



Sandon Road, Meir, Stoke-on-Trent, ST3 7DF Telephone: 01782 377100 Fax: 01782 377101

Email: info@omera.co.uk Website: www.ormistonmeridianacademy.co.uk

Principal: Mrs C Stanyer

Subject: BIOLOGY (TRIPLE) Year 9 Curriculum Map 2020 – 2021

Resources:

Week Commencing	Topic (including links to additional resources)	Assessment Window
1 st September	<p>TOPIC 4.1 CELLS</p> <p><u>Lesson 1 - Animal and plant cells</u></p> <p>Label diagrams of animal and plant cells. Describe the function of the main organelles Describe the order of size of: cell, nucleus, chromosome and gene</p>	
7 th September	<p>Lesson 2 – Animal and plant cells</p> <p>Prepare slides of plant and animal cells and describe the procedure. Correctly use a microscope to observe cells under different magnifications. Describe the order of size of: cell, nucleus, chromosome and gene.</p>	
14 th September	<p>Lesson 3 - Cell specialisation and cell differentiation</p> <p>Explain the need for differentiation in a multicellular organism. Describe the differences between differentiation in plants and in animals. Explain how specialised cells are adapted for their function.</p>	
21 st September	<p>Lesson 4 - Stem Cells</p> <p>Define the term 'stem cell'. Describe where stem cells can be found in animals and plants. Describe in simple terms how nerve cells genetically identical to a patient could be obtained. Describe how stem cells could be used to help treat some medical conditions. Evaluate risks and benefits, as well as the social and ethical issues concerning the use of stem cells from embryos in medical research and treatments.</p>	
28 th September	<p>Lesson 5 - Eukaryotic and prokaryotic cells</p> <p>Identify plant, animal and bacterial cells and classify them as eukaryotic or prokaryotic cells. Label diagrams of bacterial cells. Describe the differences between eukaryotic and prokaryotic cells in terms of structure and size.</p>	
5 th October	<p>Lesson 6 – Microscopy</p> <p>Describe the differences in magnification and resolution of light and electron microscopes. Explain how electron microscopy has increased understanding of organelles. Calculate the magnification of a light microscope.</p>	LC

Ormiston Meridian Academy is committed to safeguarding and promoting the welfare of children and young people and expects all staff and volunteers to share this commitment.



	Rearrange the equation to calculate image size or magnification. Convert values for the units: cm, mm, μm and nm.	
12 th October	<u>Lesson 7 – Microorganisms and binary fission</u> Know that bacteria multiply by simple cell division. Know how bacteria can be grown. Know procedure to prepare an uncontaminated culture. Explain why cultures are incubated at a maximum temperature of 25°C. Describe why uncontaminated cultures are necessary in research.	
19 th October (inset Friday 22 nd)	<u>Lesson 8 – Chromosomes</u> Describe what a chromosome is and where chromosomes are found in the cell.	
Half Term		
2 nd November	<u>Lesson 9 - Mitosis and the cell cycle</u> Describe simply how and why body cells divide by mitosis Draw simple diagrams to describe mitosis. Draw and describe the cell cycle	
9 th November	<u>Lesson 10 – Diffusion</u> Define the term 'diffusion'. Explain how temperature, concentration gradient and surface area affect the rate of diffusion. Give examples of substances that diffuse into and out of cells.	
16 th November	<u>Lesson 11 - Diffusion</u> Calculate and compare surface area: volume ratios. Explain how the small intestine and lungs in mammals, and roots and leaves in plants, are adapted for exchange of substances. Describe and explain how an exchange surface is made more effective.	
23 rd November	AR1 Assessment DDI Wave 1	AR 1 ASSESSMENTS
30 th November	DDI Wave 2	AR 1 ASSESSMENTS
7 th December	Reassessment Consolidation lesson	
14 th December	<u>Lesson 12 – Osmosis</u> Define the term 'osmosis'. Apply knowledge of osmosis to unfamiliar situations and make predictions.	LC
Christmas Holiday		
4 th January	<u>Lesson 13 – Osmosis</u> Practical investigation	
11 th January	<u>TOPIC 4.2 – ORGANISATION</u> <u>Lesson 1 – Cells, Tissues, Organs, Systems and Human digestive system</u> Explain the terms cell, tissue, organ, organ system and organism, and be able to give examples of each.	

Ormiston Meridian Academy is committed to safeguarding and promoting the welfare of children and young people and expects all staff and volunteers to share this commitment.



	<p>Describe the functions of the digestive system to digest and absorb foods.</p> <p>Identify the positions of the main organs on a diagram of the digestive system.</p> <p>Know that food molecules must be small and soluble in order to be absorbed into the blood.</p> <p>Describe the functions of the organs in the system.</p> <p>Explain how the small intestine is adapted for its function</p>	
18 th January	<p><u>Lesson 2 – Properties of enzymes</u></p> <p>Define the terms ‘catalyst’ and ‘enzyme’.</p> <p>Describe the properties of enzymes.</p> <p>Explain why enzymes are specific and are denatured by high temperatures and extremes of pH.</p> <p>Use the lock and key theory and collision theory to explain enzyme action.</p>	
25 th January	<p><u>Lesson 3 – Required practical – effect of pH on enzymes</u></p> <p>Carry out a safe, controlled investigation to measure the rate of the catalase under different conditions.</p> <p>Draw a diagram of the apparatus and write a method. Identify variables. Present and analyse the results: calculate rates of reaction using raw data and graphs. Draw conclusions and give explanations for the results.</p>	
1 st February	<p><u>Lesson 4 - Required practical</u> – effect of pH on enzymes continued</p>	
8 th February (Inset 12 th February)	<p><u>Lesson 5 – Human digestive enzymes</u></p> <p>Explain why foods need to be digested into small, soluble molecules.</p> <p>Describe the three types of enzymes involved in digestion, including the names of the substrates, products and where the enzymes are produced.</p> <p>Explain how bile helps in the digestion of fats.</p> <p>Interpret graphs to determine the optimum temperature or pH for an enzyme.</p> <p>Calculate the rate of enzyme controlled reactions.</p> <p>Interpret the results from enzyme controlled reactions.</p>	LC
February Half Term		
22 nd February	<p><u>Lesson 6 – Required practical - food tests</u></p> <p>Use qualitative reagents to test for a range of carbohydrates, lipids and proteins. To include: Benedict’s test for sugars; iodine test for starch; and Biuret reagent for protein</p>	
1 st March	<p><u>Lesson 7 – Heart, blood vessels and pacemakers</u></p> <p>Describe the functions of the heart and circulatory system.</p> <p>Describe and label a diagram of the heart showing four chambers, vena cava, pulmonary artery, pulmonary vein and aorta.</p> <p>Describe the flow of blood from the body, through the heart and lungs and back to the body.</p> <p>Explain how the heart is adapted for its function.</p> <p>Describe the heart as a double pump and explain why this is efficient.</p> <p>Describe the function of the pacemaker cells and coronary arteries.</p> <p>Label the main structures in the gas exchange system – trachea, bronchi, alveoli and capillary network around alveoli.</p> <p>Explain how the alveoli are adapted for efficient gas exchange.</p>	
8 th March	<p><u>Lesson 8 – Structure of arteries, veins and capillaries</u></p> <p>Explain how the blood vessels are adapted for their function.</p>	

Ormiston Meridian Academy is committed to safeguarding and promoting the welfare of children and young people and expects all staff and volunteers to share this commitment.



15 th March	<p><u>Lesson 9 – Coronary heart disease</u> Describe problems associated with the heart and explain how they can be treated. Evaluate the use of drugs, mechanical devices and transplants to treat heart problems, including religious and ethical issues.</p>	
22 nd March	<p><u>Lesson 10 - Blood structure and function</u> Describe the four main components of blood. Explain how each component is adapted for its function. Identify pictures of the different blood cells.</p>	
29 th March	<p><u>Lesson 11 – Non communicable diseases</u> Explain how diet, stress and life situations can affect physical and mental health. Give examples of communicable and non-communicable diseases. Describe examples of how diseases may interact. Describe the effects of diet, smoking, alcohol and exercise on health. Explain how and why the Government encourages people to lead a healthy lifestyle. Give risk factors associated with cardiovascular disease, Type 2 diabetes, lung diseases and cancers.</p>	LC
Easter Holiday		
19 th April	<p><u>Lesson 12 - Cancers</u> Describe some causes of cancer, eg viruses, smoking, alcohol, carcinogens and ionising radiation. Describe the difference between benign and malignant tumours. Explain how cancer may spread from one site in the body to form a secondary tumour in another part of the body.</p>	
26 th April	<p><u>Lesson 13 - Plant organs and tissues</u> Label the main organs of a plant and describe their functions. Identify the tissues in a leaf and describe their functions. Relate the structure of each tissue to its function in photosynthesis. Explain why there are more stomata on the lower surface of a leaf. Describe the role of stomata and guard cells to control water loss and gas exchange.</p>	
3 rd May	<p><u>Lesson 14 – Calculate stomatal density practical</u></p>	
10 th May	<p><u>Lesson 15 – Plant transport systems</u> Describe the organs that make up the plant transport system. Describe the role of xylem, phloem and root hair cells and explain how they are adapted for their functions. Define the terms 'transpiration' and 'translocation'</p>	
17 th May	AR2 Assessment DDI Wave 1	AR 2 ASSESSMENTS
24 th May	DDI Wave 2 Reassessment	AR 2 ASSESSMENTS
7 th June	<p><u>Lesson 16 – Active Transport</u> Define the term 'active transport'.</p>	

Ormiston Meridian Academy is committed to safeguarding and promoting the welfare of children and young people and expects all staff and volunteers to share this commitment.



	<p>Describe where active transport occurs in humans and plants and what is transported.</p> <p>Explain why active transport requires energy.</p> <p>Explain how active transport enables cells to absorb ions from very dilute solutions.</p> <p>Explain the relationship between active transport and oxygen supply and numbers of mitochondria in cells.</p>	
14 th June	<p><u>TOPIC 4.3 INFECTION AND RESPONSE</u></p> <p><u>Lesson 1 Communicable diseases</u></p> <p>Define the term pathogen and state the four main groups of pathogen.</p> <p>Explain how pathogens can be spread to plants or animals and cause infection.</p> <p>Describe the main differences between bacteria and viruses.</p> <p>Explain how the spread of disease can be reduced or prevented.</p>	LC
21 st June	<p><u>Lesson 2 Viral, bacterial and fungal diseases (humans)</u></p> <p>Describe the symptoms, mode of transmission, prevention and treatment for measles, HIV and AIDS, salmonella and gonorrhoea.</p> <p>Describe colds and flu as viral diseases.</p> <p>Describe athlete's foot as a fungal disease.</p>	
28 th June	<p><u>Lesson 3 Protist diseases</u></p> <p>Describe the life cycle of the malarial protist.</p> <p>Describe the symptoms, mode of transmission, prevention and treatment for malaria</p>	
5 th July	<p><u>Lesson 4 Human defence systems</u></p> <p>Describe the body's first line defences</p> <p>Explain how microbes make us feel ill and how viruses damage cells.</p>	
12 th July	<p><u>Lesson 5 Human defence systems</u></p> <p>Explain how the immune system defends against disease</p> <p>Describe what white blood cells do.</p> <p>Explain why antibodies are specific for one pathogen/ antigen.</p>	
19 th July (School closed from 22 nd)	Consolidation and review	LC

Ormiston Meridian Academy is committed to safeguarding and promoting the welfare of children and young people and expects all staff and volunteers to share this commitment.

