



Topic name	Term	Skills developed	Link to NC subject content	Prior learning	Next link in curriculum
4.7 Ecology	Autumn	Completed from Year 10. See Curriculum map-Year 10-Biology for content			
4.6 Inheritance, variation and evolution	Spring / Summer	<p><b>4.6.1 Reproduction</b> Modelling behaviour of chromosomes during meiosis.</p> <p>Historical developments of our understanding of the causes and prevention of malaria.</p> <p>Interpret a diagram of DNA structure but will not be required to reproduce it.</p> <p>Students should be able to understand the concept of probability in predicting the results of a single gene cross, but recall that most phenotype features are the result of multiple genes rather than single gene inheritance.</p> <p>Students should be able to use direct proportion and simple ratios to express the outcome of a genetic cross.</p> <p>Students should be able to complete a Punnett square diagram and extract and interpret information from genetic crosses and family trees.</p> <p>(HT only) Students should be able to construct a genetic</p>	<p>4.6.1 Reproduction 4.6.2 Variation and evolution 4.6.3 The development of understanding of genetics and evolution 4.6.4 Classification of living organisms</p> <p>In this section we will discover how the number of chromosomes are halved during meiosis and then combined with new genes from the sexual partner to produce unique offspring. Gene mutations occur continuously and on rare occasions can affect the functioning of the animal or plant. These mutations may be damaging and lead to a number of genetic disorders or death. Very rarely a new mutation</p>	<p><b>Links from KS3:</b> KS3 Y7 Cells, tissues, and organs Y7 Human Reproduction Y7 Plant Reproduction</p> <p><b>Links from KS4:</b> Y9 Cell Biology – mitosis and the cell cycle Y10 Antibiotics Y11 Role of biotechnology</p>	<p><b>KS5 AQA A-level Biology</b></p> <p>3.4 Genetic information, variation and relationships between organisms</p> <p>3.4.1 DNA, genes and chromosomes</p> <p>3.4.3 Genetic diversity can arise as a result of mutation or during meiosis</p> <p>3.4.4 Genetic diversity and adaptation</p> <p>3.4.5 Species and taxonomy</p> <p>3.7 Genetics, populations,</p>



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		<p>cross by Punnett square diagram and use it to make predictions using the theory of probability.</p> <p>Appreciate that embryo screening and gene therapy may alleviate suffering but consider the ethical issues which arise.</p> <p><b>4.6.2 Variation and evolution</b> Use the theory of evolution by natural selection in an explanation.</p> <p>Explain the benefits and risks of selective breeding given appropriate information and consider related ethical issues.</p> <p>Students should be able to explain the potential benefits and risks of genetic engineering in agriculture and in medicine and that some people have objections.</p> <p>Interpret information about genetic engineering techniques and to make informed judgements about issues concerning cloning and genetic engineering, including GM crops.</p> <p>Explain the potential benefits and risks of cloning in agriculture and in medicine and that some people have ethical objections.</p> <p><b>4.6.3 The development of understanding of genetics and evolution</b> Students should appreciate that the theory</p>	<p>can be beneficial and consequently, lead to increased fitness in the individual. Variation generated by mutations and sexual reproduction is the basis for natural selection; this is how species evolve. An understanding of these processes has allowed scientists to intervene through selective breeding to produce livestock with favoured characteristics. Once new varieties of plants or animals have been produced it is possible to clone individuals to produce larger numbers of identical individuals all carrying the favourable characteristic. Scientists have now discovered how to take genes from one species and introduce them in to the genome of another by a process called genetic engineering. In spite of the huge potential benefits that this technology can offer,</p>		<p>evolution and ecosystems</p> <p>3.7.1 Inheritance</p> <p>3.7.3 Evolution may lead to speciation</p> <p>3.8 The control of gene expression</p> <p>3.8.4 Gene technologies allow the study and alteration of gene function allowing a better understanding of organism function and the design of new industrial and medical processes</p>



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		<p>of evolution by natural selection developed over time and from information gathered by many scientists.</p> <p>The theory of speciation has developed over time.</p> <p>Our current understanding of genetics has developed over time.</p> <p>Extract and interpret information from charts, graphs and tables.</p> <p>Appreciate why the fossil record is incomplete.</p> <p>Understand how scientific methods and theories develop over time.</p> <p><b>4.6.4 Classification of living organisms</b> Understand how scientific methods and theories develop over time.</p> <p>Interpret evolutionary trees.</p>	<p>genetic modification still remains highly controversial.</p>		
Revision & Exam Practice	Summer				