

Buttershaw Business and Enterprise College



AQA Combined Science Trilogy

Biology Paper 2 Higher

Key Recall Facts

Homeostasis and Response, Inheritance, Variation and Evolution and Ecology

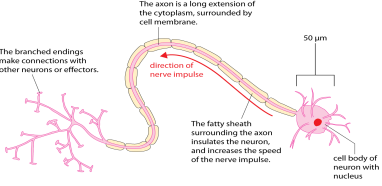
Exam Date – Friday 9th June

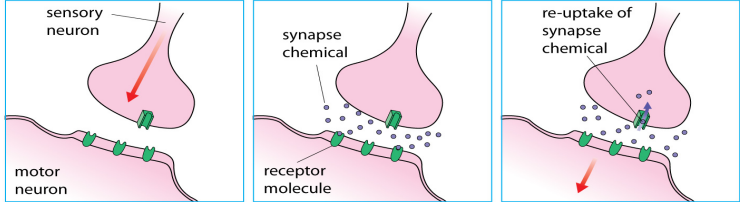
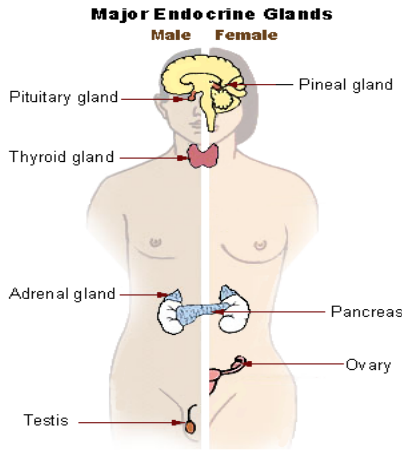
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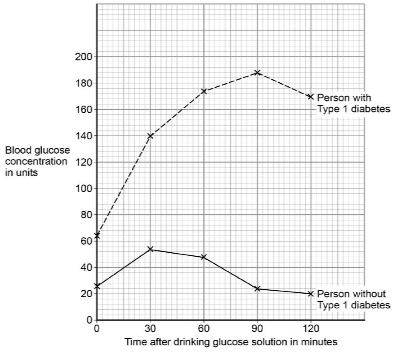
Teacher.....

Homeostasis and Response

1. What is homeostasis?	Keeping internal body conditions constant
2. State 3 factors that must be kept constant	<ul style="list-style-type: none"> • Body temperature • Blood water levels • Blood glucose concentration
3. State 2 reasons why conditions have to be kept constant	<ul style="list-style-type: none"> • Cells function properly • Enzymes function properly
4. Name 2 body systems that are responsible for homeostasis	Endocrine and nervous systems
5. Compare the nervous system to the endocrine system	<ul style="list-style-type: none"> • Both receive, coordinate and send messages • Nervous system produces responses quicker • Nervous system produces short-lived responses • Nervous system sends electrical impulses, whilst the endocrine system sends messages by using hormones • Nervous system uses nerve cells to send messages, whilst the endocrine system uses the blood to carry hormones
6. Describe the general steps in a response	Stimulus → receptor → processing centre → effector → response
7. Define the following terms: - a) Stimulus b) Receptor c) Processing centre d) Effector e) Response	a) Change in environment b) Detects stimulus c) Processes and receives information d) Brings about response e) Change in body due to stimulus
8. Define the term hormone	Chemical released by a gland into the blood stream and affects a target organ
9. Define the term gland	Organs that produce chemicals, such as hormones or enzymes
10. Describe and explain adaptations of a nerve cell 	<ul style="list-style-type: none"> • Fatty sheath to insulate the axon to prevent impulses from being lost and faster impulses • Long axon to allow impulses to travel faster • Branched endings to make connections with other nerve cells
11. What is a reflex?	Rapid and involuntary (automatic) response

12. Why is a reflex important?	Ensures survival or prevents harm to an organism
13. Describe what happens at a synapse	<ul style="list-style-type: none"> • Impulse reaches the end of the first neuron • Neuron releases neurotransmitters into the synapse • Neurotransmitters diffuse across the synapse to bind to receptors on the second neuron • If enough bind, it causes an impulse in the second neuron  <p>A nerve impulse arrives at a synapse. The direction of the impulse is shown by the arrow.</p> <p>A chemical is released from the sensory neuron. It diffuses across the synapse. The molecule is the correct shape to fit into receptor molecules on the membrane of the motor neuron.</p> <p>A nerve impulse is stimulated in the motor neuron. The chemical is absorbed back into the sensory neuron to be used again.</p>
14. Why does a conscious decision take longer than a reflex?	Impulse has to be processed by the brain More synapses in the brain
15. Name different glands in the body, and the hormones they release	<p>Pituitary gland – master gland that releases lots of different hormones including FSH, LH and ADH</p> <p>Thyroid gland – releases thyroxine</p> <p>Adrenal gland – adrenaline</p> <p>Testes – testosterone</p> <p>Ovaries – oestrogen and progesterone</p>  <p>Major Endocrine Glands Male Female</p> <p>Pituitary gland, Pineal gland, Thyroid gland, Adrenal gland, Pancreas, Testis, Ovary</p>
16. Describe the effect of thyroxine on the body	Thyroxine controls the body's basal metabolic rate (sum of all the reactions in the body)
17. What happens if too much thyroxine is produced?	An overactive thyroid can lead to lots of thyroxine being produced, and a thinner body shape

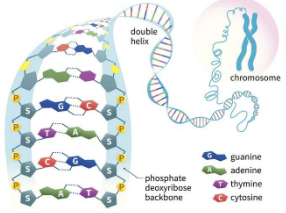
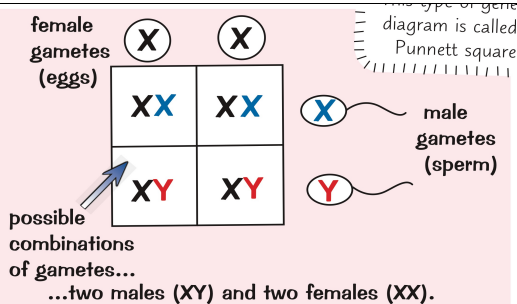
<p>18. What happens if too much thyroxine is produced?</p>	<p>Less thyroxine in the body can lead to the person gaining weight (overweight or obesity)</p> <p>Due to negative feedback, if there is a lack of thyroxine, the pituitary gland releases more thyroid stimulating hormone to go to the thyroid to activate the release of thyroxine. This enlarges the thyroid gland making the person's neck look swollen</p>
<p>19. Describe the effect of adrenaline on the body</p>	<p>This is the 'flight or fight' response</p> <p>Increases breathing rate and heart rate. This means more blood is pumped around the body, which means more oxygen (and glucose) reach the muscles. This means more respiration and more energy released for muscle contraction.</p>
<p>20. What is the processing centre for controlling blood glucose levels?</p>	<p>Pancreas</p>
<p>21. Describe what happens when blood glucose levels increase</p>	<p>Pancreas detects rise in blood glucose levels</p> <p>The pancreas releases insulin into the blood</p> <p>Insulin travels to the liver, which takes up glucose from the blood and stores it as glycogen in the liver</p> <p>Blood glucose levels fall</p>
<p>22. Describe what happens when blood glucose levels decrease</p>	<p>Pancreas detects fall in blood glucose levels</p> <p>The pancreas releases glucagon into the blood</p> <p>Glucagon travels to the liver, which breaks glycogen back down into glucose</p> <p>Releases glucose into the blood, so blood glucose levels increase</p>
<p>23. Compare the two types of diabetes</p>	<ul style="list-style-type: none"> • Type 1 occurs in younger people, whilst type 2 generally occurs when you are older. • Type 1 is caused by genetic factors, whereas type 2 is caused by lifestyle factors, such as obesity, diet, lack of exercise as well as genetic factors • Type 1 is when the pancreatic cells are destroyed, and they cannot produce insulin but in type 2, the body still produces some insulin (sometimes higher than normal), but the liver does not respond to the insulin • Type 1 is treated with insulin injections, whilst diet and exercise are the first form of treatment for type 2 diabetes.

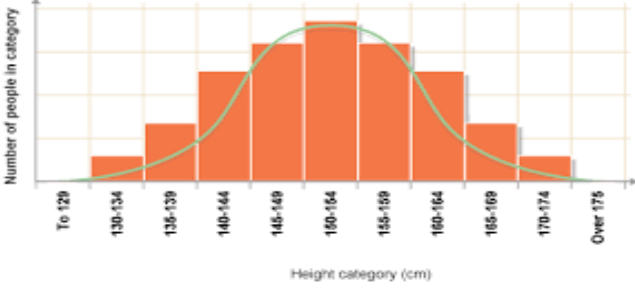
<p>24. How will blood glucose levels differ from a diabetic person compared to a non-diabetic before and after eating?</p>	<p>Diabetic person will have higher blood glucose levels before.</p> <p>Both levels will go up after eating.</p> <p>Non-diabetic person releases insulin, so blood glucose levels drop back to normal after 1-2 hours, whilst for the diabetic person, they will remain high</p> <p>●</p>  <table border="1"> <caption>Blood Glucose Concentration Data</caption> <thead> <tr> <th>Time after drinking glucose solution (minutes)</th> <th>Person without Type 1 diabetes (units)</th> <th>Person with Type 1 diabetes (units)</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>30</td> <td>60</td> </tr> <tr> <td>30</td> <td>50</td> <td>140</td> </tr> <tr> <td>60</td> <td>45</td> <td>170</td> </tr> <tr> <td>90</td> <td>35</td> <td>180</td> </tr> <tr> <td>120</td> <td>30</td> <td>160</td> </tr> </tbody> </table>	Time after drinking glucose solution (minutes)	Person without Type 1 diabetes (units)	Person with Type 1 diabetes (units)	0	30	60	30	50	140	60	45	170	90	35	180	120	30	160
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<p>25. Name the sex hormones in males and females</p>	<p>Males – testosterone released by the testes</p> <p>Females – oestrogen released by the ovaries</p>																		
<p>26. What is the role of testosterone?</p>	<p>Causes the testes to produce sperm</p> <p>Responsible for secondary sexual characteristics, such as pubic hair, growth spurt, broad shoulders, enlarging the penis etc</p>																		
<p>27. What are the secondary sexual characteristics in the female?</p>	<p>Breasts enlarge, pubic hair, wider hips, growth spurt</p>																		
<p>28. Name the 4 hormones involved in the menstrual cycle, where they are released from and their function</p>	<p><u>FSH</u></p> <p>Released by the pituitary gland</p> <p>Causes egg to mature in the ovary</p> <p>Causes release of oestrogen from the ovaries</p> <p><u>Oestrogen</u></p> <p>Released by the ovaries</p> <p>Causes the lining of the uterus to thicken</p> <p>Causes the release of LH from the pituitary gland</p> <p><u>LH</u></p> <p>Released by the pituitary gland</p> <p>A surge in his causes ovulation (release of an egg) around day 14</p> <p><u>Progesterone</u></p> <p>Released by the ovaries (corpus luteum)</p> <p>Maintains the lining of the uterus</p>																		
<p>29. Why is progesterone important in preventing menstruation?</p>	<p>Progesterone inhibits FSH and LH, and therefore preventing another egg from maturing, and another menstrual occurring.</p> <p>So, if an egg is fertilised, progesterone levels remain high.</p> <p>If an egg is not fertilised, progesterone levels drop, and this trigger menstruation, and FSH levels to increase causing an egg to mature</p>																		

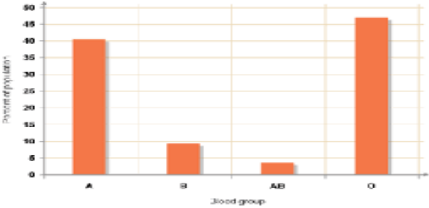
30. What are the 2 different types of contraception?	<p>Hormonal – prevents egg from maturing or egg being released e.g. pill, patch, implant</p> <p>Non-Hormonal – barrier method stopping the sperm reaching the egg e.g. condom, IUD, diaphragm</p>
31. What is the name of the hormone found in the pill?	Progesterone
32. Why is progesterone found in the pill?	Inhibits FSH and LH and therefore prevents egg from maturing or egg from being released
33. Which hormone is given to women to increase fertility?	FSH (and LH)
34. Evaluate the use of IVF to treat infertility	<p>Pros</p> <p>Can become pregnant</p> <p>Screening for inherited diseases</p> <p>Cons</p> <p>Multiple pregnancies, can lead to miscarriages and premature deliveries</p> <p>Success rate is very low</p> <p>Side-effects</p> <p>Ethical issues of embryo being destroyed</p>

Inheritance, Variation and Evolution

1. Describe sexual reproduction	Involves 2 parents and the fusion of gametes (sex cells)																											
2. What is a gamete?	Sex cell which contains half the number of chromosomes																											
3. What are the gametes called in animals?	Sperm cell in males Egg cell in females																											
4. What are the gametes called in plants?	Pollen is the male sex cell Ovum/egg cell is female sex cell																											
5. What is meant by fertilisation?	This is when the nucleus of the sperm cell fuses with the nucleus of the egg cell																											
6. Describe asexual reproduction	Involves 1 parent and no fusion of gametes																											
7. Give examples of organisms that reproduce asexually	<ul style="list-style-type: none"> • Bacteria • Fungi – using spores • Some plants using runners (strawberry plants) or bulbs (daffodils) • Parasites 																											
8. What are the 2 main stages of the cell cycle?	<ul style="list-style-type: none"> • Cell growth (interphase) • Mitosis or meiosis 																											
9. What happens during cell growth?	Replicating DNA/chromosomes Increasing cell organelles like ribosomes/mitochondria																											
10. Compare mitosis and meiosis	<p>Table 14.1 The key differences between cell division in mitosis and meiosis.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #00a0e3; color: white;"> <th></th> <th>Mitosis</th> <th>Meiosis</th> </tr> </thead> <tbody> <tr> <td>Number of cells at beginning</td> <td>One</td> <td>One</td> </tr> <tr> <td>Type of cell at beginning</td> <td>Diploid body cell (23 pairs of chromosomes in humans)</td> <td>Diploid body cell (23 pairs of chromosomes in humans)</td> </tr> <tr> <td>Number of cells at end (daughter cells)</td> <td>Two</td> <td>Four</td> </tr> <tr> <td>Type of cell at end</td> <td>Diploid body cell (23 pairs of chromosomes in humans)</td> <td>Haploid gamete (23 chromosomes in humans)</td> </tr> <tr> <td>Number of divisions</td> <td>One</td> <td>Two</td> </tr> <tr> <td>Identical or non-identical cells</td> <td>Identical</td> <td>Non-identical</td> </tr> <tr> <td>Used for</td> <td>Growth and repair</td> <td>Producing gametes</td> </tr> <tr> <td>Where it occurs</td> <td>Everywhere except the sex organs</td> <td>Sex organs (ovaries and testes in mammals)</td> </tr> </tbody> </table>		Mitosis	Meiosis	Number of cells at beginning	One	One	Type of cell at beginning	Diploid body cell (23 pairs of chromosomes in humans)	Diploid body cell (23 pairs of chromosomes in humans)	Number of cells at end (daughter cells)	Two	Four	Type of cell at end	Diploid body cell (23 pairs of chromosomes in humans)	Haploid gamete (23 chromosomes in humans)	Number of divisions	One	Two	Identical or non-identical cells	Identical	Non-identical	Used for	Growth and repair	Producing gametes	Where it occurs	Everywhere except the sex organs	Sex organs (ovaries and testes in mammals)
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11. Why is meiosis important?	To ensure the same number of chromosomes in every generation. Halves the number of chromosomes for gametes. When gametes fuse, they form a diploid cell again.																											
12. What is a zygote?	Fertilised egg																											
13. Name the type of cell division taking place to ensure growth of the zygote into an embryo	Mitosis																											

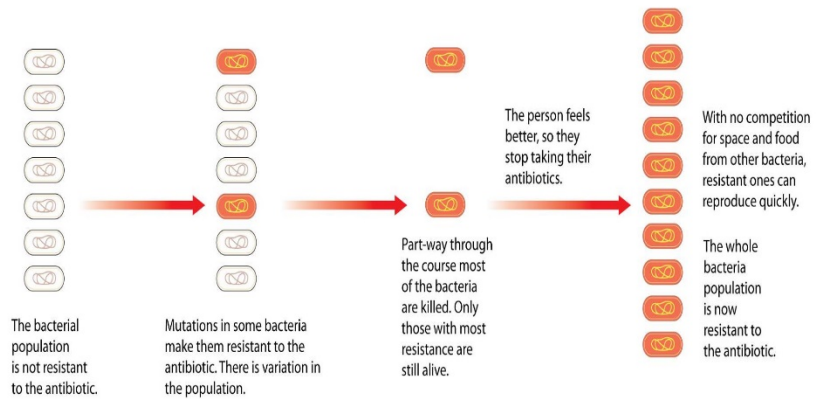
<p>14. Describe the structure of DNA</p>	<ul style="list-style-type: none"> • A polymer (long strand of monomers joined together) • Double stranded helix 
<p>15. What is a chromosome?</p>	<p>Thread-like structure inside the nucleus made up of DNA</p>
<p>16. What is a gene?</p>	<p>Short section of DNA that codes for a protein</p>
<p>17. What is the genome?</p>	<p>The entire genetic material of that organism</p>
<p>18. Why is the human genome project important?</p>	<ul style="list-style-type: none"> • Search for genes that cause disease • Identify genes that cause disease • Understand and treat genetic disorders • Trace human migration patterns from the past
<p>19. Define the term allele</p>	<p>A different version of the same gene</p>
<p>20. How many alleles of each gene do we possess?</p>	<p>2 – one from your mum, and one from your dad</p>
<p>21. Describe the difference between dominant and recessive</p>	<p>A dominant characteristic shows even if there is only one copy of the allele A recessive characteristic only shows if there are two copies of the allele</p>
<p>22. Describe the difference between homozygous and heterozygous</p>	<p>Homozygous is when you have 2 copies of the same allele Heterozygous when both alleles are different</p>
<p>23. Describe the difference between genotype and phenotype</p>	<p>Genotype is the combination of alleles that you possess, whilst phenotype is the physical characteristics an organism has</p>
<p>24. Why is a Punnett Square used?</p>	<p>To find the probability of a particular characteristic being passed on to a child when the genotype of the parents is known</p>
<p>25. What are the sex chromosomes for a male and female?</p>	<p>XY – male XX – female</p>
<p>26. Draw a Punnett Square to show how sex (gender) is determined</p>	

27. Is cystic fibrosis caused by a dominant or recessive allele?	Recessive – so must have 2 copies of the allele for the disease to show
28. What is a carrier?	A person who carries the disease allele to pass on but not have the disease themselves. Can only be a carrier for a recessive disease
29. Describe the symptoms of cystic fibrosis	<p>Produces sticky mucus blocking tubes within the body due to disorder of cell membranes. This can cause...</p> <ul style="list-style-type: none"> • Difficulty breathing • Chest infections • Unable to digest food – so thinner • Infertility (blocks sperm tubes and fallopian tubes)
30. What is polydactyly?	<p>A disease caused by a dominant allele leading the person having an extra finger/toe</p> <p>If a child has polydactyly, one of the parents must also have it</p>
31. What is embryo screening?	Checking the genes of an embryo for a genetic disorder. Could be done before implantation into the woman's uterus.
32. What are the advantages of embryo screening?	<p>Reduce incidence of genetic diseases or wipe them out completely</p> <p>Saves NHS money in the long run, but may cost money in the short-term</p>
33. What are the disadvantages of embryo screening?	<p>Could lead to screening of certain characteristics like gender or intelligence</p> <p>Less variation within population</p>
34. What is variation?	The differences in characteristics within a population
35. What are the 3 causes of variation?	<ul style="list-style-type: none"> • Inherited • Environment • Both
36. What is meant by continuous variation?	<p>Variation that can have a range of values e.g. height, weight</p> 

<p>37. What is meant by discontinuous variation?</p>	<p>Can only have a discrete or fixed value e.g. Eye colour, blood group</p>  <table border="1" data-bbox="598 197 1029 403"> <caption>Percentage of people by blood group</caption> <thead> <tr> <th>Blood group</th> <th>Percentage of people</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>40</td> </tr> <tr> <td>B</td> <td>10</td> </tr> <tr> <td>AB</td> <td>5</td> </tr> <tr> <td>O</td> <td>45</td> </tr> </tbody> </table>	Blood group	Percentage of people	A	40	B	10	AB	5	O	45
Blood group	Percentage of people										
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<p>38. What is a mutation?</p>	<p>A change in DNA – leads to the formation of new phenotypes</p>										
<p>39. When did life on Earth begin?</p>	<p>About 3,500 million years ago</p>										
<p>40. What is Evolution?</p>	<p>Change in the inherited characteristics of a population over time</p>										
<p>41. Define the term species</p>	<p>Organisms that can breed to produce fertile offspring</p>										
<p>42. Describe the evidence for Evolution</p>	<ul style="list-style-type: none"> • DNA • Fossils – similarities in physical features • Natural Selection – antibiotic resistant bacteria 										
<p>43. Describe how fossils could be formed</p>	<ul style="list-style-type: none"> • Parts not decayed due to unfavourable condition e.g. lack of oxygen, extremes of pH • Parts of bones replaced by minerals when they decay • Preserved traces of organisms e.g. footprint 										
<p>44. Why are there gaps in the fossil record?</p>	<p>Some fossils destroyed by geological activity Some species were mainly soft tissue, very little bone to leave fossils</p>										
<p>45. What causes extinction?</p>	<ul style="list-style-type: none"> • Changes in environment e.g. global warming • New predator • New competitor • New disease • Deforestation – loss of habitat 										
<p>46. What are the steps in Natural Selection?</p>	<ul style="list-style-type: none"> • Mutation • Variation • Competition • Survival • Reproduction 										
<p>47. Explain how giraffes evolved to have longer necks</p>	<p>A mutation occurred causing a giraffe to be born with a longer neck This led to variation in neck lengths in the population Longer neck giraffes are better able to compete for food Therefore, more likely to survive long enough to reproduce, and pass their long neck alleles to their next generation.</p>										

48. Explain how antibiotic resistant bacteria have developed

A mutation leads to a bacterium becoming resistant to antibiotics
 When antibiotics were given, bacteria without mutation are killed off
 Bacteria with mutations now have more space, more nutrients to survive and reproduce.
 Therefore, more antibiotic resistant bacteria in the next generation



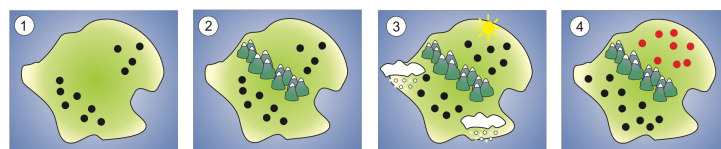
49. How can we reduce the number of antibiotic resistant bacteria?

- Not prescribing antibiotics for viruses because antibiotics do not kill viruses (viruses replicate inside cells, and antibiotics cannot access cells)
- Not prescribing antibiotics for mild infections that will get better with just the body's immune system
- Make sure patient finishes their course, and therefore bacteria are not left over that could possibly mutate
- Reducing use of antibiotics in agriculture e.g. battery farming of chickens

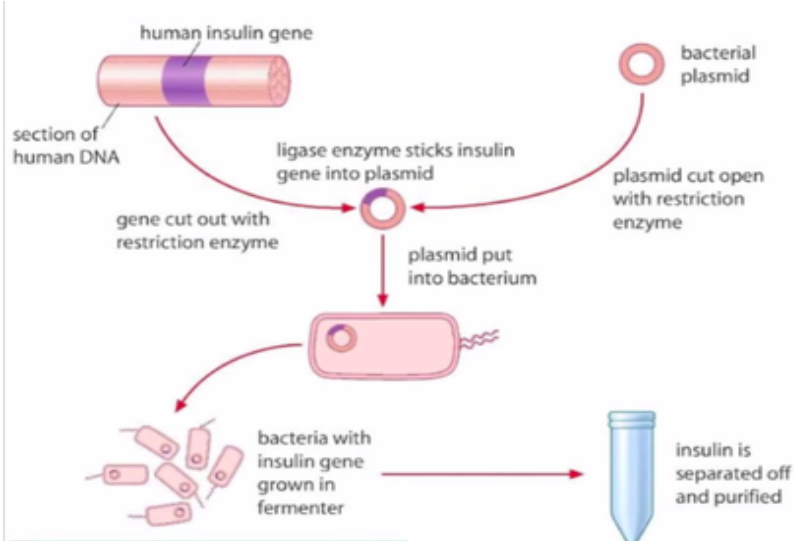
50. Explain how the process of isolation leads to evolution of a new species (speciation)

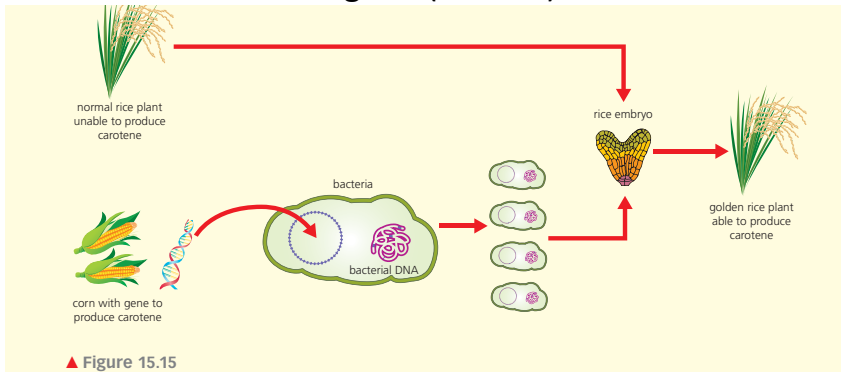
Two populations of the same species are separated by a geographical barrier
 The two populations live in different environments
 Any mutations they possess are suited to their environment
 The organisms with the more favourable mutations/alleles survive long enough to reproduce, and therefore pass their alleles to the next generation
 Eventually, if the barrier is removed, the two population would not be able to breed and produce fertile offspring (different species)

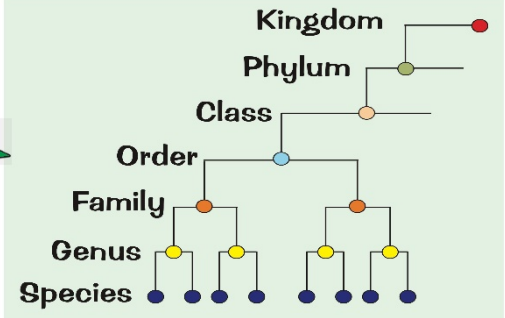
Eventually, individuals from the different populations will have **changed** so much that they **won't** be able to **breed** with one another to produce fertile offspring. The two groups will have become **separate species**.



Two populations of the same species → Physical barriers separate populations. → Populations adapt to new environments. → Development of a new species.
 • = individual organism

<p>51. Describe the process of selective breeding</p>	<ul style="list-style-type: none"> • Humans choose members of species with desired characteristics • Only these organisms are bred • Offspring with best features are then bred • Repeated over several generations
<p>52. Give 3 characteristics that humans have selectively bred for</p>	<ul style="list-style-type: none"> • Disease resistance in food crops • Animals which produce more meat or milk • Domestic dogs with a gentle nature • Large or unusual flowers
<p>53. State 2 disadvantages of selective breeding</p>	<ul style="list-style-type: none"> • More prone to disease and inherited defects • Reduction in gene pool
<p>54. What is genetic engineering?</p>	<p>Modifying the genome of an organism by inserting a gene from another organism</p>
<p>55. Give examples of genetic engineering</p>	<ul style="list-style-type: none"> • Herbicide resistance in plants • Plants resistant to disease • Plants resistant in insect/pest attack • Plants to produce bigger fruits • Bacterial cells to produce human insulin • Sheep produce different proteins in their milk
<p>56. What are the 2 types of vectors in genetic engineering?</p>	<ul style="list-style-type: none"> • Bacterial plasmids • Viruses
<p>57. Explain how genetic engineering could be used to insert the insulin gene into bacteria</p>	<ol style="list-style-type: none"> 1) A restriction enzyme is used to cut out and isolate the insulin gene from human DNA 2) The same restriction enzyme is used to cut a bacterial plasmid 3) This leaves the same sticky ends 4) A ligase enzyme is used to stick the insulin gene and plasmid together 5) The plasmid is then put back into the bacterium  <p>B Making genetically engineered insulin.</p>

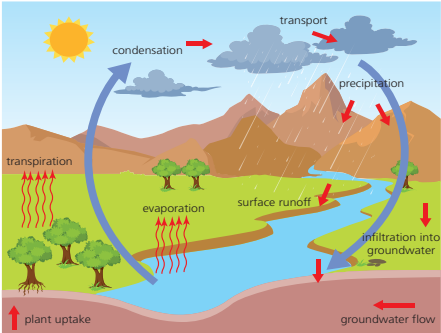
<p>58. How can we ensure that only the bacteria that have taken up the insulin gene grow?</p>	<p>With the insulin gene, an antibiotic resistant gene is also inserted. If the bacterium takes up the insulin gene, it will also take up the antibiotic resistant gene Give the bacterial population, the antibiotic, and this will kill off the bacteria that have not taken up the insulin gene (saves resources)</p>
<p>59. Explain how genetic engineering could be used to insert the herbicide resistant gene into plants</p>	<ol style="list-style-type: none"> 1) A restriction gene is used to cut out and isolate the herbicide resistant gene 2) The same restriction enzyme is used to cut a bacterial plasmid 3) This leaves the same sticky ends 4) A ligase enzyme is used to stick the herbicide resistant gene and plasmid together 5) The plasmid is then put back into the bacterium 6) The bacteria are then allowed to infect the plant cells at a very early stage, and they insert their DNA into plant DNA 7) Every cell that divides after that point will contain the herbicide resistant gene (mitosis)  <p>▲ Figure 15.15</p>
<p>60. What are the advantages of genetic engineering?</p>	<ul style="list-style-type: none"> • Crop yield is higher, so more profits for farmers and more food for an increasing population • More vitamin content inside food, so better health • Plants resistant to herbicide, so more space and less competition for crops, so bigger yield • Mass production of human proteins needed to treat diseases
<p>61. What are the disadvantages of genetic engineering?</p>	<ul style="list-style-type: none"> • Affects not fully explored so could be harmful • Cross pollination with wild plants, so making these herbicide resistant • Less plant biodiversity, so reduction in herbivores, and other species further up the food chain

<p>62. Name the 7 classification groups in the system designed by Carl Linnaeus</p>	<ul style="list-style-type: none"> • Kingdom • Phylum • Class • Order • Family • Genus • Species 	
<p>63. What are the 5 kingdoms?</p>	<p>Animals, Plants, Fungi, Protists and prokaryotes</p>	
<p>64. What is the binomial system for naming species?</p>	<p>Species named using their genus and species name It is written in italics, with the genus name starting with a capital letter e.g. <i>Homo sapiens</i> or <i>Panthera leo</i></p>	
<p>65. How can the species names be used to identify two organisms that are very close in their evolutionary relationship?</p>	<p>They will have the same genus</p>	
<p>66. How are organisms classified?</p>	<p>Based on...</p> <ul style="list-style-type: none"> • DNA • Physical features • Amino acid sequences 	
<p>67. Why is important to classify organisms?</p>	<p>Makes communication easier across different countries Makes sense of enormous diversity on Earth Find evolutionary relationship between different species</p>	
<p>68. Who came up with the 3 Domain system of classification?</p>	<p>Carl Woese</p>	
<p>69. What led to changes in the classification system?</p>	<p>More knowledge of cell structure due to developments in microscopes More knowledge of cell processes</p>	
<p>70. Describe the 3 Domain system</p>	<p>Archaea – primitive bacteria (extremophiles) Bacteria – true bacteria Eukaryotes – contain a nucleus (animals, plants, protists, fungi)</p>	

Ecology

1. Define the term habitat	Environment where an organism lives
2. Define the term population	Total number of organisms of one species living in a habitat
3. Define the term community	Populations of the all the different species in a habitat
4. Define the term abiotic factors	Non-living factors in an environment e.g. light intensity, temperature, moisture levels, oxygen level, pH levels, angle of slope, wind intensity
5. Define the term biotic factors	Living factors in an environment e.g. new predators, pathogens, availability of food
6. Define the term ecosystem	Interaction of the biotic and abiotic factors in the environment. Habitat + community = ecosystem
7. Define the term competition	Where members of the same species (intraspecific competition) or members of different species (interspecific competition) fight for the same resources
8. What do animals compete for?	Food, shelter and mates
9. What do plants compete for?	Water, light intensity, carbon dioxide, space and minerals
10. Define the term interdependence	How different species rely on each other for food, shelter, pollination etc. If one species is removed, it affects the whole community
11. Describe the 3 different types of adaptations	Structural – physical adaptations that you can see, such as white fur, small ears Behavioural – what an organism does to survive e.g. penguins huddling Functional – relating to an organisms body e.g. hibernating or producing venom
12. Describe and explain adaptations of an animal living in an arctic environment	<ul style="list-style-type: none"> • Thick layer of fur to act as an insulation • Thick layer of insulating fat to keep warm, and store of food • White fur for camouflage to hide from prey/predators • Small ears to reduce surface area to volume ratio and reduce heat loss • Body shape has a small surface area to volume ration to reduce heat loss <p>Large paws to reduce pressure, and therefore easier to move/run across snow and ice</p>

<p>13. Describe and explain adaptations of an animal living in a desert environment</p>	<ul style="list-style-type: none"> • Brown fur for camouflage to hide from prey/predators • Store of water to cope with periods where drinking water is not available • Produce small amounts of concentrated urine • Store of food to cope with periods where food is scarce • Large ears to increase surface area to volume ratio and increase heat loss • Body shape has a large surface area to volume ratio to increase heat loss • Large paws to reduce pressure, and therefore easier to move/run across sand
<p>14. Give an example of an extreme environment</p>	<p>Deep sea hydrothermal vents</p>
<p>15. Describe and explain adaptations of a plant living in a desert environment</p>	<ul style="list-style-type: none"> • Spike leaves to prevent animals taking their store of water • Leaves also has small surface area to volume ratio to reduce water loss • Have a store of a water to cope with periods where water is not available • Shallow roots extend over a large area to absorb as much water as possible • Deep roots that can access deep groundwater that may available
<p>16. Define the term producer</p>	<p>Species such as plants, phytoplankton and algae use the Sun's light energy to produce glucose (chemical energy)</p>
<p>17. Define the term consumer</p>	<p>Animal that eats to obtain glucose</p>
<p>18. What do the arrows represent in a food chain?</p>	<p>Energy transfer</p>
<p>19. State 2 processes that remove carbon dioxide from the air</p>	<ul style="list-style-type: none"> • Photosynthesis • Carbon dioxide dissolved in oceans
<p>20. State 2 processes that release carbon dioxide into the air</p>	<ul style="list-style-type: none"> • Respiration (this includes decomposition of dead material) • Combustion
<p>21. Explain the process of decomposition</p>	<p>This is where decomposers use the glucose insides dead material to respire to release energy. This will release minerals back into the soil, as well as release carbon dioxide back into the air.</p>

22. What are detritivores?	Small insects that help with the decomposition process
<p>23. State and describe 5 processes in the water cycle</p> 	<p>Precipitation e.g. rain, snow Surface run off – water runs down rivers and eventually into seas Evaporation – water evaporates from rivers, seas and oceans Transpiration – evaporation of water from the leaves of plants Condensation – water from evaporation and transpiration condenses to form clouds</p>
24. What is biodiversity?	Variety of different species within a habitat
25. How is biodiversity measured?	<ul style="list-style-type: none"> • Using the number of different species • Using the population of each species • Genetic diversity
26. How is biodiversity related to the different type of microhabitats?	The bigger the number of microhabitats, the greater the biodiversity
27. Why is biodiversity important?	<ul style="list-style-type: none"> • Development of food and medicines from species • An ecosystem is more likely to cope with change in environment if there is huge biodiversity - reducing the dependence of one species on another for food, shelter and the maintenance of the physical environment • Organisms have a right to survive
28. How has human population impacted the environment?	<ul style="list-style-type: none"> • Increased waste production • Increased use of limited resources • Increased demand on the environment
29. Describe 2 human activities that increased the amount of carbon dioxide in the air	<ul style="list-style-type: none"> • Deforestation – reduced photosynthesis • Increased combustion of fossil fuels
30. Describe 2 human activities that increased the amount of methane in the air	<ul style="list-style-type: none"> • Increased decomposition of waste in a landfill • Agriculture – more animals and rice fields
31. How does Climate Change affect food production?	Change in rainfall patterns, droughts, desertification of previously fertile land

<p>32. How does Climate Change affect biodiversity?</p>	<ul style="list-style-type: none"> • Extreme weather patterns/change in environment means that if a species cannot adapt, they may go extinct • Species may have to migrate to different regions, or migrate at different times • Flooding due melting ice caps/sea levels rising, or destruction of habitats, leading to lower biodiversity
<p>33. Describe the negative impacts of deforestation</p>	<ul style="list-style-type: none"> • Less carbon dioxide taken in by plants for photosynthesis, and thus increasing carbon dioxide in the air • Loss of habitats, reducing biodiversity • Less transpiration, less rainfall, and therefore droughts • Trees bind soil together, and so without them, soil erosion more likely, as well as desertification
<p>34. How are peat bogs formed?</p>	<ul style="list-style-type: none"> • When organic material does not decompose due to lack of oxygen or extremes of pH
<p>35. Why are peat bogs destroyed?</p>	<ul style="list-style-type: none"> • Clear land for fuel • Use the organic material for fuel or compost
<p>36. Describe the negative impacts of removing peat bogs</p>	<ul style="list-style-type: none"> • Destruction of habitats, reducing biodiversity • Using as a fuel releases carbon dioxide into the air
<p>37. Give 4 ways by which humans can maintain biodiversity</p>	<ul style="list-style-type: none"> • Reduce deforestation • Reintroduce hedgerows and other habitats, increasing the number of habitats, will increase biodiversity • Reduce amount of waste – uses less land • Breeding programmes to prevent extinction
<p>38. Give 3 problems of maintaining biodiversity</p>	<ul style="list-style-type: none"> • All programmes listed in Q37 cost money • Loss of jobs • Land cannot be used for growing crops for food for an increasing human population