

Year 12 Biology

3.1 Biological molecules

- 3.1.1 Monomers and polymers
- 3.1.2 Carbohydrates 8-15
- 3.1.3 Lipids
- 3.1.4 Proteins RP1 p19-26
- 3.1.5 Nucleic acids
- 3.1.6 ATP
- 3.1.7 Water
- 3.1.8 Inorganic ions

3.2 Cells

- 3.2.1 Cell structure 56-76
- 3.2.2 All cells arise from other cells RP2 p77-81
- 3.2.3 Transport across cell membranes RP3
- 3.2.4 Cell recognition and the immune system

3.3 Organisms exchange substances with their environment

- 3.3.1 Surface area to volume ratio
- 3.3.2 Gas exchange 130-147
- 3.3.3 Digestion
- 3.3.4 Mass transport 161-191

3.4 Genetic information variation and relationships between organisms

- 3.4.1 DNA, genes and chromosomes
- 3.4.2 DNA and protein synthesis 205-214
- 3.4.3 Genetic diversity can arise as a result of mutation or during meiosis
- 3.4.4 Genetic diversity and adaptation RP6 229-232
- 3.4.5 Species and taxonomy
- 3.4.6 Biodiversity within a community 243-247
- 3.4.7 Investigation diversity

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3.5 Energy transfers in and between organisms (A-level only)

3.5.1 **Photosynthesis** (A-level only) 268-276

3.5.2 **Respiration** (A-level only) RP9 283-294

3.5.3 **Energy and ecosystems** (A-level only) 301-314

3.5.4 **Nutrient cycles** (A-level only) 298-300

3.6 Organisms respond to changes in their internal and external environments (A-level only)

3.6.1 Stimuli, both internal and external, are detected and lead to a response (A-level only) 326-341

3.6.2 **Nervous coordination** (A-level only) 346-365

3.6.3 Skeletal muscles are stimulated to contract by nerves and act as effectors (A-level only)

3.6.4 **Homeostasis is the maintenance of a stable internal environment** (A-level only) 378-406

3.7 Genetics, populations, evolution and ecosystems (A-level only)

3.7.1 **Inheritance** (A-level only) 418-442

3.7.2 Populations (A-level only)

3.7.3 Evolution may lead to speciation (A-level only)

3.7.4 Populations in ecosystems (A-level only)

3.8 The control of gene expression (A-level only)

3.8.1 Alteration of the sequence of bases in DNA can alter the structure of proteins (A-level only)

3.8.2 **Gene expression is controlled by a number of features** (A-level only) 500-520

3.8.3 Using genome projects (A-level only)

3.8.4 Gene technologies allow the study and alteration of gene function allowing a better understanding of organism function and the design of new industrial and medical processes (A-level only) 530-551