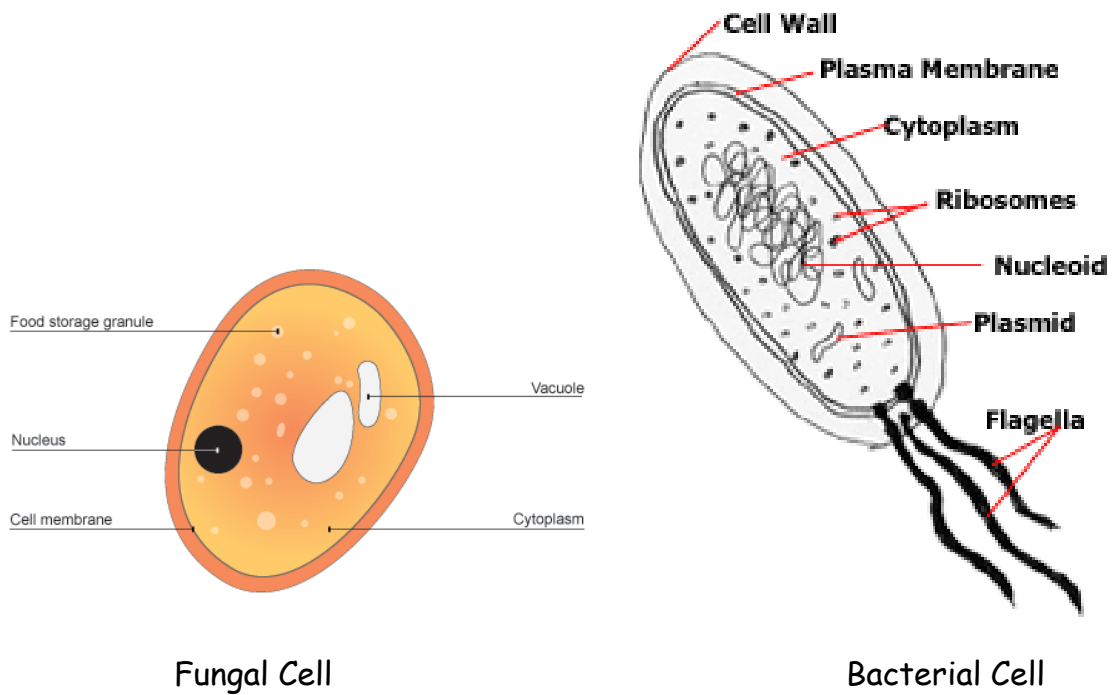
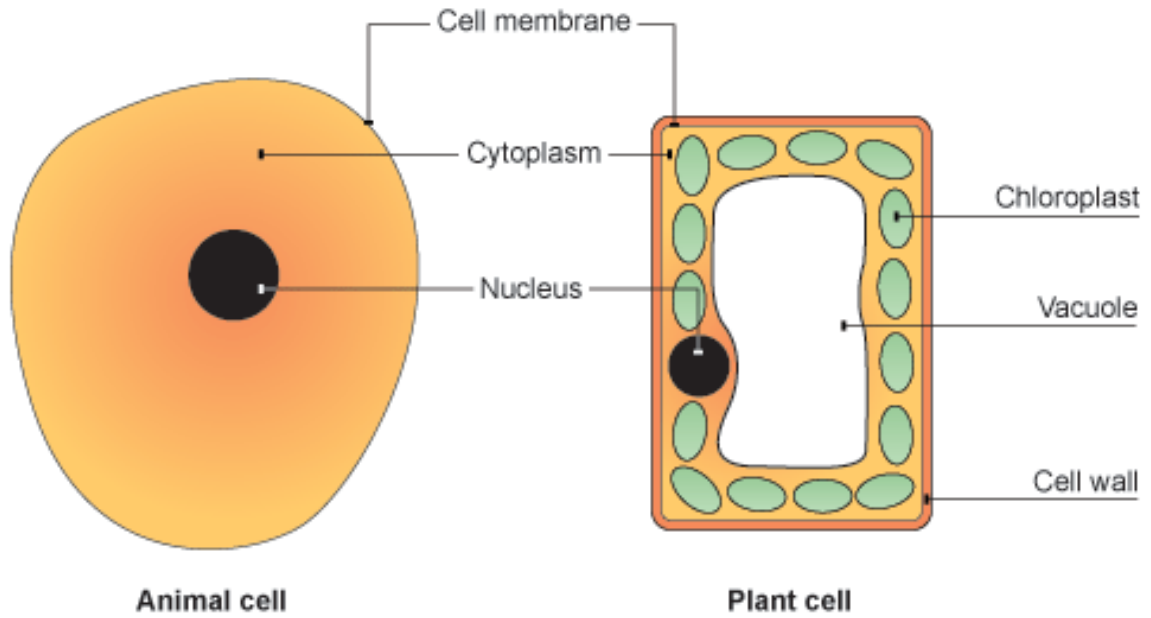


National 3- Cell Biology Revision

Cell Structure



DNA

DNA (deoxyribose nucleic acid) is a large molecule found in the nucleus of all plant and animal cells.

DNA molecules are arranged into a double helix structure which coils around to form larger structures called chromosomes. These little differences in our genes are what make us all unique.



DNA carries the instructions (genes) a cell needs to correctly make proteins.

Proteins have a variety of jobs within cells and in large multicellular organisms like us, these proteins give us our characteristics e.g. hair colour.

Proteins that our body makes can also be used in washing up powder to clean our clothes.

DNA Profiling

The process of DNA profiling involves analysing gathered DNA samples in order to create a profile or DNA identity for the person in question.

Advantages/Benefits

- Paternity testing
- Finding criminals (forensics)
- Medical investigations

Disadvantages/risks

- Privacy risks

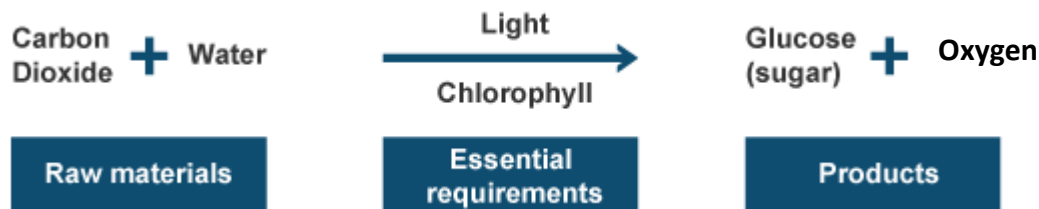
Photosynthesis

What is photosynthesis?

Green plants make their own food by the process of photosynthesis. Chlorophyll, the green pigment found in chloroplasts, traps light energy from the sun. The plant also takes in raw materials from the environment, water through its roots and carbon dioxide moves into the stomata by diffusion. Glucose is made and oxygen which is released into the atmosphere again by diffusion.

Photosynthesis equation

The word photosynthesis can be broken down simply - 'photo' means 'light' and 'synthesis' means 'to make'. Therefore, plants use the sunlight in order to make their own food:



Different types of Microorganisms

The 2 main types of microorganisms are bacteria and fungi.

Microorganisms can be bad causing diseases but can also be useful. E.g.

Yeast is a single celled, microscopic fungus which uses sugar as food.

During bread making the baker is interested in the **carbon dioxide** the yeast produces. This gas makes the dough rise before baking.

You can see a significant rise once it's been baked.



A brewer is interested in both the **alcohol** and the **carbon dioxide** made by the yeast. Beer is expected to be alcoholic and the carbon dioxide gives the characteristic fizz.

Controlling growth of Microorganisms

Growth of microorganisms means an increase in their cell number. It can be affected by different conditions.

- **Temperature**

High temperatures will kill microorganisms and stop them growing.

- **Antibacterial gel/ cleaners/ bleach**

These will normally kill 99.9% of bacteria.

- **Antibiotics**

Antibiotics are chemicals which slow down or prevent the growth of microorganisms. There are many diseases, each caused by a different bacteria. One antibiotic may only work against a few types of bacteria. This means that a

range of different antibiotics is needed for the treatment of the whole range of bacterial diseases.



If growth of a bacterium is slowed or prevented by an antibiotic it is said to be sensitive to that particular antibiotic. However if an antibiotic has no effect on the growth of a bacterium, the bacteria is said to be resistant. A range of antibiotics is also useful because some people are allergic to particular antibiotics.

- **Antifungals**

Some infections are caused by **fungi e.g. athlete's foot, thrush.**

Antifungals are chemicals that **limit the growth of fungi.**

Antifungals can be used to **treat fungal infection.**