

**YEAR: 11 Science (Double Award) Biology**

Knowledge Focus: 4.3 DNA and inheritance, 4.4 Variation and evolution






**Skills, knowledge and understanding to be developed in this Learning Plan:**

The structure of DNA, and triplet codes in their role during protein synthesis. Process of genetic profiling and relevant uses. The use of Punnett squares to assess single gene inheritance. Process and ethical arguments of genetic gene transfer. Understanding of the formation of new genes from mutations leading to advantageous characteristics and variation. Process of natural selection and heritable variation as the basis of evolution.

**Key terms to be learned in this LP:**

Deoxyribonucleic acid, triplet code, protein, adenine, thymine, cytosine, guanine, evolution, Darwin, heterozygous, homozygous, dominant, recessive

<p><b>Week 1 - 2 Learning Objectives: 4.3 DNA and inheritance</b></p> <ul style="list-style-type: none"> <li>Understand the structure of DNA</li> <li>Understand the coding of DNA</li> <li>Understand what genetic profiling is and how it is used</li> </ul>		<p><b>Objective assessments:</b></p> <p>Be able to: Describe the structure of DNA and explain complementary base pairing.</p> <p>Explain the process of genetic profiling and the uses of it. Be able to analyse results of a DNA fingerprint and successfully identify matches.</p>	<p><b>Homework:</b></p> <p>Set: Due:</p> <hr/> <p><b>Homework:</b></p> <p>Set: Due:</p>
<p><b>Week 3 - 4 Learning Objectives: Finish 4.3 DNA and inheritance</b></p> <ul style="list-style-type: none"> <li>Understand single gene inheritance</li> <li>Complete Punnett squares to predict the outcomes of monohybrid crosses</li> <li>Understand that most phenotypic features are a combination of several genes</li> <li>Sex determination of humans (XX and XY)</li> <li>What artificial gene transfer is, ethical arguments and advantages/disadvantages</li> </ul>		<p><b>Objective assessments:</b></p> <p>Be able to: Explain the concept of single gene inheritance</p> <p>Predict the changes of gene expression using Punnett squares from heterozygous or homozygous genes</p> <p>Explain the process of artificial gene transfer and discuss the ethical arguments alongside advantages and disadvantages.</p>	<p><b>Homework:</b></p> <p>Set: Due:</p> <hr/> <p><b>Homework:</b></p> <p>Set: Due:</p>
<p><b>Week 5 - 7 Learning Objectives: 4.4 Variation and evolution</b></p> <ul style="list-style-type: none"> <li>The production of genetically different offspring through sexual reproduction</li> <li>Understand the impact mutations have on DNA and their likelihood of survival</li> <li>Understand cystic fibrosis and development of treatments</li> <li>Understand the theory of evolution and natural selection</li> <li>Understand and explain how antibiotic resistance demonstrates evolution</li> </ul>		<p><b>Objective assessments:</b></p> <p>Be able to: Explain the concept of evolution and how mutations in DNA lead to desirable characteristics (natural selection)</p> <p>Explain how antibiotic resistance shows evolution and the consequences this can have furthering the</p>	<p><b>Homework:</b></p> <p>Set: Due:</p> <hr/> <p><b>Homework:</b></p> <p>Set: Due:</p>

Assessment  
 4.3 Mid topic PPA (QER)

Assessment  
 4.3 End of Topic

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importance for understanding  
of the genome.

**\*specified prac\***

Investigation into variation of  
organisms

**Homework:**

Set:

Due:

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