

Year 9	Cells	Organisation	Infection and Response
<p>Content- WHAT will be learned? What previous learning can be linked? Why this order/sequence?</p>	<p>Builds on Y7 Inheritance of life. Underpins understanding of different tissues and organs in the next unit.</p> <p>Cells are the basic unit of all life. We explore how structural differences between cell types enables them to perform specific functions within an organism. These differences in cells are controlled by their DNA. For an organism to grow, cells must divide by mitosis producing more cells. If cells are taken from early development before they become too specialised, they can retain their potential to grow into a range of different cell types. This has led to the development of stem cell technology, a new branch of medicine that allows doctors to repair damaged organs by growing new tissue from stem cells.</p>	<p>Builds on Y8 Body Systems and Year 7 Swifter, Higher, Stronger.</p> <p>Builds on knowledge of cells from previous unit.</p> <p>Students have already been introduced to cells so now we move on to look at how they work together in different organs in the circulatory, respiratory and digestive system (in humans). How can these systems be damaged and how do diet and lifestyle choices impact the risk of this?</p>	<p>Builds on Y8 Body Systems and idea of disease interaction in the previous unit. Last unit focusses on non-contagious this unit moves onto looking and contagious disease and it's prevention in a range of organisms.</p> <p>They are introduced to a range of immune cells, building on their knowledge of specialisation from first unit in year 9.</p>
<p>Skills- What will be developed?</p>	<p>Use of microscopes Aseptic technique Numeracy skills below Plotting and interpreting data</p>	<p>Dissection Principles of sampling with relation to data of human health risk factors Minimising risk and hazards during practical Numeracy skills below make decisions based on the evaluation of evidence and arguments</p>	<p>Aseptic techniques using a range of new apparatus. Culturing of microorganisms in a safe way Plotting and interpreting data Recognise the importance of peer review of results and of communicating results to a range of audiences. Make decisions based on the evaluation of evidence and arguments</p>
<p>Key 'How'/'Why' Questions- What powerful knowledge will be gained? What</p>	<p>Key Concepts: How do different cell types compare and how are they studied?</p>	<p>Explain how cells make up different tissues, organs and organ systems. What are enzymes and what do they do? What factors impact the action of enzymes?</p>	<p>What are the main types of pathogen and how do they cause disease?</p>

Curriculum Map KS4 Biology

<p>areas/themes/concepts will be explored?</p>	<p>How do substances move in and out of cells? How do cells become well adapted for their functions? How do cells get organised in multi-cellular organisms?</p>	<p>How do enzymes help with digestion? How does circulatory, respiratory and digestive function? How can we treat and reduce the risk of disease in these systems?</p>	<p>What are the defining characteristics of some common examples of disease caused by these types of disease? How can we prevent various different types of disease from spreading? How do our bodies prevent and fight off existing infection?</p>
<p>SEND- how will support be seen? Seating plans? Simplified questions?</p>	<p>Keyword box for each lesson, knowledge organisers for the unit. Scaffolded tasks and sentence starters in appropriate units. Off colour backgrounds and dyslexia friendly fonts to avoid visual overload. Glossary for overlearning key vocabulary. Checking in with students regularly in lesson.</p>	<p>Keyword box for each lesson, knowledge organisers for the unit. Scaffolded tasks and sentence starters in appropriate units. Off colour backgrounds and dyslexia friendly fonts to avoid visual overload. Glossary for overlearning key vocabulary. Checking in with students regularly in lesson.</p>	<p>Keyword box for each lesson, knowledge organisers for the unit. Scaffolded tasks and sentence starters in appropriate units. Off colour backgrounds and dyslexia friendly fonts to avoid visual overload. Glossary for overlearning key vocabulary. Checking in with students regularly in lesson.</p>
<p>Assessment- What? Why?</p>	<p>Summative: 2 x 12 mark assessment during the unit 1 x 25 mark assessment at the end of the unit Formative: regular plenary quizzes and starter retrieval practice to check understanding. Tiered assessment.</p>	<p>Summative: 2 x 12 mark assessment during the unit 1 x 25 mark assessment at the end of the unit Formative: regular plenary quizzes and starter retrieval practice to check understanding. Tiered assessment.</p>	<p>Summative: 2 x 12 mark assessment during the unit 1 x 25 mark assessment at the end of the unit Formative: regular plenary quizzes and starter retrieval practice to check understanding. Tiered assessment.</p>
<p>What memory for learning skills will be required- modelling? Concrete answers? Retrieval?</p>	<p>Modelling answers Concrete examples Interleaving Retrieval practice quizzes throughout</p>	<p>Modelling answers Concrete examples Interleaving Students creating their own revision quiz questions for peers Retrieval practice quizzes throughout</p>	<p>Part way through this unit year 9s will pause for mock revision and skills such as mind mapping, producing flash cards and retrieval quizzing are modelled to students in teacher led revision lessons.</p>
<p>Literacy- reading, extended accurate writing and oracy opportunities</p>	<p>Stem cell article reading comprehension activity</p>	<p>HIV comprehension activity</p>	<p>Skim reading an extended passage to identify essential information during research activities.</p>

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	How to write a scientific comparison and a scientific evaluation.	Correct use of scientific terminology such as accuracy, validity and precision in scientific writing.	
Numeracy/computing skills	SA:V ratio Percentage Rearranging equations Unit conversion and prefix micro Scale for enlargement Exponential growth Plotting data onto graphs Use of rounding and standard form	Translate information between graphical and numerical forms; and extract and interpret information from charts, graphs and tables. Use a scatter diagram to identify a correlation between two variables in terms of risk factors	Calculating area of a circle Calculating means Translate information between graphical and numerical forms; and extract and interpret information from charts, graphs and tables.
Character development	Well-rounded individual who critically considers both sides to an argument. Students can collect data as evidence to support a scientific hypothesis and consider the validity of scientific data. Teamwork and attention to detail during large practical procedures.	Make sensible lifestyle choices and understand how they impact your health. Appreciation for safety. Critical understanding of untrustworthy sources and how well data supports a claim.	Make sensible lifestyle choices and understand how they impact your health. E.g. safe sex, personal hygiene and food preparation, mental health.
Equality/Diversity opportunities	Bioethics- should stem cell research use embryos given the egg donor shortage and damage to the embryo this can cause?	The historic absence of females from data samples relating to human health and risk factors. The need for samples to be representative of modern diverse populations. How disease risk changes with characteristics E.g. by sex, age and ethnicities.	The globalised need for cooperation to stop the spread of disease. Bioethics- use of animals and human volunteers in the stages of clinical trials.
Homework/Independent learning	Quizzes and retrieval practice (see schedule). Links to myGCSEscience.com and use of knowledge organisers.	Quizzes and retrieval practice (see schedule). Links to myGCSEscience.com and use of knowledge organisers.	Quizzes and retrieval practice (see schedule). Links to myGCSEscience.com and use of knowledge organisers.
CIAG coverage/links	Knowledge of cells and microscopy relevant to those interested in hospital laboratories/ research or microbiology.	Anatomical knowledge and dissection skills relevant to those interesting in nursing/health care/medicine. Science communicator	Knowledge of disease and microbial culture skills relevant to those interesting in nursing/health care/medicine/hospital laboratories.