

# B2 Topic 1 Revision tracker

## BIOLOGY

Learning objectives I can:	I can do this very well	I can do this quite well	I need to do more work on this
<b>1.2</b> Describe the function of the components of a plant cell including chloroplast, large vacuole, cell wall, cell membrane, mitochondria, cytoplasm and nucleus			
<b>1.3</b> Describe the function of the components of an animal cell including cell membrane, mitochondria, cytoplasm and nucleus			
<b>1.4</b> Describe how plant and animal cells can be studied in greater detail with a light microscope			
<b>HSW 2</b> Interpret data, using creative thought, to provide evidence for testing ideas and developing theories			
<b>1.1</b> Describe the function of the components of a bacterial cell including chromosomal DNA, plasmid DNA, flagella and cell wall			
<b>1.5</b> Demonstrate an understanding of how changes in microscope technology have enabled us to see cells with more clarity and detail than in the past, including simple magnification calculations			
<b>HSW 14</b> Explain how uncertainties in scientific knowledge and scientific ideas change over time and the role of the scientific community in validating these changes.			
<b>1.6</b> Recall that a gene is a section of a molecule of DNA and that it codes for a specific protein			
<b>1.7</b> Describe a DNA molecule as: <b>a</b> two strands coiled to form a double helix <b>b</b> strands linked by a series of complementary base pairs joined together by weak hydrogen bonds: <b>i</b> adenine (A) with thymine (T) <b>ii</b> cytosine (C) with guanine (G)			
<b>HSW 13</b> Explain how and why decisions that raise ethical issues about uses of science and technology are made			
<b>1.8</b> Investigate how to extract DNA from cells			
<b>1.9</b> Explain how the structure of DNA was discovered, including the roles of the scientists Watson, Crick, Franklin and Wilkins			
<b>H 1.10</b> Demonstrate an understanding of the implications of sequencing the human genome (Human Genome Project) and of the collaboration that took place within this project			
<b>HSW 1</b> Describe the collection and analysis of scientific data			
<b>1.11</b> Demonstrate an understanding of the process of genetic engineering, including the removal of a gene from the DNA of one organism and the insertion of that gene into the DNA of another organism			
<b>1.12</b> Discuss the advantages and disadvantages of genetic engineering to produce GM organisms, including: <b>a</b> beta-carotene in golden rice to reduce vitamin deficiency in humans <b>b</b> the production of human insulin by genetically modified bacteria <b>c</b> the production of herbicide-resistant crop plants			
<b>HSW 12</b> Describe the use of contemporary science and technological developments and their benefits, drawbacks and risks			
<b>1.13</b> Describe the division of a cell by mitosis as the production of two daughter cells, each with identical sets of chromosomes in the nucleus as the parent cell, and that this results in the formation of two genetically identical diploid body cells			
<b>1.14</b> Recall that mitosis occurs during growth, repair, and asexual reproduction			
<b>1.15</b> Recall that, at fertilisation, haploid gametes combine to form a diploid zygote			
<b>1.16</b> Describe the division of a cell by meiosis as the production of four daughter cells, each with half the number of chromosomes, and that this results in the formation of genetically different haploid gametes			
<b>HSW 11</b> Present information using scientific conventions and symbols			
<b>1.17</b> Recall that cloning is an example of asexual reproduction that			

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produces genetically identical copies			
<b>H 1.18</b> Demonstrate an understanding of the stages in the production of cloned mammals, including:			
<b>a</b> removal of diploid nucleus from a body cell			
<b>b</b> enucleation of egg cell			
<b>c</b> insertion of diploid nucleus into enucleated egg cell			
<b>d</b> stimulation of the diploid nucleus to divide by mitosis			
<b>e</b> implantation into surrogate mammals			
<b>1.19</b> Demonstrate an understanding of the advantages, disadvantages and risks of cloning mammals			
<b>HSW 12</b> Describe the benefits, drawbacks and risks of using new scientific and technological developments			
<b>1.20</b> Recall that stem cells in the embryo can differentiate into all other types of cells, but that cells lose this ability as the animal matures			
<b>1.21</b> Demonstrate an understanding of the advantages, disadvantages and risks arising from adult and embryonic stem cell research			
<b>1.22</b> Describe how the order of bases in a section of DNA decides the order of amino acids in the protein			
<b>H 1.23</b> Demonstrate an understanding of the stages of protein synthesis, including transcription and translation:			
<b>a</b> the production of complementary mRNA strand in the nucleus			
<b>b</b> the attachment of the mRNA to the ribosome			
<b>c</b> the coding by triplets of bases (codons) in the mRNA for specific amino acids			
<b>d</b> the transfer of amino acids to the ribosome by tRNA			
<b>e</b> the linking of amino acids to form polypeptides			
<b>HSW 3</b> Describe how phenomena are explained using scientific models			
<b>1.24</b> Describe each protein as having its own specific number and sequence of amino acids, resulting in different shaped molecules that have different functions, including enzymes			
<b>1.25</b> Demonstrate an understanding of how gene mutations change the DNA base sequence and that mutations can be harmful, beneficial or neither			
<b>HSW 3</b> Describe how phenomena are explained using scientific theories and ideas			
<b>1.26</b> Describe enzymes as biological catalysts			
<b>1.27</b> Demonstrate an understanding that enzymes catalyse chemical reactions occurring inside and outside living cells, including:			
<b>a</b> DNA replication			
<b>b</b> protein synthesis			
<b>c</b> digestion			
<b>HSW 13</b> Explain how and why decisions about uses of science and technology are made			
<b>1.32</b> Investigate the factors that affect enzyme activity			
<b>1.28</b> Describe the factors affecting enzyme action, including:			
<b>a</b> temperature			
<b>b</b> substrate concentration			
<b>c</b> pH			
<b>1.29</b> Recall that enzymes are highly specific for their substrate			
<b>1.30</b> Demonstrate an understanding of the action of enzymes in terms of the 'lock-and- key' hypothesis			
<b>1.31</b> Describe how enzymes can be denatured due to changes in the shape of the active site			
<b>HSW 2</b> Describe how phenomena are explained using scientific theories, models and ideas. Describe how data is used by scientists to provide evidence that increases our scientific understanding			