

## Curriculum Links

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### AQA GCE Biology

#### AS level

<b>Unit 2 BIOL2 The variety of living organisms</b>	
3.2.1	Living organisms vary and this variation is influenced by genetic and environmental factors <ul style="list-style-type: none"><li>• Causes of variation</li></ul>
3.2.2	DNA is an information-carrying molecule. Its sequence of bases determines the structure of proteins, including enzymes. <ul style="list-style-type: none"><li>• Structure of DNA</li><li>• Genes and polypeptides</li></ul>
3.2.3	Similarities & differences in DNA result in genetic diversity <ul style="list-style-type: none"><li>• Genetic diversity</li></ul>
3.2.5	During the cells cycle, genetic information is copied and passed to genetically identical daughter cells <ul style="list-style-type: none"><li>• Replication of DNA</li></ul>
3.2.9	Originally, classification systems were based on observable features but more recent approaches draw on a wider range of evidence to clarify relationships between organisms <ul style="list-style-type: none"><li>• Genetic comparisons</li><li>• DNA</li><li>• Proteins</li></ul>

#### A2 level

<b>Unit 4 BIOL4 Populations and environment</b>	
3.4.8	Genetic variation within a species and genetic isolation leads to the accumulation of different genetic information in populations and the potential formation of new species <ul style="list-style-type: none"><li>• Inheritance</li><li>• Selection</li></ul>
<b>Unit 5 BIOL5 Control in cells and organisms</b>	
3.5.6	The sequence of bases in DNA determines the structure of proteins, including enzymes <ul style="list-style-type: none"><li>• Gene mutation</li></ul>
3.5.8	Gene cloning technologies allow study and alteration of gene function in order to better understand function and to design new industrial and medical processes <ul style="list-style-type: none"><li>• Gene cloning and transfer</li><li>• Medical diagnosis</li><li>• Genetic fingerprinting</li></ul>

## AQA GCE Human Biology

### AS level

<b>Unit 2 HBIO2 Humans - their origins &amp; adaptations</b>	
3.2.1	The information of Life <ul style="list-style-type: none"><li>• Nucleic acids – the keys to life</li><li>• Semi conservative replication of DNA</li></ul>
3.2.3	Where we fit in the world and how we came to be here <ul style="list-style-type: none"><li>• What's in a name</li><li>• Theories of Lamarck and Darwin</li></ul>
3.2.4	Adaptations to a way of Life <ul style="list-style-type: none"><li>• Humans have evolved adaptations that increase survival</li></ul>

### A2 level

<b>Unit 4 HBIO4 Bodies &amp; Cells in and out of control</b>	
3.4.2	Growing up, growing old and passing on your genes <ul style="list-style-type: none"><li>• Genetic counselling and Mendelian inheritance</li><li>• Where variation comes from</li></ul>
3.4.3	The management structure of cells <ul style="list-style-type: none"><li>• DNA and protein synthesis</li></ul>
3.4.4	New genes for old <ul style="list-style-type: none"><li>• Recombinant DNA</li></ul>
<b>Unit 5 HBIO5 The air we breathe, the water we drink, the food we eat</b>	
3.5.1	Human impacts on evolution <ul style="list-style-type: none"><li>• Evolution</li></ul>

## Edexcel GCE Biology

### AS level

<b>Unit 1 Lifestyle, transport, genes &amp; health</b>	
Topic 2	Genes and health
<b>Unit 2 Development, plants and the environment</b>	
Topic 3	The voice of the genome
<b>Unit 3 Practical biology and research skills</b>	
Part 2	Visit report: Students write a report on a visit to a site of biological interest

### A2 level

<b>Unit 4 The natural environment and species survival</b>	
Topic 6	Infection, immunity and forensics

## OCR GCE Biology

### AS level

<b>Unit F212 Molecules, biodiversity, food and health</b>	
Module 1	Biological Molecules <ul style="list-style-type: none"><li>• 2.1.2 Nucleic acids</li></ul>
Module 3	Biodiversity and evolution <ul style="list-style-type: none"><li>• 2.3.3 Evolution</li></ul>

### A2 level

<b>Unit F215 Control, genomes and environment</b>	
Module 1	Cellular control and variation <ul style="list-style-type: none"><li>• 5.1.1 Cellular control</li><li>• 5.1.2 Meiosis and variation</li></ul>
Module 2	Biotechnology and gene technologies <ul style="list-style-type: none"><li>• 5.2.3 Genomes and gene technologies</li></ul>

## OCR GCE Human Biology

### AS level

<b>Unit F222 Growth, development and disease</b>	
Module 1	The developing cell <ul style="list-style-type: none"><li>• 2.1.1 Mitosis as part of the cell cycle</li></ul>

### A2 level

<b>Unit F225 Genetics, control and ageing</b>	
Module 1	Genetics in the Twenty First Century <ul style="list-style-type: none"><li>• 5.1.1 Inheritance of human genetic disease</li><li>• 5.1.2 Genetic techniques</li></ul>

## WJEC GCE Biology

### AS level

<b>Unit BY1 Basic biochemistry and cell structure</b>	
1.6	Nucleic acids
<b>Unit BY2 Biodiversity and physiology of body systems</b>	
2.1	All organisms are related through their evolutionary history

### A level

<b>Unit BY5 Environment, genetics and evolution</b>	
5.1	The genetic code and cell function
5.4	Inheritance
5.5	Variation & evolution
5.6	Applications of reproduction & genetics

## WJEC GCE Human Biology

### AS level

<b>Unit BY1 Basic biochemistry and cell structure</b>	
1.6	Nucleic acids
<b>Unit HB2 Biodiversity and physiology of body systems</b>	
2.1	All organisms are related through their evolutionary history

### A level

<b>Unit BY5 Environment, genetics &amp; evolution</b>	
5.1	The genetic code and cell function
5.4	Inheritance
5.5	Variation & evolution
5.6	Applications of reproduction & genetics

# Scottish Qualifications Authority

## Higher Biology

<b>Unit 1: Cell Biology</b>	
d) Synthesis and release of proteins	(ii) DNA: structure
<b>Unit 2: Genetics and Adaptation</b>	
a) Variation	3 Mutation
b) Selection and speciation	1 Natural selection

## Advanced Higher Biology

<b>Unit: Cell and Molecular Biology</b>	
b) Structure and function of cell components	(iv) Nucleic acids. Structure of DNA
d) Applications of DNA technology	(i) The Human Genome Project (iii) Forensic uses

## Higher Human Biology

<b>Unit 1: Cell Function &amp; Inheritance</b>	
b) Protein synthesis	2 (i) DNA structure
f) Inheritance	1 Chromosomes as vehicles of inheritance 2 Monohybrid inheritance 3 Mutations & chromosome abnormalities

# CCEA GCE Biology

## AS level

<b>Unit AS1 Molecules and Cells</b>	
1.1 Molecules	1.1.6 Recognise the occurrence, structure and function of nucleic acids 1.1.7 Understand the replication of DNA
1.3 DNA Technology	1.3.1 Explain the polymerase chain reaction (PCR) 1.3.3 Understand that differences in nucleotide sequences can be identified 1.3.4 Explain genetic fingerprinting and show an appreciation of its potential uses
<b>Unit AS 2 Organisms and Biodiversity</b>	
2.2 The Adaptation of Organisms	2.2.1 Understand that organisms are adapted to their environment 2.2.2 Understand that ecological factors have an influence on the distribution of organisms 2.2.3 Understand the role of selection in maintaining the adaptiveness of populations of organisms in their environment
2.3a The Variety of Life	2.3.2 Understand that biodiversity involves variation among living organisms at all levels of biological organization 2.3.7 Understand phylogenetic taxonomy as a means of classifying sets of species according to ancestral relationships

## A level

<b>Unit A2 2 Biochemistry, Genetics and Evolutionary Trends</b>	
5.3 DNA as the Genetic Code	5.3.1 Understand the nature of the genetic code 5.3.4 Explain the one gene/one polypeptide theory
5.4 Gene Technology	5.4.5 Understand genome sequencing projects
5.5 Genes and Patterns of Inheritance	5.5.1 Understand the terms genotype and phenotype 5.5.2 Understand the relationship between chromosomes, genes and alleles 5.5.3 Understand the inheritance of traits showing discontinuous variation
5.6 Mechanism of Change	5.6.1 Understand the concept of the gene pool 5.6.3 Understand the source and maintenance of genetic Variation 5.6.4 Understand selection and its contribution to the maintenance of polymorphic populations and evolutionary change in populations

## BTEC Level 3 Applied Science

<b>Unit 4 Scientific Practical Techniques</b>	
2. Be able to use scientific techniques to separate and assess purity of substances	Separation techniques: electrophoresis
3. Be able to use instruments/sensors for scientific investigation	Use of a variety of basic instruments: pipettes
<b>Unit 9 Informatics for Science</b>	
1. Know how informatics is used in science	Aims Methods Sources of data Applications
2. Be able to collect scientific data	Data collection
<b>Unit 13 Biochemistry and Biochemical Techniques</b>	
1. Be able to investigate properties of water and biological molecules in living organisms	Biological molecules: nucleic acids Structural characteristics Laboratory techniques: electrophoresis
<b>Unit 18 Genetics and Genetic Engineering</b>	
1. Understand the process of protein synthesis	Structure of nucleic acids Genetic code
3. Understand the principles of Mendelian genetics	Principles of classical genetics Modern genetics
4. Be able to apply basic techniques of DNA technology	DNA extraction Gel electrophoresis of DNA fragments: use of restriction enzymes; principles of electrophoresis Amplification of DNA: polymerase chain reaction