

# Year 10: Living World- Genetics and Biotechnology

	Check	Date
<b>Revise assumed knowledge:</b> <b>SC4-14LW</b> relates the structure and function of living things to their classification, survival and reproduction <b>SC4-15LW</b> explains how new biological evidence changes people's understanding of the world	<input type="checkbox"/>	
<b>LW3 Advances in scientific understanding often rely on developments in technology, and technological advances are often linked to scientific discoveries. (ACSHE158, ACSHE192)</b>		
<b>DNA AND THE GENETIC CODE</b>		
<i>5LW3c. identify that genetic information is transferred as genes in the DNA of chromosomes</i>	<input type="checkbox"/>	
<b>Define</b> and <b>distinguish</b> between gene, DNA and chromosomes	<input type="checkbox"/>	
<b>Identify</b> the basic structure of a nucleotide and the double helix (Oxford pg6)	<input type="checkbox"/>	
<b>Identify</b> the pairing arrangement of the four types of nitrogen bases (complementary base pairs)	<input type="checkbox"/>	
<b>Identify</b> that the DNA molecule is common to all life	<input type="checkbox"/>	
<b>CODE:10LW20 First-hand investigation:</b> Construct a model of the DNA molecule	<input type="checkbox"/>	
<b>Identify</b> that traits are determined by genes which are located on chromosomes	<input type="checkbox"/>	
<b>CODE:10 LW21 First-hand investigation:</b> DNA extraction (Oxford pg10)	<input type="checkbox"/>	
<i>5LW3d. outline how the Watson-Crick model of DNA explains: the exact replication of DNA and changes in genes (mutation)</i>	<input type="checkbox"/>	
<b>Define</b> double helix, nucleotide, gene, allele, protein, mutation, mitosis, meiosis, somatic cell, homologous chromosomes, diploid and replication	<input type="checkbox"/>	
<b>Identify</b> the evidence Watson and Crick used to determine the structure of DNA	<input type="checkbox"/>	
<b>Describe</b> how the Watson-Crick model of DNA explains the exact replication of DNA	<input type="checkbox"/>	
<b>CODE: 10LW22 First-hand investigation:</b> Observe prepared slides of cells undergoing mitosis	<input type="checkbox"/>	
<b>Distinguish</b> between a gene and an allele	<input type="checkbox"/>	
<b>Identify</b> mutations as change in the genetic code of an organism	<input type="checkbox"/>	
<b>Outline</b> , using examples (e.g. the evolution of skin colour in humans, genetic disorders), advantages and disadvantages of mutations	<input type="checkbox"/>	
<b>CODE:10LW23 First-hand investigation:</b> Genetic Variation in a Human Population	<input type="checkbox"/>	
<b>CODE: 10LW24 First-hand investigation:</b> DNA Translation and DNA mutations	<input type="checkbox"/>	
<i>5LW3a. relate the organs involved in human reproductive systems to their function</i>	<input type="checkbox"/>	
<b>Define</b> gamete, sperm, ovum, haploid, fertilisation	<input type="checkbox"/>	
<b>Describe</b> the structures involved in gamete production in humans (male and female)	<input type="checkbox"/>	
<b>Relate</b> the organs involved in human reproductive systems to their function	<input type="checkbox"/>	
<b>LITERACY SET 1: COSMOS ARTICLE</b>	<input type="checkbox"/>	
<b>Assessment: Oxford online test-</b> DNA and the genetic code Students to achieve 100% in Support and Consolidate <b>OR</b> Consolidate and Extend	<input type="checkbox"/>	

**GENETIC INHERITANCE**

<b>5LW3b. identify that during reproduction the transmission of heritable characteristics from one generation to the next involves DNA and genes (ACSSU184)</b>	<input type="checkbox"/>	
Briefly <b>outline</b> the work of Gregor Mendel (Oxford pg22)	<input type="checkbox"/>	
<b>Identify</b> that during reproduction the transmission of heritable characteristics from one generation to the next involves DNA and genes	<input type="checkbox"/>	
<b>LITERACY SET 2: MIXED ACTIVITIES</b>	<input type="checkbox"/>	
<b>Assessment: Oxford online test-</b> Genetic inheritance Students to achieve 100% in Support and Consolidate <b>OR</b> Consolidate and Extend	<input type="checkbox"/>	

**GENE TECHNOLOGY**

<b>5LW3e. describe, using examples, how developments in technology have advanced biological understanding, eg vaccines, biotechnology, stem-cell research and in-vitro fertilisation</b> ⚙️ 🧬	<input type="checkbox"/>	
<b>Identify</b> developments in technology that have advanced biological understanding. For example: <ul style="list-style-type: none"> <li>• In-vitro fertilisation,</li> <li>• GMO's-human health (Oxford pg42),</li> <li>• GMO's-agriculture (Oxford pg44),</li> <li>• DNA profiling (Oxford pg45),</li> <li>• Stem-cell research (Oxford pg49)</li> <li>• Genetic screening (Oxford pg49)</li> <li>• Cloning (Oxford pg50)</li> </ul>	<input type="checkbox"/>	
<b>Describe</b> , using several examples from above, how developments in technology have advanced biological understanding	<input type="checkbox"/>	
<b>CODE:10LW25 First-hand investigation: Click and clone</b> <a href="http://learn.genetics.utah.edu/content/cloning/clickandclone/">http://learn.genetics.utah.edu/content/cloning/clickandclone/</a>	<input type="checkbox"/>	
<b>5LW3f. discuss some advantages and disadvantages of the use and applications of biotechnology, including social and ethical considerations</b> 🧑🏫 🧬	<input type="checkbox"/>	
<b>Define</b> the term transgenic	<input type="checkbox"/>	
<b>Identify</b> examples of transgenic organisms that benefit humans	<input type="checkbox"/>	
<b>Describe</b> the possible benefits of and concerns about a particular gene technology (social, ethical and legal considerations)	<input type="checkbox"/>	
<b>NUMERACY AND SKILLS SET</b>	<input type="checkbox"/>	
<b>Assessment: Oxford online test-</b> Gene technology Students to achieve 100% in Support and Consolidate <b>OR</b> Consolidate and Extend	<input type="checkbox"/>	
<b>Assessment: GENETICS AND BIOTECHNOLOGY CHAPTER TEST</b>	<input type="checkbox"/>	