AQA Biology GCSE Year 9 Knowledge Grid

Christleton High School
B1 Cell Structure and Transport

Name .... Class .... Date ....

Cell Structure and transport

Lesson	Aiming for 4 (Foundation / Intermediate)		Aiming for 6 (Intermediate / Higher		Aiming for 8 (Higher / Exceptional)	
B1.1 The world of the microscope	I can use a light microscope.		I can describe the difference between magnification and resolution.		I can compare and contrast the magnification and resolution obtained by using light and electron microscopes.	
	I can state why microscopes are useful in the study of cell biology.		I can describe the advantages and disadvantages of using a light and electron microscope.		I can justify the use of an electron microscope.	
	I can calculate total magnification.		I can use the formula: magnification = size of image/size of real object.		I can re-arrange the magnification equation and measure the size of cells.	
B1.2 Animal and plant cells	I can identify a plant and animal cell from a diagram.		I can describe the functions of the parts of cells.		I can explain how the main structures of cells are related to their functions.	
	I can name the main parts of cells.		I can compare plant and animal cells.		I can suggest reasons why some cells do not contain all cell structures.	
	I can prepare a microscope slide.		I can use a microscope to study plant and algal cells.		I can compare sizes of cells using units of length and standard form.	
B1.3 Eukaryotic cells and prokaryotic cells	I can identify structures in prokaryotic cells.		I can compare prokaryotic and eukaryotic cells.		I can explain how the main structures of prokaryotic cells are related to their functions.	
	I can state that bacterial (prokaryotic) cells do not contain a nucleus and eukaryotic cells do.		I can describe the functions of the parts of a prokaryotic cell.		I can perform calculations to work out orders of magnitude.	
	I can use orders of magnitude to correctly order objects according to size.		I can use orders of magnitude to compare sizes of organisms.			

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B1.4 Specialisation in animal cells	I can identify specialised animals cells from diagrams.		I can explain why animals have specialised cells.		I can discuss how the structure of specialised animal cells are related to their function within the organ and whole organism.	
	I can describe the function of specialised animal cells.		I can compare the structure of a specialised and generalised animal cell.		I can suggest the function of an unknown specialised cell based on its structure.	
	I can write a basic explanation of how animal cells are adapted.		I can write a coherent explanation of how animal cells are adapted.		I can write an effectively structured explanation of how animal cells are adapted.	
B1.5 Specialisation in plant cells	I can identify specialised plant cells from diagrams.		I can compare the structure of a specialised and generalised plant cell.		I can discuss how the structure of specialised plant cells is related to their function within the organ and whole organism.	
	I can describe the function of specialised plant cells.		I can describe the adaptations of specialised plant cells.		I can design a cell, tissue or organ to perform a certain function.	
	I can use a light microscope to view a root hair cell.		I can draw a scientific drawing of a root hair cell observed using a light microscope.		I can measure a root hair cell observed using a light microscope.	
B1.6 Diffusion	I can state that diffusion is the spreading of the particles of any substance in solution, or particles of a gas.		I can predict which way substances will move across a cell membrane.		I can explain how temperature and concentration gradient affects rate of diffusion.	
	I can list the factors that affect the rate of diffusion.		I can explain why surface area affects the rate of diffusion.		I can write a hypothesis using detailed scientific knowledge and explain how it could be tested.	
	I can write a simple hypothesis.		I can write a hypothesis using scientific knowledge.			
B1.7 Osmosis	I can describe what osmosis is.		I can state the differences between osmosis and diffusion.		I can explain how a model shows osmosis in a cell.	

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	I can state that if animal cells lose or gain too much water by osmosis they can stop working properly.		I can use ideas about osmosis to explain why maintaining constant internal conditions in living organisms is important.		I can use the terms isotonic, hypotonic or hypertonic to explain the movement of water across a cell membrane.	
			I can write a prediction using scientific knowledge of osmosis.			
B1.8 Osmosis in plants	I can state that if a plant loses too much water from its cells they become soft.		I can use use osmosis to explain the effect of placing plant tissue in salt or sugar solutions.		I can explain the mechanisms that lead to turgid or flaccid plant cells and plasmolysis.	
	I can write a simple method with support.		I can write a suitable plan to investigate into the effect of salt or sugar solutions on plant tissue.		I can write a detailed plan independently.	
	I can use given data to plot a suitable graph with some support.		I can calculate percentage change and use this to plot a line graph with negative numbers and draw a line of best fit.		I can use a line graph to estimate the concentration of solution inside a plant cell.	
B1.9 Active transport	I can define active transport as the movement of a substance against a concentration gradient using energy.		I can explain why active transport is important for living organisms.		I can describe how active transport takes place.	
	I can identify where active transport takes place.		I can explain the differences between diffusion, osmosis, and active transport.		I can suggest how a cell that carries out active transport is adapted to this function.	
	I can use a representational model to show active transport.		I can suggest some improvements/ limitations to a representational model that shows active transport.		I can design and evaluate a representational model to show active transport.	
B1.10 Exchanging materials	I can state the function of exchange surfaces in plants and animals.		I can describe how the effectiveness of exchange surfaces is increased.		I can link ideas about diffusion to explain how the adaptations of exchange surfaces increases their effectiveness.	
	I can state that a single-celled organism has a relatively large surface area to volume ratio.		I can use ideas about surface area to volume ratio to describe why multicellular organisms need exchange surfaces.		I can use ideas about surface area to explain the shape of a leaf.	
	I can calculate the surface area to volume ratio of a cube.		I can calculate the surface area to volume ratio of a cylinder.		I can calculate the surface area to volume ratio of a sphere.	