



Curriculum Map: Year 9 Subject: Biology

Topic	Key Knowledge <i>What will all students KNOW by the end of the topic?</i>	Key Skills <i>What key skills will be learnt/developed by the end of the topic? What will all students be able to DO by the end of the topic?</i>	Assessment Opportunities <i>What are the key pieces of assessment? How will students be assessed?</i>
Cell Biology	<ul style="list-style-type: none"> - Structure of eukaryotic cells: plant and animal cells - Function of cell organelles. - How to calculate order of magnitude. - How specialised cells are adapted to their function. - The importance of cell differentiation. - Stem Cells – functions, location and potential uses including therapeutic cloning - Structure of prokaryotic cells - <i>Cultural/ calendar appropriate lessons (Hallowe'en) to learn about the skeletal system including names and how muscles work</i> - Different microscopy techniques to include light and electron microscopes. - The difference between magnification and resolution. - Where DNA is found in the cell - The 3 main stages of the cell cycle, including mitosis. - How substances are transported in and out of cells by diffusion - Factors that affect the rate of diffusion including concentration gradients, temperature and presence of a membrane/barrier. - Specific examples of where diffusion occurs in organisms 	<ul style="list-style-type: none"> - Identify, draw, label and interpret cell images. - Build on experimental skills ready for KS4- Use a light microscope to observe, draw and label plant and animal cells - Build on microscopy skills from Year 7. - Evaluation skills e.g. pros and cons of the uses of different types of stem cells. - Consider the ethical implications of using stem cells. - Cell calculations using the magnification equation - Use of prefixes such as nano, micro, milli and conversions between units. To include use of standard form. - Use of models and analogies for cell division. - Recognise, draw and interpret diagrams modelling diffusion - Apply knowledge of diffusion to real life examples 	<ul style="list-style-type: none"> -Studying plant cells practical sheet and drawing in C/W and finish questions for H/W - 2 x knowledge organiser test on cells topic spread across lessons 2 to 10 -Therapeutic cloning order of stages and embryonic vs adult stem cells: advantages vs disadvantages -Prokaryote vs eukaryote comparison extended writing question -Microscopy calculations in class and homework task -Diffusion show my homework quiz -Diffusion mini practical written conclusions -Year 9 Biology assessment in November

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<p>Organisation: Tissues, Organs and Organ Systems</p>	<ul style="list-style-type: none"> - How cells, tissues, organs and organ systems relate to each other. - Structure and function of the human digestive system - Structure and function of enzymes - Which enzymes are responsible for digestion of each biological molecule, the products and where they are found in the body - The role of bile in lipid digestion - Structure and function of the human heart - Structure and function of blood vessels. - Components and functions of the blood. - Role of natural and artificial pacemakers. - <i>Causes and treatments for coronary heart disease (related to cultural topic of valentine's day lesson and reference to non-communicable disease for next topic)</i> - Structure and function of the respiratory system - The mechanisms of breathing 	<ul style="list-style-type: none"> - Understanding of the hierarchy that our bodies and other multicellular organisms are built upon - Identify parts of the digestive system both those that come directly and indirectly into contact with food - Creating models to explain the lock and key theory of enzyme activity for specificity - How to safely carry out a heart dissection - Compare blood vessels to identify differences between all 3 types - Evaluate the pros and cons of different heart disease treatments including stents, biological and mechanical valves and pacemakers. - Analyse data to draw conclusions. - Identify key parts of the respiratory system in a lung dissection demo 	<ul style="list-style-type: none"> - Practice exam questions on digestion (homework) - 2 x knowledge organiser test (2 separate KO's) for organisation topic - Observations of heart dissection and written risk assessment by individuals - Blood vessels extended writing task - Ongoing SMH quizzes - Year 9 Biology assessment in February
<p>Infection and Response</p>	<ul style="list-style-type: none"> - The relationship between health and disease - Knowledge of examples of communicable diseases e.g. types of pathogen, spread of disease, symptoms, prevention and treatments - First and second line of defence/Role of white blood cells - Examples of sexually transmitted infections and ways reduce the spread - Immunity and vaccines - Use of painkillers and antibiotics and introduction as to how antibiotic resistance can occur. - The difference between communicable and non-communicable diseases. - The effect of lifestyle on disease 	<ul style="list-style-type: none"> - Analyse and interpret disease incidence information from graphs - Research skills for finding out about different communicable disease examples - Apply key terminology from the immunity topic to practice questions - Interpret graphs for antibodies based on primary and secondary infections - Evaluate the pros and cons of vaccines and the idea of herd immunity (inc. a discussion about the MMR debate from the 80s/90s) - Explain the concern with overusing antibiotics in medical care 	<ul style="list-style-type: none"> - Poster/ Leaflet detailing research completed of each students assigned communicable disease - 2 x knowledge organiser tests on infection and response topic - Practice exam questions on communicable diseases topic covered as far as vaccines lesson - Analysing data in the lesson on graphs for risk and correlation and also information about antibiotic resistance - Drug development quiz on SMH - Year 9 Biology assessment in June

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Infection and Response	<ul style="list-style-type: none">- Risk factors for diseases- Knowledge of what cancer is – types and risk factors- Process involved in drug development and clinical trials.	<ul style="list-style-type: none">- Analyse and interpret data on risk factors and make valid judgements- Develop awareness of the difference between correlation and causation- Appreciate the difference between benign and malignant tumours based on localisation or metastasis- Understand the ethical issues associated with drug trials including animal testing as well as the risks- Explain how bias is eliminated in double blind trials and understand the importance of peer review and ongoing monitoring	
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