

## Year 1

Teacher A:

<b>Term</b>	<b>Topic</b>	<b>Content</b>	<b>Practical</b>
1	2: Genes and Health	This topic considers the following biological principles through the context of the genetic disease cystic fibrosis: the properties of and transport of materials, across cell membranes and gas exchange surfaces, DNA structure and replication, protein synthesis, enzymes and monohybrid inheritance through the context of the genetic disease cystic fibrosis. The topic also allows for discussion of the social and ethical issues surrounding the genetic screening for genetic conditions.	CORE PRACTICAL 3: Investigate membrane structure, including the effect of alcohol concentration or temperature on membrane permeability.  CORE PRACTICAL 4: Investigate the effect of enzyme and substrate concentrations on the initial rates of reactions.
2	3: Voice of the Genome	This topic follows the development of multicellular organisms from single cells to complex individuals. Cell structure and ultrastructure, cell division, the importance of fertilisation, the roles of stem cells, gene expression, cell differentiation and tissue organisation are all considered within this topic, as is the role of the genotype, epigenetics and the effect of environment on phenotype	CORE PRACTICAL 5: Prepare and stain a root tip squash to observe the stages of mitosis.
3	5: On the Wild Side	This topic builds an appreciation that photosynthesis is the primary process that underpins the majority of ecosystems, and provides students with an understanding of how ecosystems work. The topic continues by looking at whether climate change will lead to extinction of species or evolution by natural selection, and looks at the evidence for climate change and its effects on plants and animals. By the end of the topic students should appreciate how scientific understanding can make us aware of our	CORE PRACTICAL 10: Carry out a study on the ecology of a habitat, such as using quadrats and transects to determine distribution and abundance of organisms, and measuring abiotic factors appropriate to the habitat.  CORE PRACTICAL 11: Investigate photosynthesis using

		responsibilities as stewards of the environment.	<p>isolated chloroplasts (the Hill reaction).</p> <p>CORE PRACTICAL 12: Investigate the effect of temperature on the initial rate of an enzyme-catalysed reaction, to include Q10.</p> <p>CORE PRACTICAL 13: Investigate the effects of temperature on the development of organisms (such as seedling growth rate, brine shrimp hatch rates).</p>
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Teacher B:

<b>Term</b>	<b>Topic</b>	<b>Content</b>	<b>Practical</b>
1	1: Lifestyle, Health and Risk	This topic builds on students' knowledge and understanding of the functioning of the circulatory system and the importance of lifestyle choices to health. The role of diet and other lifestyle factors in maintenance of good health is considered with particular reference to the heart and circulation and to cardiovascular disease (CVD). The structures and functions of some carbohydrates and lipids are also detailed within this context. Ideas about correlation, causation and the concept of risks to health are covered.	<p>CORE PRACTICAL 1: Investigate the effect of caffeine on heart rate in Daphnia.</p> <p>CORE PRACTICAL 2: Investigate the vitamin C content of food and drink</p>
2	4: Biodiversity and Natural Resources	<p>The topic focuses on biodiversity and the wealth of natural resources used by humans. Why there are so many different species is considered first, with the concept of niche and adaptation explored.</p> <p>The topic looks at how all this diversity has come about through adaptation and natural selection and how this leads to evolution.</p> <p>The concerns for disappearing</p>	CORE PRACTICAL 6: Identify sclerenchyma fibres, phloem sieve tubes and xylem vessels and their location within stems through a light microscope.

		<p>biodiversity and loss of potential natural resources are used to highlight the need for biologists to identify, name and classify species.</p> <p>The topic has sections on both traditional and novel uses of plants and plant fibres and the use of chemical extracts from animals and plants. The relationship of plant anatomy to function and the structure and role of cellulose and starch is studied. The topic ends with the issue of sustainability and the role of zoos and seed banks in conservation of endangered species.</p>	<p>CORE PRACTICAL 7: Investigate plant mineral deficiencies.</p> <p>CORE PRACTICAL 8: Determine the tensile strength of plant fibres.</p> <p>CORE PRACTICAL 9: Investigate the antimicrobial properties of plants, including aseptic techniques for the safe handling of bacteria.</p>
3	6: Infection, Immunity and Disease	<p>This topic starts by looking at how forensic pathologists use a wide variety of analytical techniques to determine identity and the time and cause of death of an organism, including humans. It then considers how bacteria and viruses use a variety of routes into their hosts and how hosts have evolved barriers and internal mechanisms to combat infections. These protections are not always successful and many people in the world still die from infectious diseases. This topic also investigates the evolutionary battles that take place between invading pathogens and their hosts.</p> <p>The topic ends by looking at hospital acquired infections, their prevention and control.</p>	<p>CORE PRACTICAL 14: Use gel electrophoresis to separate DNA fragments of different length.</p> <p>CORE PRACTICAL 15: Investigate the effect of different antibiotics on bacteria.</p>

## Year 2

### Teacher A:

<b>Term</b>	<b>Topic</b>	<b>Content</b>	<b>Practical</b>
1	Grey Matter	<p>The scene is set by considering how the working of the nervous system enables us to see. Brain imaging and the regions of the brain are considered. The topic also demonstrates how an understanding of brain structure</p>	<p>CORE PRACTICAL 18: Investigate habituation to a stimulus.</p>

		and functioning is relevant to issues such as the response to stimuli, the development of vision and learning. It investigates how imbalances in brain chemicals may result in conditions such as Parkinson's disease, which can be treated with suitable drugs. Students discuss the ethical issues raised by the Human Genome Project and the risks and benefits of using genetically modified organisms.	
2	Required practical's + exam practise		
3	Paper 3 article + exam practise		

Teacher B:

<b>Term</b>	<b>Topic</b>	<b>Content</b>	<b>Practical</b>
1	Run for your Life	This topic is centred on the physiological adaptations that enable animals and humans, particularly sports people, to undertake strenuous exercise. It explores the links between an animal's physiology and its performance. The topic summarises the biochemical requirements for respiration and looks at the links between homeostasis, muscle physiology and performance. It ends by looking at how medical technology is enabling more people to participate in sport, and raising the issue of whether the use of performance-enhancing substances by athletes can be justified.	CORE PRACTICAL 16: Investigate rate of respiration.  CORE PRACTICAL 17: Investigate the effects of exercise on tidal volume, breathing rate, respiratory minute ventilation and oxygen consumption using data from spirometer traces.
2	Statistics+ exam practise	-the Chi squared test to test the significance of the difference between observed and expected results -the Student's t-test -the correlation coefficient	
3	Exam practise		