Key Concepts in Biology

RAG rate your confidence levels at the start and end of each topic:

R= Not Confident **A= Fairly confident (need more practice/ to review)** **G= Very confident**

CB1a Microscopes

Step	Learning outcome	Start of topic	End of Topic
	Recall what an electron microscope is.		
	Recall what is meant by an instrument's resolution.		
	Explain why some cell structures can be seen with an electron microscope but not with a light microscope.		
	Calculate total magnification using an equation.		
	Calculate sizes using magnifications.		
	Interpret the SI prefixes milli-, micro-, nano- and pico-.		

CB1b Plant and animal cells

Step	Learning outcome	Start of topic	End of Topic
	Identify the parts of plant and animal cells.		
	Recall the parts of plant and animal cells.		
	Make drawings of plant and animal cells using a light microscope and identify their parts.		
	Describe the functions of the sub-cellular structures commonly found in eukaryotic cells (nucleus, cell membrane, cell wall, chloroplasts, mitochondria and ribosomes).		
	Estimate sizes using microscope fields of view.		
	Estimate sizes using scale bars.		

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CB1c Specialised cells

Step	Learning outcome	Start of topic	End of Topic
	Describe how sperm cells are adapted to their function.		
	Describe how egg cells are adapted to their function.		
	Describe how ciliated epithelial cells are adapted to their function.		
	Draw conclusions about a cell's function from its adaptations.		

CB1d Inside bacteria

Step	Learning outcome	Start of topic	End of Topic
	Identify the common parts of bacteria.		
	Describe the functions of common parts of bacteria.		
	Describe why bacteria are classified as being prokaryotic.		
	Change numbers to and from standard form.		
	Compare eukaryotic and prokaryotic cells.		

CB1e Enzymes and nutrition

Step	Learning outcome	Start of topic	End of Topic
	State that enzymes are proteins.		
	Give examples of enzymes and where they are found in the human body and in other species.		
	Recall the subunits from which carbohydrates, proteins and lipids are formed (sugars, amino acids, fatty acids and glycerol).		
	Describe what enzymes do (catalyse the synthesis and breakdown of substances, such as carbohydrates, proteins and lipids, by speeding up the rate of reaction).		
	Define an enzyme as a biological catalyst.		
	Explain why catalysis by enzymes is important for life processes (because reactions happen much faster).		

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CB1f Enzyme action

Step	Learning outcome	Start of topic	End of Topic
7th	State what enzyme specificity means.		
7th	State that an enzyme's action is due to its active site.		
7th	Describe the role of the active site in enzyme function (including specificity).		
9th	Use the lock-and-key model to develop explanations for enzyme activity.		
8th	Explain why enzymes have a particular shape, as a result of the sequence of amino acids in the chain.		
9th	Explain how enzymes become denatured.		

CB1g Enzyme activity

Step	Learning outcome	Start of topic	End of Topic
8th	Describe the effect of temperature on enzyme activity.		
8th	Describe the effect of substrate concentration on enzyme activity.		
8th	Describe the effect of pH on enzyme activity.		
8th	Explain what is meant by the optimum pH/temperature of an enzyme.		
9th	Calculate the rate of enzyme activity from experimental data.		
9th	Explain why temperature, substrate concentration and pH affect enzyme activity.		

CB1h Transporting substances

Step	Learning outcome	Start of topic	End of Topic
7th	State that substances are transported by diffusion, osmosis and active transport.		
7th	Describe how substances are transported by active transport (including the need for energy).		
6th	Explain how substances are transported by diffusion.		
9th	Explain how substances are transported by osmosis.		
9th	Explain the effects of osmosis on cells and tissues.		
8th	Investigate osmosis in potatoes.		
9th	Calculate percentage gain and loss of mass in osmosis.		

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