Year 12 Biology | Term 5

How does inheritance occur?

Past Exploration: Previously students have explored

In other areas of curriculum students will have

Topic Overview: The theory of evolution underpins modern Biology. All new species arise from an existing species. Students will explore how this results in different species sharing a common ancestry, as represented in phylogenetic classification. Students will explore how common ancestry can explain the similarities between all living organisms, such as common chemistry (eg all proteins made from the same 20 or so amino acids), physiological pathways (eg anaerobic respiration), cell structure, DNA as the genetic material and a 'universal' genetic code. Students will also explore how populations of different species live in communities.

Future Explorations:
Going forward in Biology,

	Lesson Exploration	Lesson Experience(s)	Key Words
Week 1: Lesson 1	**Why do we look like our parents but not exactly like them?**	Students will experience using guided activities to explore how and why some characteristics are passed onto the offspring but others aren't	Monohybrid, dihybrid, sex-linkage, autosomal, multiple alleles, co-dominance, epistasis, evolution, succession, competition, predation, Hardy-weinberg principle, phenotype, genotype, Fouder effect, Bottleneck effect, Speciation, Conservation
Week 1: Lesson 2	**How is a single trait inherited in organisms?**	Students will experience using information to represent phenotypic ratios in monohybrid crosses.	
Week 1: Lesson 3	**How did Mendel come up with principles of inheritance?**	Students will experience understanding the probability associated with inheritance.	
Week 1: Lesson 4	**Why are some flowers multicoloured?**	Students will experience using information to represent phenotypic ratios in monohybrid crosses.	

Week 2: Lesson 1	**What determines an individual's blood group?**	Students will experience using fully labelled genetic diagrams to interpret, or predict, the results of codominant alleles and multiple alleles and epistasis.	
Week 2: Lesson 2	**Why is red-green colour blindness more common in men?**	Students will experience using labelled genetic diagrams to interpret, or predict, the results of sex-linkage and explain why some diseases are common amongst men.	
Week 2: Lesson 3	**How are autosomal diseases caused and inherited?**	Students will experience using labelled genetic diagrams to interpret, or predict, the results of autosomal linkage.	
Week 2: Lesson 4	**How do genes interact with each other?**	Students will experience using labelled genetic diagrams to interpret, or predict, the results of epistasis and explain who some genes can determine the fate of others	
Week 3: Lesson 1	**How can chi squared tests be used in population genetics?**	Students will experience using the Chi squared test to investigate the significance of differences between expected and observed phenotypic ratios.	
Week 3: Lesson 2	**What does the distribution of phenotypes in a population tell us?**	Students will experience calculating allele, genotype and phenotype frequencies from appropriate data using the Hardy–Weinberg equation.	
Week 3: Lesson 3	**Why did Darwin's finches have different beaks?**	Students will experience collecting and interpreting data about the frequency of observable phenotypes within a single population.	
Week 3: Lesson 4	**What did Darwin propose? What is the evidence for it?**	Students will experience applying their knowledge of sampling to explore the concept of genetic drift.	
Week 4: Lesson 1	**How do different forms of selection affect evolution and species population?**	Students will experience drawing and interpreting graphs to represent how different forms of selection affects species population	
Week 4: Lesson 2	**How do new species come about?**	Students will experience using computer programs to model the effects of natural selection and of genetic drift.	

Week 4: Lesson 3	**What do the examiners want me to know?**	Students will experience a range of activities to improve their exam techniques.	
Week 4: Lesson 4	**Where are the gaps in my knowledge ?**	Students will experience a range of activities to test and close gaps in current knowledge to prepare for the week 5 assessment.	
Week 5: Lesson 1	**Week 5 assessment**		
Week 5: Lesson 2	**When is the hardy-weinberg equation used?**	Students will experience calculating allele, genotype and phenotype frequencies from appropriate data using the Hardy–Weinberg equation.	
Week 5: Lesson 3	**What causes variations in a population size?**	Students will experience applying their knowledge of Darwin's theory and developing it to explore other aspects of population genetics	
Week 5: Lesson 4	**How do predator and prey populations change over time?**	Students will experience researching predator-prey cycles and predicting the future patterns. Students will experience using the case study of Dodo bird to explore the impact of human intervention.	
Week 6: Lesson 1	**RP 12 Investigating populations**	Required practical 12: Investigation into the effect of a named environmental factor on the distribution of a given species.	
Week 6: Lesson 2	**How does a barren land become a woodland?**	Students will experience discovering primary succession, from colonisation by pioneer species to climax community.	
Week 6: Lesson 3	**What can we do to conserve the habitats?**	Students will experience researching and discussing the need to manage the conflict between human needs and conservation in order to maintain the sustainability of natural resources	
Week 6: Lesson 4	**TRY NOW**	...	

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