

Key Concepts

Opportunities for Breadth and Challenge:			
Links to Sequencing for Learning: This unit links to previous work on cells and microscopes done in year 7 and enzymes in year 8 This unit prepares pupils for work in Y10 and Y11 as the basic concepts required for future GCSE topics			
Section	What we are learning (Key knowledge)	Key words	Assessment
1	Microscopes <ul style="list-style-type: none"> Explain how changes in microscope technology, including electron microscopy, have enabled us to see cells with more clarity and detail than in the past. Demonstrate an understanding of the relationship between quantitative units 	Microscope Magnification Micrometres Nanometres Picometres	Prior knowledge
2	Animal cells <ul style="list-style-type: none"> To be able to label the sub-cellular structures of a Eukaryotic animal cell. To be able to estimate the size of a cell. To be able to discuss how the organelles are related to their functions. 	Microscope slide Eukaryotic cell Cell membrane Cytoplasm Nucleus Mitochondria	Retrieval Qs of keywords Practical skills
3	Plant cells <ul style="list-style-type: none"> To label and describe the functions of organelles in the plant cell. To calculate cell size 	Cell wall Vacuole Chloroplast	MUM: Estimating cell size
4	Specialised Cells <ul style="list-style-type: none"> To explain how specialised cells are adapted to various individual functions To name examples of specialised cells To describe the specific functions of a range of specialised cells 	Ciliated epithelial cell Root hair cell Small intestine cell	Prior knowledge of specialised cells Comparing cell types
5	Bacteria cells <ul style="list-style-type: none"> To list sub-cellular structures of a bacteria cell. To state comparisons of prokaryotic cells and eukaryotic cells. To discuss some of the uses of bacterial cells. 	Prokaryotic cell Flagella Slime coat Chromosomal DNA Plasmid	
6	Enzymes and Nutrition <ul style="list-style-type: none"> What are enzymes made out of? What do enzymes do? Why are enzymes important for life? 	Enzyme, active site, catalyst, product, substrate	

7	Enzyme action <ul style="list-style-type: none"> What is the function of the active site of an enzyme? Why do enzymes only work on specific substrates? How are enzymes denatured? 	Denatured, Temperature, pH, specific	
8	Enzyme Activity <ul style="list-style-type: none"> How is enzyme activity affected by temperature, pH and substrate concentration? How do you calculate the rate of enzyme activity? Why is enzyme activity affected by temperature, pH and substrate concentration? 	Concentration, optimum temperature	Enzyme Exam style Q
9 & 10	Transporting substances <ul style="list-style-type: none"> What is the difference between diffusion and osmosis? How do cells move substances against a concentration gradient? How do you calculate a percentage change in mass? <i>Investigate osmosis in potatoes.</i> 	Diffusion, active transport, osmosis, passive, concentration gradient, permeable, solvent, solute.	
11	Food tests <ul style="list-style-type: none"> To know how to test for biological molecules (starch, glucose, protein, lipids) 	Benedict's Biurets Iodine Ethanol	Recall of monomers and polymers
12	Revision		Class assessment sheet
13	End of Unit Test		EUT
14	Test Feedback		Test feedback sheet

Lacon Childe School Science Department – Biology Scheme of Work – Year 9– Unit 2

Cells and Control

Opportunities for Breadth and Challenge:			
Links to Sequencing for Learning:			
Section	What we are learning (Key knowledge)	Key words	Assessment
1	Mitosis <ul style="list-style-type: none"> To describe the process of mitosis To explain reasons for and the importance of mitosis 	Mitosis Daughter cell Diploid Nucleus Asexual	Name cell structures

2	Mitosis and cancer cells <ul style="list-style-type: none"> To describe how cancer cells result from uncontrolled cell division Explain how mitosis is used in asexual reproduction 	Uncontrolled cell division Tumour	Recall of mitosis stages Exam style questions
3	Growth in animals <ul style="list-style-type: none"> Describe growth by cell division and differentiation in animals. Explain the importance of cell differentiation in the development of specialised cells. Demonstrate an understanding of the use of percentile charts to monitor growth. 	Mitosis Embryo Cell differentiation Percentile growth chart	Using percentile growth charts
4	Growth in plants <ul style="list-style-type: none"> Describe the stages of growth in plants including the function of the meristem. Explain why differentiation is important for making specialised cells. Give examples of specialised plant cells. 	Meristem Zone of elongation Zone of differentiation	
5	Stem cells <ul style="list-style-type: none"> Describe where stem cells are found in animals and in plants Describe the function of stem cells Discuss the potential benefits and risks associated with the use of stem cells in medicine. 	Stem cell Multipotent Pluripotent Embryonic stem cell Adult stem cell Cell differentiation	Exam style question
6	Nervous system <ul style="list-style-type: none"> To describe the structures that make up the nervous system Describe structure and function of neurones (sensory, relay and motor) Describe how a nerve impulse is transmitted 	Neurone Axon Sensory neurone Relay neurone Motor neurone	
7	Neurotransmission speeds <ul style="list-style-type: none"> Describe what a synapse is. Explain how reflex actions including synapses enable a fast response. 	Synapse Reflex arc Neurotransmitter Axon terminal Dendrite Diffusion	MUM – measuring impulse speed
8	Revision		
9	End of unit test		
10	Feedback		