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Year 10 Science Self-Assessment Chapter 2: DNA and genetics

Learning summary: Transmission of heritable characteristics from one generation to the next involves DNA and genes.

Basics

| Learning Intention | Book | Proficiency | Comments/questions |
| --- | --- | --- | --- |
| Describe **the role of DNA** as the blueprint for controlling the characteristics of organisms | p36 |  |  |
| Use models and diagrams to represent the relationships between DNA, **genes and chromosomes** | p34-36 |  |  |

Core

| Learning Intention | Book | Proficiency | Comments/questions |
| --- | --- | --- | --- |
| Explain how genetic information is passed onto offspring from both parents by **meiosis and fertilisation** | p50-51 |  |  |
| Model patterns of inheritance of simple **dominant/recessive characteristics** through generations of a family | p57-59 |  |  |
| Predict simple **ratios of offspring** genotypes and phenotypes in crosses involving dominant/recessive gene pairs or in genes that are sex-linked | p60-61 |  |  |
| Describe **mutations** as changes in DNA or chromosomes and outline the factors that contribute to causing mutations | p63-64 |  |  |

Science as a Human Endeavour

| Learning Intention | Book | Proficiency | Comments/questions |
| --- | --- | --- | --- |
| Explain the development of the Watson and Crick double helix model of **the structure of DNA** and its impact on developments in genetic knowledge | p37-38 |  |  |
| Investigate the applications of **gene technologies** such as gene therapy and genetic engineering | p71-72, 76 |  |  |
| Discuss the use of **genetic testing** for decisions such as genetic counselling, embryo selection, identifying carriers of gene mutations and the use of this information for personal use or by organisations such as insurance companies or medical facilities | p74-75 |  |  |
| Explain how fast computing and ICT have enabled the analysis of large amounts of **DNA sequence** information in the field of bioinformatics | p73 |  |  |

Extension

| Learning Intention | Book | Proficiency | Comments/questions |
| --- | --- | --- | --- |
| Outline how **genes are decoded**  | p530-531 |  |  |
| Demonstrate some complex patterns of **genetic inheritance** | p532-535 |  |  |
| Outline how **DNA technology** can be applied in many areas of biology | p536-537 |  |  |