



## Learning Journey – Year 8 – Genetics

What have I done previously in my learning journey?		
Previously....	<ul style="list-style-type: none"><li>The structure of plant and animal cells.</li><li>The function of the different organelles in plant and animal cells.</li><li>Describing how plants and animals reproduce.</li><li>Specialised cells and their adaptations</li></ul>	
In this topic...	<p>You will learn more about genetics, genetic engineering , biodiversity and how genetics can lead to variation in the environment. This will include learning about:</p> <ul style="list-style-type: none"><li>DNA and the extraction process.</li><li>How the inheritance of alleles can lead to differences in characteristics.</li><li>Biodiversity and how it can lead to extinction.</li><li>How to predict the outcome of a genetic cross diagram and Punnet Square diagram.</li></ul>	
We will develop our learning by studying the following each lesson:		Skills in Science checklist
<b>8K.01 Natural Selection</b> <ul style="list-style-type: none"><li>Describe the theory of natural selection.</li><li>Explain why species evolve over time.</li></ul>		<input type="checkbox"/> Scientific Methods <input type="checkbox"/> Practical <input type="checkbox"/> Number skills <input type="checkbox"/> Application <input type="checkbox"/> Communication
<b>8K.02 Extinction</b> <ul style="list-style-type: none"><li>State some factors that may lead to extinction.</li><li>Explain why a species has become extinct.</li><li>Interpret scientific texts on the theories of extinction.</li></ul>		<input type="checkbox"/> Scientific Methods <input type="checkbox"/> Practical <input type="checkbox"/> Number skills <input type="checkbox"/> Application <input type="checkbox"/> Communication
<b>8K.03 Biodiversity</b> <ul style="list-style-type: none"><li>Describe the importance of biodiversity in maintaining plant and animal populations.</li><li>Explain how a lack of biodiversity can affect an ecosystem.</li><li>Describe some techniques to preserve biodiversity</li></ul>		<input type="checkbox"/> Scientific Methods <input type="checkbox"/> Practical <input type="checkbox"/> Number skills <input type="checkbox"/> Application <input type="checkbox"/> Communication
<b>8K.04 Continuous and discontinuous variation</b> <ul style="list-style-type: none"><li>Describe the differences between continuous and discontinuous variation.</li><li>Represent variation within species using a graph.</li></ul>		<input type="checkbox"/> Scientific Methods <input type="checkbox"/> Practical <input type="checkbox"/> Number skills <input type="checkbox"/> Application <input type="checkbox"/> Communication
<b>8K.05 DNA</b> <ul style="list-style-type: none"><li>Describe the relationship between DNA, genes and chromosomes.</li><li>Describe the structure of DNA.</li><li>Extract the DNA from cells of fruit.</li></ul>		<input type="checkbox"/> Scientific Methods <input type="checkbox"/> Practical <input type="checkbox"/> Number skills <input type="checkbox"/> Application <input type="checkbox"/> Communication
<b>8K.06 Inheritance</b> <ul style="list-style-type: none"><li>Describe how characteristics are inherited.</li><li>Identify some characteristics that are caused by genes, the environment or both</li></ul>		<input type="checkbox"/> Scientific Methods <input type="checkbox"/> Practical <input type="checkbox"/> Number skills <input type="checkbox"/> Application <input type="checkbox"/> Communication
<b>8K.07 Genetics</b> <ul style="list-style-type: none"><li>Describe the difference between dominant and recessive alleles.</li><li>Use a Punnett square to show how genes are inherited.</li></ul>		<input type="checkbox"/> Scientific Methods <input type="checkbox"/> Practical <input type="checkbox"/> Number skills <input type="checkbox"/> Application <input type="checkbox"/> Communication
<b>8K.08 Genetic Modification</b> <ul style="list-style-type: none"><li>Describe how a product is produced using genetic modification.</li><li>Describe some advantages and disadvantages of genetic modification.</li></ul>		<input type="checkbox"/> Scientific Methods <input type="checkbox"/> Practical <input type="checkbox"/> Number skills <input type="checkbox"/> Application <input type="checkbox"/> Communication



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Key Vocabulary								
DNA	Gene	Chromosome	Evolution	Selective breeding	Genetic engineering	Charles Darwin	Biodiversity	Allele
Dominant	Recessive	Nucleus	Extinct	Meiosis	Continuous	Discontinuous	Natural Selection	Population
Genotype	Punnet square	Inherited	Genetic	Variation	Fossils	Ethanol	Mutation	Nucleic acid

<b>Future Learning</b>	<u>Biodiversity</u> <ul style="list-style-type: none"><li>• Classification is a means of organising the variety of life based on relationships between organisms and is built around the concept of species.</li><li>• Originally classification systems were based on observable features but more recent approaches draw on a wider range of evidence to clarify relationships between organisms</li><li>• Adaptation and selection are major factors in evolution and make a significant contribution to the diversity of living organisms.</li></ul>
	<u>Genetics and Evolution</u> <ul style="list-style-type: none"><li>• Transfer of genetic information from one generation to the next can ensure continuity of species or lead to variation within a species and possible formation of new species.</li><li>• Reproductive isolation can lead to accumulation of different genetic information in populations potentially leading to formation of new species.</li><li>• Sequencing projects have read the genomes of organisms ranging from microbes and plants to humans. This allows the sequences of the proteins that derive from the genetic code to be predicted .</li><li>• Gene technologies allow study and alteration of gene function in order to better understand organism function and to design new industrial and medical processes.</li></ul>
<b>In careers</b>	Careers in genetic engineering and biotechnology have helped us to develop new drugs and predict inherited disorders. This research helps us to assess medical risks and develop new technology.