



Long Term Plan Year 10 Biology

Half Term	Unit Title	Key Knowledge/Content to learn and retain	Essential Skills to acquire (subject & generic)	Link to intent and ethos	Anticipated misconceptions	Links to previous KS	Link to future KS	Opportunity for stretch and high prior attainers	SMSC & British Values	Cultural Capital	Career Link
One	Cells	Prokaryotic compared to eukaryotic cells. Microscopy The cell cycle. The use of stem cells	Drawing and labelling scientific diagrams Changing the subject of, and substituting into, simple equations. Extended writing. Interpreting data.		That all animal cells look like or similar to the model animal cell often used to teach this topic, teaching must be careful that students understand that most animal cells are specialised That people grow as their cells get bigger as opposed to replica.	A key stage three students to study the basic structure from animal plant and bacterial cells, including the function of most organelles At key stage three students studied cell specialisation Students carried out some basic work with microscopy at KS3.	The cell as the fundamental unit of life is studied in A-level biology At A-level this will be extended to look at explaining cell differentiation, comparing yourself to viruses, and also to comparing light and electron microscopy	Students to compare stem cells extracted from bone marrow and from embryos, looking at which kind of cells these can differentiate into and considering why	The ethics surrounding the use of stem cells in medical research and in the treatment of certain diseases such as, paralysis, diabetes and dementia	Students explore the ethical issues surrounding use stem cells, including why different people may hold different views on their use	As cells are fundamental to biology this unit opens doors to careers in any biological medical or ecological field
Two	Organisation	Digestion. Heart and circulation	Interpreting data in graphical and tabular form Reading for comprehension n Extended writing		Students often believe digestion and absorption only occur in the stomach. Enzymes are living and so extremes in temperature or pH can kill them. Blood transports oxygen only. The blood in veins is blue. Students often hold on to the idea that soil provides food for the plant.	Builds from the "Organisms" units at KS3, which laid the foundations of health, the body processes disease transmission and immune system function	Biological molecules are the fundamental unit of life is studied in A-level biology At A-level this will be extended to look at explaining mass transport in plants and animals.	Students can compare the vascular bundles found in plants with the mammalian transports systems.	Staying healthy and lifestyles choices, such as smoking, alcohol intake and drug abuse.	A general awareness of health lifestyles and their impact upon individuals, communities and the NHS.	Any healthcare based career Therapist
Three	Communicable diseases	Pathogens and modes of transmission The function of key components of the immune system	Interpreting data in graphical and tabular form Reading for comprehension n Extended writing		That white blood cells "eat" invaders - students must refer to phagocytosis. Potential for confusion between antibody and antigen That bacteria "learn" rather than evolve to be resistant to antibiotics	Builds from the "Organisms" units at KS3, which laid the foundations of health, the body processes disease transmission and immune system function	At A-level this will be extended to look immunity and the different mechanisms of response.	Students could consider how a white blood cell can tell if a cell is self or non-self. Students could look at the rise of antibiotic resistant bacteria	Staying healthy and good infection control The importance of vaccines The spread of MRSA	A general awareness of pandemics and how they can be controlled, both in the UK and world wide	Any healthcare based career. Medical research Drugs research Virologist. Microbiologist. Biomedical engineer. Biotechnologist.
Four	Preventing and treating diseases	How vaccines work Antibiotics, painkillers and the development of new drugs	Interpreting data in graphical and tabular form Reading for comprehension n Extended writing		That vaccinations are composed of live pathogen. That all drugs are "bad"/ illegal. The misconceptions generated by the coronavirus pandemic are yet to be fully understood, so we are preparing to answer more.	Builds from the "Organisms" units at KS3, which laid the foundations of health, the body processes disease transmission and immune system function	At A-level this will be extended to look vaccination and the different mechanisms of response.	Students could consider ideas of herd immunity and why it is important for those that can be vaccinated to be vaccinated.	Staying healthy and good infection control The importance of vaccines The spread of MRSA	A general awareness of pandemics and how they can be controlled, both in the UK and world wide	Virologist. Microbiologist. Biomedical engineer. Biotechnologist. Chemist. Chemical laboratory technician. Clinical research specialist. Epidemiologist.
Five	Bioenergetics	What aerobic and anaerobic respiration are and where they occur. The effect of exercise on the body. Leaf structure, photosynthesis and factors effecting photosynthesis.	Interpreting data in graphical and tabular form		Respiration is breathing. Plants don't respire. Plants get 'food' from the soil. Photosynthesis will only occur with sunlight. Photosynthesis is the term given to respiration in plants.	Builds from the "Organisms" and "plants and organisms" units at KS3, which laid the foundations of cellular respiration, plants, leaf structure and photosynthesis.	At A-level this will be extended to look at transpiration and rate of photosynthesis. At A-level this will be extended to investigate respiration rates in different tissues .	Students could consider how photosynthesis can be manipulated to aid in world food production.	The ethics surrounding modern farming practices and feeding a growing world population. Staying healthy and good exercise habits.	A general awareness of how food is produced.	Farmer. Agriculturalist. Cell Biologist. Biomedical scientist. Sports scientist.
Six	Revision and Examinations	Half term six is dedicated to preparation for the summer PPEs, followed by targeted intervention, review, reflection and improvement work; which will be planned bespoke to each class depending on the data collected.									