

YEAR 11 BIOLOGY SEMESTER 1

TITLE: VARIATION AND EVOLUTION

LESSON	TITLE	OBJECTIVES	Check your progress		
			MEG 2	MEG 5	MEG 8
1	Fossil evidence and the fossil record	<ul style="list-style-type: none"> -Understand how, and the situations in which, fossils are formed -Understand how fossils are used as evidence for evolution of species from simpler life forms -Understand why the fossil record is incomplete -Use the fossil record to understand how much, or how little, organisms have changed as life developed on Earth 			
2	Darwin and Wallace	<ul style="list-style-type: none"> -Recall how Darwin and Wallace proposed, independently, the theory of evolution -Describe how Alfred Wallace gathered evidence of evolution, including warning colouration and mimicry 	Identify reasons why evolution was not, to begin with, accepted	Identify the reasons why genetics and evolution were not linked until the twentieth century	Explain how the scientific work of many scientists contributed to the gene theory
3	Why were these theories not accepted?	<ul style="list-style-type: none"> -Describe the work of Mendel, Wallace and Darwin -Appreciate that the contributions of many scientists led to gene theory being developed 			

4	Speciation	<ul style="list-style-type: none"> -Understand that when natural selection operates differently on populations, a new species is produced -Understand that during evolution, new species are formed when populations become so different that they can no longer interbreed 			
5	Antimicrobial resistance	<ul style="list-style-type: none"> -Recall that bacteria develop that are resistant to antibiotics, which is evidence of evolution -Understand the mechanism by which antibiotic resistance develops -Understand the effects of the development of antibiotic resistance on the treatment of disease 			
6	Combatting antimicrobial resistance	<ul style="list-style-type: none"> -Describe how to reduce the rate of development of antibiotic resistance -Understand the requirement for, and impact of, new antibiotics 			
7	Selective breeding	<ul style="list-style-type: none"> -Describe the process of selective breeding -Recall how selective breeding enables humans to choose desirable characteristics in animals 			

		-Explain how selective breeding can lead to inbreeding			
8	Genetic engineering	-Give examples of how plant crops have been genetically engineering to improve products and describe how fungus cells are engineered to produce human insulin -Describe the process of genetic engineering -Explain the benefits of, and concerns about, genetic modification -Explain the ethical concerns about genetic engineering			
9	New and genetically modifies plants	-Describe the process of selective breeding -Recall how selective breeding enables humans to choose desirable characteristics in plants			
10	Cloning	-Describe hoe cuttings and tissue culture are used to produce new plants -Describe the use of embryo transplantation and cloning in animals			

11	Classification (The tree of life)	-Describe how living things have been classified into groups using a system devised by Linnaeus -Describe how new models of classification have developed	Recall and use the classification system developed by Linnaeus	Explain the features used to develop evolutionary trees	Explain how microscopic examination, fossils and biochemistry have led to modern evolutionary trees
12	Extinction	-List the causes of extinction -Explain how new predators, competitors and diseases can lead to extinctions	Identify the causes of extinction	Describe how new species, predators and competitors can lead to extinction	Evaluate circumstances that may lead to another mass extinction

KEY TERM LIST:

Fossil, radiometric dating, fossil record, missing link, palaeontologist
Mimicry, warning colouration, gene theory, genetic variation, mathematical model
Antimicrobial resistance
Breed, inbreeding, selective breeding
Environmental change, mixed population, genetic variation
Genetic engineering, GM crops, vector, food security, larva, order, genetic marker, gene, gene therapy
Adult cell cloning, embryo transplant, cutting, therapeutic cloning, tissue culture
Binomial system, evolutionary tree
Extinction, invasive species

MATHEMATICAL SKILLS:

Translate information between graphical and numeric form
Plot two variables from experimental or other data
Construct and interpret frequency tables and diagrams, bar charts and histograms