



Learning Journey – B1 Cell Biology – Cell Structure

What have I done previously in my learning journey?									
Previously....			You have learnt previously about cells. This has involved: - Describing that all living organisms are made of cells. - Observing plant and animal cells using a light microscope - Explaining the functions (jobs) of the specific structures that are found in the cell - Describing the similarities and differences between plant and animal cells						
In this topic...			You will learn more about cells as the building blocks of living organisms. This will include: - Describing the structure of bacterial cells - Forming links between topics, for example bacterial cells and how certain bacteria can cause diseases. - Applying mathematical skills to demonstrate an understanding of scale and the size of cells. - Applying knowledge of subject specific keywords, for example prokaryotic and eukaryotic, to demonstrate literacy skills in speaking and writing like a scientist						
We will develop our learning by studying the following each lesson:						British Values	RAG	Skills in Science checklist	
B1.01 Cells – Eukaryotes and Prokaryotes - Identify the main parts present in eukaryotic and prokaryotic cells - Describe how genetic material is stored in bacterial cells - Compare the relative sizes of prokaryotic and eukaryotic cells - Make order of magnitude calculations, including the use of standard form.						☐ Democracy ☐ Rule of law ☐ Tolerance ☐ Individual liberty ☐ Mutual respect		☐ Development of scientific thinking ☐ Experimental skills and strategies ☐ Analysis and evaluation ☐ Scientific literacy ☐ Maths skills	
B1.02 Animal and Plant Cells - Name and identify the main parts present in animal and plant cells. - Explain how the main sub-cellular structures are related to their functions.						☐ Democracy ☐ Rule of law ☐ Tolerance ☐ Individual liberty ☐ Mutual respect		☐ Development of scientific thinking ☐ Experimental skills and strategies ☐ Analysis and evaluation ☐ Scientific literacy ☐ Maths skills	
B1.03 Microscopy RP Describe how to use a light microscope to observe, draw and label a selection of plant and animal cells (required practical activity 1).						☐ Democracy ☐ Rule of law ☐ Tolerance ☐ Individual liberty ☐ Mutual respect		☐ Development of scientific thinking ☐ Experimental skills and strategies ☐ Analysis and evaluation ☐ Scientific literacy ☐ Maths skills	
B1.04 Microscopy Calculations - Understand how microscopy techniques have developed over time. - Explain how electron microscopy has increased understanding of sub-cellular structures. - Carry out calculations involving magnification, real size and image size using the formula: $\text{magnification} = \frac{\text{size of image}}{\text{size of real object}}$ - Express answers in standard form where appropriate.						☐ Democracy ☐ Rule of law ☐ Tolerance ☐ Individual liberty ☐ Mutual respect		☐ Development of scientific thinking ☐ Experimental skills and strategies ☐ Analysis and evaluation ☐ Scientific literacy ☐ Maths skills	
B1.05 Cell Specialisation and Differentiation - State some examples of specialised animal and plant cells. - Explain how the structure of different types of cells relates to their function in a tissue, an organ or organ system, or the whole organism. - Describe when differentiation occurs in most types of animal cells and in many types of plant cells. - Describe the main purpose of cell division in mature animals. - Explain the importance of cell differentiation.						☐ Democracy ☐ Rule of law ☐ Tolerance ☐ Individual liberty ☐ Mutual respect		☐ Development of scientific thinking ☐ Experimental skills and strategies ☐ Analysis and evaluation ☐ Scientific literacy ☐ Maths skills	
Key Vocabulary									
Bacteria	Prokaryote	Pathogen	Antibiotic	Subcellular	Nucleus	Ribosomes	Mitochondria	Cell membrane	Cytoplasm
Genes	Chromosomes	Eukaryotic	Resolution	Objective	Sub-cellular	Magnification	Chloroplasts	Cell wall	Vacuole
Image size	Actual size	Standard form	Estimation	Adaptation	Specialised	Multicellular	Cell	Tissue	Organ system



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Future Learning	In Year 10 and 11 you will learn more about cells and the differences between them. You will learn that these differences are controlled by genes in the nucleus. For an organism to grow, cells must be able to divide to produce new cells.
In careers	If cells are isolated at an early stage of growth before they have become too specialised, they can retain their ability to grow into a range of different types of cells. This phenomenon has led to the development of stem cell technology. This is a new branch of medicine that allows doctors to repair damaged organs by growing new tissue from stem cells.