

B15 Genetics and Evolution

Lessons TBAT	Key Knowledge	Practical	Assessment
<p>TBAT: Explain how fossils provide evidence for evolution</p>	<p>Fossils are the ‘remains’ of organisms from millions of years ago, which are found in rocks. Fossils may be formed: • from parts of organisms that have not decayed because one or more of the conditions needed for decay are absent • when parts of the organism are replaced by minerals as they decay • as preserved traces of organisms, such as footprints, burrows and rootlet traces.</p> <p>Many early forms of life were soft-bodied, which means that they have left few traces behind. What traces there were have been mainly destroyed by geological activity. This is why scientists cannot be certain about how life began on Earth.</p> <p>We can learn from fossils how much or how little different organisms have changed as life developed on Earth.</p>		<p>End of unit assessment with B14 and B15 content</p>
<p>TBAT: Describe different causes of extinction</p>			<p>Maths focus</p> <p>Students should be able to extract and interpret information from charts, graphs and tables such as evolutionary trees.</p>
<p>TBAT: Explain how nature can cause extinction</p>			<p>Extract and interpret information from charts, graphs and tables.</p>
<p>TBAT: Describe the evolution of antibiotic resistant bacteria</p>			

<p>TBAT: Explain how organisms are classified</p> <p>TBAT: Explain how technology has changed classification methods</p>	<p>Extinctions occur when there are no remaining individuals of a species still alive. Students should be able to describe factors which may contribute to the extinction of a species.</p> <p>Mutations of bacterial pathogens produce new strains. Some strains might be resistant to antibiotics, and so are not killed. They survive and reproduce, so the population of the resistant strain rises. The resistant strain will then spread because people are not immune to it and there is no effective treatment.</p> <p>MRSA is resistant to antibiotics. To reduce the rate of development of antibiotic resistant strains: • doctors should not prescribe antibiotics inappropriately, such as treating non-serious or viral infections • patients should complete their course of antibiotics so all bacteria are killed and none survive to mutate and form resistant strains • the agricultural use of antibiotics should be restricted. The development of new antibiotics is costly and slow. It is unlikely to keep up with the emergence of new resistant strains.</p> <p>Traditionally living things have been classified into groups depending on their structure and characteristics in a system developed by Carl Linnaeus. Linnaeus classified living things into kingdom, phylum, class, order, family, genus and species. Organisms are named by the binomial system of genus and species.</p> <p>Students should be able to use information given to show understanding of the Linnaean system. Students should be able to describe the impact of developments in biology on classification systems. As evidence of internal structures became more developed due to improvements in microscopes, and the</p>	<p>Key stage 3</p> <p>Inheritance, chromosomes, DNA and genes</p> <ul style="list-style-type: none"> ♣ heredity as the process by which genetic information is transmitted from one generation to the next ♣ a simple model of chromosomes, genes and DNA in heredity, including the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model ♣ differences between species ♣ the variation between individuals within a species being continuous or discontinuous, to include measurement and graphical representation of variation ♣ the variation between species and between individuals of the same species means some organisms compete more successfully, which can drive natural selection ♣ changes in the environment may leave individuals within a species, and some entire species, less well adapted to compete successfully and reproduce, which in turn may lead to extinction ♣ the importance of maintaining biodiversity and the use of gene banks to preserve hereditary material.
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	<p>understanding of biochemical processes progressed, new models of classification were proposed. Due to evidence available from chemical analysis there is now a 'three-domain system' developed by Carl Woese. In this system organisms are divided into: • Archaea (primitive bacteria usually living in extreme environments) • Bacteria (true bacteria) • Eukaryotes (which includes protists, fungi, plants and animals).</p>	
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