




1.1 Cell Structure

At the end of this sequence of lessons I can:

			
1. Identify the cell wall, mitochondria, chloroplasts, cell membrane, vacuole, nucleus, ribosomes and plasmids on diagrams of cells.			
2. Identify organelles from the list above which would be found in typical plant, animal, fungi and bacterial cells.			
3. State that mitochondria are the sites of aerobic respiration.			
4. State that chloroplasts are the sites of photosynthesis.			
5. State that the cell membrane controls the movement of materials in and out of cells.			
6. State that the nucleus contains the genetic material and so controls most cell activities.			
7. State that the vacuole contains cell sap and helps to support the plant cell.			
8. State that ribosomes are the sites of protein synthesis.			
9. State that plasmids are pieces of DNA which can be transferred from one bacterial cell to another.			




1.2 Transport Across Cell Membranes

At the end of this sequence of lessons I can:

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1. I can describe, through use of a diagram, the structure of the fluid mosaic model of the cell membrane.			
2. I can state what is meant by the term selectively permeable			
3. I can describe the role of phospholipid molecules and protein molecules in the cell membrane			
4. I can state what is meant by the terms passive transport, diffusion and concentration gradient			
5. I can list example of materials that move through the body by diffusion and their importance to the body			
6. I can state what is meant by the term osmosis, hypotonic, hypertonic and isotonic			
7. I can state the effect on plant an animal cells when placed in pure water and conc. salt solution			
8. I can plan an investigation designed to calculate the concentration of salt within a cell			
9. I can state what is meant by the term osmosis			
10. I can state the effect on plant an animal cells when placed in pure water and conc. salt solution			
11. I can plan an investigation designed to calculate the concentration of salt within a cell			
12. I can state what is meant by the term active transport, exocytosis and endocytosis			
13. I can compare the processes of active and passive transport			




1.3 Producing New Cells

At the end of this sequence of lessons I can:

			
1. I can understand that a haploid cell is one that contains a single set of chromosomes. For example the sex cells.			
2. I can understand that a diploid cell is one that contains a double set of chromosomes. For example normal body cells.			
3. I can understand that a somatic cell is a normal body cell and is diploid.			
4. I can understand that mitosis is a process that allows the number of cells to increase but maintains the diploid number of chromosomes.			
5. I can understand the stages of mitosis and can give a description of each of the stages.			
6. I can understand that mitosis allows for an organism to grow, repair and replace cells.			
7. I can understand that tissue culturing is a technique used to artificially produce new cells.			
8. I can understand that variables such as oxygen concentration, pH and temperature must be controlled when carrying out the tissue culture technique.			
9. I can understand that the tissue culture technique must be carried out under sterile conditions by using aseptic techniques.			
10. I can understand that the tissue culture technique allows tissues to be mass produced.			
11. I can be able to name at least 3 of the aseptic techniques that should be followed to prevent contamination during practical work			
12. I can understand that agar jelly and nutrient broth are both a medium that cells and micro-organisms can be grown on.			




1.4 DNA & Protein Synthesis

At the end of this sequence of lessons I can:

			
1. State that DNA carries the genetic information for the manufacture of proteins.			
2. State that DNA is made of repeating units called nucleotides.			
3. Draw or label a nucleotide to show the phosphate, deoxyribose sugar and base.			
4. Identify the four bases in DNA as adenine guanine, cytosine and thymine.			
5. State that DNA is a double stranded molecule.			
6. State that the two strands of DNA are held together by complementary base pairs.			
7. Identify the base pairs as adenine and thymine and guanine and cytosine			
8. State that the DNA is coiled to form a double helix.			
9. State that the four bases make up the genetic code.			
10. State that messenger RNA carries a copy of the DNA to a ribosome.			
11. State that proteins are assembled from amino acid molecules on the ribosomes.			




1.5 Proteins and Enzymes

At the end of this sequence of lessons I can:

			
1. State that the variety of protein shapes and functions arises from the sequence of amino acids.			
2. State that proteins have a variety of roles in the body including structural, hormones, antibodies and enzymes.			
3. State that enzymes are found in living cells.			
4. State that enzymes speed up chemical reactions.			
5. State that enzymes remain unchanged by the reaction.			
6. State that enzymes build up and breakdown molecules.			
7. State that enzymes are specific and their active site is complementary to the substrate.			
8. State that the temperature or pH that an enzyme works best at is known as its optimum.			
9. State that changes to temperature or pH can damage cause the enzyme to change shape and stop working.			
10. State that enzymes which no longer work are said to be denatured.			




1.6 Genetic Engineering

At the end of this sequence of lessons I can:

			
1. State that during genetic engineering genes can be transferred from one organism to another.			
2. Describe the stages of genetic engineering.			
3. Give examples of the products of genetic engineering and their applications			
4. Describe the advantages of genetic engineering			
5. State that genetic engineering is currently used in the food industry to produce GM foods.			
6. State the problems associated with GM foods.			

1.7 Photosynthesis




At the end of this sequence of lessons I can:

			
1. State the word equation of photosynthesis			
2. State the meaning of the term photolysis			
3. Describe the process of photolysis			
4. State what is meant by the term carbon fixation.			
5. Describe the process of carbon fixation			

6. State the three uses of glucose in a plant cell			
7. State what is meant by the term limiting factor			
8. Plan a series of investigations to identify the limiting factors of photosynthesis			
9. Identify the limiting factor of photosynthesis from a graph			

1.8 Respiration

At the end of this sequence of lessons I can:

			
1. I can state what is meant by the terms respiration and ATP			
2. I can explain how ATP is generated from ADP + Pi			
3. I can state that different food types have different energy contents			
4. I can state what is meant by the terms glycolysis, enzyme controlled, aerobic respiration and hydrogen carrier			
5. I can state the end products of aerobic respiration			
6. I can state what is meant by the terms anaerobic respiration, muscle fatigue and oxygen debt.			
7. I can state the end products of anaerobic respiration in plants and animals			
8. I can compare the efficiency of aerobic and anaerobic			

respiration in terms of ATP Yield			
9. I can state the use of ATP throughout the cell			
10. I can state what is meant by the term fermentation			
11. I can give examples of processes utilising any form of respiration.			