

Year 10 Biology Sequence

	Content Taught	Reference	Essential Knowledge	Assessment	Rationale
YEAR 10 GCSE BIOLOGY					
HT1	<p>Cells 3</p> <p>Cell Division</p> <p>Pupils will further explore cell structure, function and specialisation and differentiation. Pupils will investigate cells by using microscopes. Cell division through mitosis and the cell cycle are also explored. Pupils will also study the role of stem cells commercially and in therapeutic medicine, and the advantages and limitations of their use.</p>	<p>NCWS</p> <p>NCB</p> <p>4.1: Cell Biology</p> <p>4.1.1.5 Microscopy</p> <p>4.1.2.1 Chromosomes</p> <p>4.1.2.2 Mitosis and the cell cycle</p> <p>4.1.2.3 Stem cells</p>	<p>Further Reading:</p> <p>Reading for consolidation</p> <p>Chromosomes and DNA - Cell division - AQA - GCSE Biology (Single Science) Revision - AQA - BBC Bitesize</p> <p>Reading for breadth</p> <p>cancer tomato article.pdf (sciencejournalforkids.org)</p> <p>Reading for breadth:</p> <p>Antonie Van Leeuwenhoek</p> <p>Antonie van Leeuwenhoek - Biography, Facts and Pictures (famousscientists.org)</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. 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>End of Topic assessed questions focusing on</p>	<p>This unit builds upon previous study of cell transport mechanisms covered in the Cells 2 unit at KS3. Cell structure, specialisation and basic principles of microscopy from Cells unit 1 at KS3 underpins the content and is further explored in this unit.</p>

				<p>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 homeworks</p>	
HT2	<p>Human Health 4 Circulation and Disease Pupils further explore the circulatory system and the transport of biological molecules for other biological processes. Non-communicable disease is studied with further exploration of CHD and it’s treatment. The causes and treatments for cancer/tumours are also outlined. The link between lifestyle and health is investigated analysis cause and correlation.</p> <p>Cross connectivity:</p>	<p>4.2.2.2 The heart and blood vessels 4.2.2.3 Blood 4.2.2.4 Coronary heart disease: a non-communicable disease 4.2.2.5 Health issues 4.2.2.6 The effect of lifestyle on some non-communicable disease 4.2.2.7 Cancer</p>	<p>Further reading: Reading for consolidation <u>General structure - The circulatory system - GCSE Biology (Single Science) Revision - BBC Bitesize</u></p> <p>Reading for breadth <u>Sir James Black Scottish pharmacologist Britannica</u></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 questions that ‘bring the essential knowledge of the topic together.’</p>	<p>This unit leads on from KS3 organisation unit. The basic principles of cells and cell transport mechanisms in previous units supports this unit of study in relation to circulation of molecules. Pupils have understanding of how the heart works from KS3. This unit develops pupils previous learning at KS3 in the respiration and digestion units in relation to diet and health.</p>

	PE curriculum: Circulatory system, respiratory system, respiration YR10.			<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>PPA1 Exam - cumulative assessment Assessment therapy Recall homeworks</p>	
HT3	<p>Human Health 5 Infection and Disease Pupils study the different types of pathogens that cause disease, their effects, prevention and treatment. Pupils explore the role of the immune system in fighting disease. . Pupils also study vaccinations and antibiotic resistance. Drug development and the technical</p>	<p>4.3. Communicable diseases 4.3.1.1 Communicable (infectious) diseases 4.3.1.2 Viral diseases 4.3.1.3 Bacterial diseases 4.3.1.4 Fungal diseases 4.3.1.5 Protist diseases 4.3.1.6 Human defence systems 4.3.1.7 Vaccination 4.3.1.8 Antibiotics and painkillers 4.3.1.9 Discovery and development of drugs</p>	<p>Further reading: Reading for breadth: antibiotics_article.pdf (sciencejournalforkids.org) artemisinin_article.pdf (sciencejournalforkids.org) Reading for breadth Edward Jenner Alexander Flemming Maurice Hilleman Virologist Maurice Hilleman saved millions of children—and stopped a</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.</p>	<p>This unit leads on from the study of organisms and health at KS2. Learning in this unit is supported by pupil prior learning at KS3 linked to health and drug use in the Reproduction 1 unit</p>

	<p>application of monoclonal antibodies are also studied in this unit as well as plant disease. Practical investigations include the culturing of microorganisms.</p>	<p>4.3.2 Monoclonal antibodies 4.3.2.1 Producing monoclonal antibodies 4.3.2.2 Uses of monoclonal antibodies 4.3.3 Plant disease) 4.3.3.1 Detection and identification of plant diseases 4.3.3.2 Plant defence response</p>	<p>1957 pandemic (nationalgeographic.com) BBC - History - Alexander Fleming Edward Jenner Facts for Kids (kiddle.co)</p>	<p>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>Assessment therapy Recall homework</p>	
HT4	<p>Bioenergetics 3 Photosynthesis and Respiration Pupil study the topic of bioenergetics focusing upon photosynthesis and respiration. Pupils further explore plant tissues and their roles in photosynthesis. The effects of rate limiting</p>	<p>4.2.3.1 Plant tissues 4.2.3.2 Plant organ system 4.4.1.1 Photosynthetic reaction 4.4.1.2 Rate of photosynthesis 4.4.1.3 Uses of glucose from photosynthesis 4.4.2.1 Aerobic and anaerobic respiration</p>	<p>Further reading: Reading for consolidation: The relationship between health and disease - Health and disease - Eduqas - GCSE Biology (Single Science) Revision - Eduqas - BBC Bitesize Reading for breadth: Jan Baptiste Van Helmont</p>	<p>Formative Assessment: Daily, Weekly and Monthly Reviews focusing on reviewing material on Essential Knowledge. Homework tests are completed approximately every 3 lessons.</p>	<p>This unit leads from content covered in the Bioenergetics Units 1 and 2 at KS3. Plant tissues and organs systems are further explored. Working scientifically is further developed and practical knowledge from previous units in KS3 are applied in a</p>

	<p>factors are also investigated. Aerobic and anaerobic respiration are further studied with link to problems and limitations and in exercise and metabolism.</p> <p>Cross connectivity: Food technology curriculum: study of diet and energy requirements in YR9. PE curriculum: study of respiration in YR10.</p>	<p>4.4.2.2 Response to exercise 4.4.2.3 Metabolism</p>	<p>Joseph Priestly Joseph Priestley Facts & Biography Famous Biologists Jan Baptista van Helmont Belgian scientist Britannica</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: 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>PPA2 – cumulative assessment Assessment therapy Recall homeworks</p>	<p>practical/investigative context within this unit.</p>
HT5	<p>Ecology 3 Human Interaction on Ecosystems</p>	<p>4.7.2.4 Impact of environmental change 4.7.3.1 Biodiversity</p>	<p>Further reading: Reading for consolidation Biodiversity - Biodiversity and the effect of human</p>	<p>Formative Assessment: Daily, Weekly and Monthly Reviews</p>	<p>This content leads from previous learning interdependence in Ecology 1 at KS3 where</p>

	<p>Pupils study how human activities and behavior impact upon ecosystems. Deforestation and global warming are explored and their impact upon biological organisms and processes. Human impact upon biodiversity is also studied alongside ways/techniques used to maintain and increase biodiversity within ecosystems.</p> <p>Cross connectivity: Geography curriculum: YR7 focus upon climate change. Changing Earth. YR10 study of ecosystems.</p>	<p>4.7.3.2 Waste management 4.7.3.3 Land use 4.7.3.4 Deforestation 4.7.3.5 Global warming 4.7.3.6 Maintaining biodiversity 4.7.5.1 Factors affecting food security 4.7.5.2 Farming techniques 4.7.5.3 Sustainable fisheries 4.7.5.4 Role of biotechnology</p>	<p><u>interaction on ecosystems - AQA - GCSE Biology (Single Science) Revision - AQA - BBC Bitesize</u></p> <p>Reading for breadth: <u>Why are whales in trouble – again? - Science Journal for Kids and Teens</u></p> <p><u>pesticide_article.pdf (sciencejournalforkids.org)</u></p> <p>Al Gore Timeline: Al Gore Environment The Guardian</p>	<p>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 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>Assessment therapy Recall homeworks</p>	<p>pupils study interdependence and bioaccumulation. Pupils also study Ecology 2 at KS3 where Energy transfer, biomass and cycling materials within ecosystems is studied and supports and underpins learning in this unit.</p>
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<p>HT6</p>	<p>Homeostasis 1 Nervous system Pupils will study homeostasis and how both the nervous system and endocrine system work together with further exploration of the nervous system. The structure and function of the nervous system are explored. Nervous system and reaction time are investigated.</p> <p>Cross connectivity: Food Technology curriculum: study of reaction times in YR10. Biomechanics in Yr11.</p>	<p>4.5.1 Homeostasis 4.5.2.1 Structure and function Nervous system 4.5.2.2 The brain 4.5.2.3 The eye 4.5.2.4 Control of body temperature</p>	<p>Further reading: Reading for consolidation: Homeostasis - Homeostasis - GCSE Biology (Single Science) Revision - BBC Bitesize</p> <p>Reading for breadth: Andrew Schally John Carew Andrew Schally Facts for Kids (kiddle.co) Sir John Carew Eccles Australian physiologist 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 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>This content leads from organization and hierarchy studied in Cells 1 at KS3 with reference to neurons as specialized cells. The unit Human Health 1 studied at KS3 also underpins learning in this unit through study of the skeleton, movement and muscle coordination.</p>
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