

Year 11 Biology Sequence

| | Content Taught | Reference | Essential Knowledge | Assessment | Rationale |
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| HT1 | <p>Homeostasis 2</p> <p>Endocrine System</p> <p>This unit focuses upon how the endocrine system brings about homeostasis within the body. Maintaining the balance of biological molecules is a key feature of the unit, Control of blood glucose is studied as well as human reproductive hormones. The use of plant hormones commercially is also studied in this unit.</p> | <p>4.5.3.1 Human endocrine system</p> <p>4.5.3.2 Control of blood glucose concentration</p> <p>4.5.3.3 Maintaining water and nitrogen balance in the body</p> <p>4.5.3.4 Hormones in human reproduction</p> <p>4.5.3.5 Contraception</p> <p>4.5.3.6 The use of hormones to treat infertility</p> <p>4.5.3.7 Negative feedback</p> <p>4.5.4.1 Control and coordination plant hormones</p> <p>4.5.4.2 Use of plant hormones</p> | <p>Further reading:</p> <p>Reading for consolidation:</p> <p>Body temperature and the thermoregulatory centre - Homeostasis in humans - AQA - GCSE Biology (Single Science) Revision - AQA - BBC Bitesize</p> <p>Reading for breadth:</p> <p>biomass_article.pdf (sciencejournalforkids.org)</p> <p>testosterone_article.pdf (sciencejournalforkids.org)</p> <p>Frederick G Banting Charles H Best</p> <p>Who discovered insulin? Diabetes research Diabetes UK</p> | <p>Formative Assessment:</p> <p>Daily, Weekly and Monthly Reviews focusing on reviewing material on Essential Knowledge. Homework tests are completed approximately every 3 lessons.</p> <p>Use of TLAC techniques in lessons to check pupil understanding of essential knowledge during each lesson. Pupils are challenged with application questions that 'bring the essential knowledge of the topic together.'</p> <p>Summative Assessment:</p> | <p>This content leads from organisation and hierarchy studied in Human Health 1 at KS3. Cell transport in Cells 2 focusing upon diffusion, osmosis and active transport underpins the movement of molecules/hormones into cells.</p> <p>The study of the Homeostasis 1 unit support learning by identifying the differences between nervous and endocrine system action.</p> <p>The study of the reproduction 1 unit at KS3 includes learning of the menstrual cycle and supports learning for reproductive hormones.</p> <p>The study of Human Health 1 and 2 at KS3 and</p> |

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| | | | | <p>End of Topic assessed questions focusing on application of the essential knowledge in this unit of work. Pupils are challenged with an open-ended, scenario based 'bringing it all together' application question.</p> <p>Recall homework</p> | <p>the process of digestion support blood glucose control in this unit.</p> |
| HT2 | <p>Inheritance 3 Reproduction In this unit Reproduction is further explored with focus upon the process of meiosis to produce gametes. Pupils will further develop their knowledge and understanding of the structure of DNA and the genome from KS3. Genetic inheritance and inherited disorders are studied in more depth and in addition how sex is determined.</p> | <p>4.6 Inheritance, variation and evolution 4.6.1 Reproduction 4.6.1.1 Sexual and asexual reproduction 4.6.1.2 Meiosis 4.6.1.3 Advantages and disadvantages of sexual and asexual reproduction (biology only) 4.6.1.4 DNA and the genome 4.6.1.5 DNA structure 4.6.1.6 Genetic inheritance 4.6.1.7 Inherited disorders 4.6.1.8 Sex determination</p> | <p>Further reading: Reading for consolidation: Genetic inheritance - Genetic inheritance - AQA - GCSE Biology (Single Science) Revision - AQA - BBC Bitesize</p> <p>Reading for breadth: neanderthal_article.pdf (sciencejournalforkids.org)</p> <p>Gregory Goodwin Pincus Gregory Pincus American endocrinologist Britannica</p> | <p>Formative Assessment: Daily, Weekly and Monthly Reviews focusing on reviewing material on Essential Knowledge. Homework tests are completed approximately every 3 lessons. Use of TLaC techniques in lessons to check pupil understanding of essential knowledge during each lesson. Pupils are challenged with application</p> | <p>In this unit pupils will develop further their understanding of sexual and asexual reproduction from Inheritance 1 at KS3 and cell division from the unit Cells 2 at KS4. Prior study of DNA at KS3 in the Inheritance 2 unit underpins further study of the genome in this unit.</p> |

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| | | | | <p>questions that ‘bring the essential knowledge of the topic together.’</p> <p><u>Summative Assessment:</u> End of Topic assessed questions focusing on application of the essential knowledge in this unit of work. Pupils are challenged with an open-ended, scenario based ‘bringing it all together’ application question.</p> <p>PPA1 Exam – cumulative assessment. Assessment therapy. Recall homework</p> | |
| <p>HT3 HT4</p> | <p>Inheritance 4 Variation and Evolution This unit we will explore in more depth how mutations lead to variation within a species. Natural Selection and Evolution</p> | <p>4.6.2.1 Variation 4.6.2.2 Evolution 4.6.2.3 Selective breeding 4.6.2.4 Genetic engineering 4.6.2.5 Cloning</p> | <p>Further reading: Reading for consolidation: Variation - Variation - AQA - GCSE Biology (Single Science) Revision - AQA - BBC Bitesize</p> <p>Reading for breadth:</p> | <p><u>Formative Assessment:</u> Daily, Weekly and Monthly Reviews focusing on reviewing material on Essential Knowledge. Homework tests are</p> | <p>This unit build upon prior learning of Evolution and Natural Selection studied at KS3 in Inheritance 2. Reproduction and DNA/genome studied in previous KS4 units Cells 1</p> |

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| | <p>are further explored. The techniques of selective breeding and genetic engineering are studied alongside the limitations and ethical considerations of such techniques. Fossils providing evidence for Evolution, species extinction and classification of organisms are also studied in this unit.</p> | <p>4.6.3.1 Theory of evolution 4.6.3.2 Speciation 4.6.3.3 The understanding of genetics 4.6.3.4 Evidence for evolution 4.6.3.5 Fossils 4.6.3.6 Extinction 4.6.3.7 Resistant bacteria 4.6.4 Classification of living organisms</p> | <p>voles_article.pdf (sciencejournalforkids.org)</p> <p>pterosauria_article.pdf (sciencejournalforkids.org)</p> <p>Nanoparticles-article.pdf (sciencejournalforkids.org)</p> <p>Reading for depth: Charles Darwin Barbara McClintock Barbara McClintock - Biography, Facts and Pictures (famousscientists.org) Charles Darwin: history's most famous biologist Natural History Museum (nhm.ac.uk)</p> | <p>completed approximately every 3 lessons. Use of TLaC techniques in lessons to check pupil understanding of essential knowledge during each lesson. Pupils are challenged with application questions that 'bring the essential knowledge of the topic together.'</p> <p>Summative Assessment: End of Topic assessed questions focusing on application of the essential knowledge in this unit of work. Pupils are challenged with an open-ended, scenario based 'bringing it all together' application question.</p> <p>Recall homework</p> | <p>support learning in this unit. The study of classification of organisms at KS2 and its revisit at KS3 underpins further exploration of this topic at KS4.</p> |
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| <p>HT4 HT5 HT6</p> | <p>Revisit Curriculum Identification of strengths and weaknesses of the curriculum to plan re-teach and fill gaps.</p> | <p>All.</p> | <p>Using question level analysis and data driven instruction, staff and pupils identify weaknesses disciplinary knowledge (science skills) and substantive knowledge (topic content) and deliver re-teaching to improve overall essential knowledge.</p> | <p>Assessment is taken in class and covers all topics. Questions are a mix of recall and application questions to assess pupils understanding of essential knowledge covering the whole key stage 4 curriculum.</p> | <p>At the end of the compulsory study of science, it is important for students to be able to identify where they have strengths and weaknesses, to allow them to independently plan their self-improvement. Pupils to revisit previous content. Intervention. Developing exam technique and response.</p> |
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