



ASPIRE • BELIEVE • ACHIEVE



## Curriculum Overview: A2 Biology

Year 13 Spring Term 1			
What are we learning?	What knowledge, understanding and skills will we gain?	What does excellence look like?	What additional resources are available?
Inherited change Populations and evolution	<b>Knowledge and understanding</b> <ul style="list-style-type: none"><li>• Draw genetic diagrams of dominant/recessive monohybrid crosses to predict offspring genotypes and phenotypes.</li><li>• Apply knowledge to calculate the predicted ratios of genotypes and phenotype of offspring when supplied with appropriate information.</li><li>• Draw genetic diagrams of sex-linked crosses to predict offspring genotypes and phenotypes.</li><li>• Use the chi-squared test to compare observed values against those predicted from genetic crosses.</li><li>• Interpret P values from chi-squared tests in terms of probability and chance.</li><li>• Explain the conditions under which Hardy-Weinberg principle is valid.</li></ul>	<ul style="list-style-type: none"><li>• Could set up an experiment to study Drosophila crosses and investigate ratios from genetic crosses e.g. dihybrid ratios. NB</li><li>• Work through some examples, using Punnet squares to represent the inheritance of characteristics. Relate back to meiosis</li><li>• Work through further examples independently, including chi-squared questions as well.</li><li>• Could measure variation within the group.</li><li>• Plot results accurately on a graph.</li></ul>	<p><a href="https://www.aqa.org.uk/subjects/science/as-and-a-level/biology-7401-7402">https://www.aqa.org.uk/subjects/science/as-and-a-level/biology-7401-7402</a></p> <p><a href="https://www.physicsandmathstutor.com/biology-revision/">https://www.physicsandmathstutor.com/biology-revision/</a></p> <p><a href="https://www.khanacademy.org">https://www.khanacademy.org</a></p> <p><a href="https://www.s-cool.co.uk/a-level/biology">https://www.s-cool.co.uk/a-level/biology</a></p> <p><a href="https://studywise.co.uk/a-level-revision/biology/www">https://studywise.co.uk/a-level-revision/biology/www</a></p> <p><a href="http://www.senecalearning.com">http://www.senecalearning.com</a> login</p>

	<ul style="list-style-type: none"> <li>Apply knowledge of the Hardy-Weinberg equation to the data given in a question to calculate the frequency of an allele or genotype.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Development of knowledge and understanding of the chi-squared test and how it is used</li> <li>Application of knowledge to interpret chi-squared outcomes</li> <li>Use the <math>\chi^2</math> test to investigate the significance of differences between expected and observed phenotypic ratios.</li> <li>Ethical and safe use of organisms</li> <li>Use information to represent phenotypic ratios in dihybrid crosses</li> <li>Understand simple probability associated with inheritance</li> <li>Calculate mean, median and mode for measured values.</li> </ul>		
Year 13 Spring Term 2			
What are we learning?	What knowledge, understanding and skills will we gain?	What does excellence look like?	What additional resources are available?
Populations in Ecosystem Gene expression	<p><b>Knowledge and understanding</b></p> <ul style="list-style-type: none"> <li>Describe what happens in substitution, addition, deletion, inversion, duplication and translocation mutations.</li> <li>Explain how mutations can arise spontaneously, and the effect</li> </ul>	<ul style="list-style-type: none"> <li>Provide information sheets on totipotent, pluripotent, multipotent and unipotent cells.</li> <li>Carry out activity to produce tissue culture from explants of cauliflower.</li> <li>Produce tissue cultures of explants of cauliflower (Brassica oleracea).</li> </ul>	<p><a href="https://www.aqa.org.uk/subjects/science/as-and-a-level/biology-7401-7402">https://www.aqa.org.uk/subjects/science/as-and-a-level/biology-7401-7402</a></p> <p><a href="https://www.physicsandmathstutor.com/biology-revision/">https://www.physicsandmathstutor.com/biology-revision/</a></p> <p><a href="https://www.khanacademy.org">https://www.khanacademy.org</a></p> <p><a href="https://www.s-cool.co.uk/a-level/biology">https://www.s-cool.co.uk/a-level/biology</a></p>

	<p>that mutagenic agents have on the rate of mutation.</p> <ul style="list-style-type: none"> <li>• Evaluate the use of stem cells in treating human disorders.</li> <li>• Describe the role of transcription factors in gene expression.</li> <li>• Interpret data provided from investigations into gene expression.</li> <li>• Explain how epigenetic control can cause disease, and how it could be used to treat diseases such as cancer.</li> <li>• Describe the characteristics of benign and malignant tumours.</li> <li>• Evaluate evidence showing correlations between genetic and environmental factors and various forms of cancer.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>• Development of understanding of tumours, and the possible reasons for developing tumours</li> <li>• Application of knowledge to exam questions</li> <li>• Evaluation of scientific data showing correlations and comparison of data against bioinformatics database</li> <li>• Develop essay-writing skills.</li> </ul>	<ul style="list-style-type: none"> <li>• Analyse data on the relative influences of genetic and environmental factors on phenotype from twin studies, and draw conclusions</li> <li>• Research the information and activities from the learn.genetics.utah.edu website eg lick your rats.</li> <li>• Research the Human Genome project</li> </ul>	<p><a href="https://studywise.co.uk/a-level-revision/biology/www">https://studywise.co.uk/a-level-revision/biology/www</a></p> <p><a href="http://www.senecalearning.com">http://www.senecalearning.com</a> login</p> <p>learn.genetics.utah.edu</p>
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