Learning Journey – 9A Building Blocks - Cells

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:	RAG	Skills in Science checklist
9A.01 Bacterial Cells • Define the features of bacterial (prokaryotic) cells • Explain how bacterial cells are adapted to carry out specific functions • Explain how bacterial cells can make us ill and how we can reduce the spread		☐ Scientific Methods ☐ Practical ☐ Number skills ☐ Application ☐ Communication
9A.02 Animal Cells (this lesson may also be a flipped learning homework) • Recall the structures found in animal cells • Describe the functions of organelles in animal cells • Describe how the genetic material is stored in the nucleus		☐ Scientific Methods ☐ Practical ☐ Number skills ☐ Application ☐ Communication
9A.03 Animal Cells Under a Microscope • Draw and label sub-cellular structures • Use a light microscope • Use estimations to judge the relative size/area of sub-cellular structures		☐ Scientific Methods ☐ Practical ☐ Number skills ☐ Application ☐ Communication
9A.04 Plant Cells • Recall the structures found in plant cells (including algal cells) • Describe the functions of the structures in plant cells		☐ Scientific Methods ☐ Practical ☐ Number skills ☐ Application ☐ Communication
9A.05 Plant Cells Under a Microscope • Prepare a slide for microscopy • Use a light microscope to draw and label sub-cellular structures in a plant cell		☐ Scientific Methods ☐ Practical ☐ Number skills ☐ Application ☐ Communication
9A.06 Magnification Calculations • Carry out calculations involving magnification • Use estimations to judge the relative size or area of subcellular structures. • Use standard form		☐ Scientific Methods ☐ Practical ☐ Number skills ☐ Application ☐ Communication
9A.07 Comparing Cells • Use the terms ‘eukaryotic’ and ‘prokaryotic’ to describe different types of cells. • Compare eukaryotic and prokaryotic cells.		☐ Scientific Methods ☐ Practical ☐ Number skills ☐ Application ☐ Communication
9A.08 Specialised Cells ● Describe the structural adaptations of some animal and plant cells ● Identify the structural adaptations of some unicellular organisms		☐ Scientific Methods ☐ Practical ☐ Number skills ☐ Application ☐ Communication

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9A.09 Scale of Organisms • Describe the levels of organisation within living organisms • Demonstrate an understanding of the scale and size of cells • Make order of magnitude calculations, including standard form		☐ Scientific Methods ☐ Practical ☐ Number skills ☐ Application ☐ Communication

Key Vocabulary

Bacteria	**Prokaryote**	**Pathogen**	**Antibiotic**	**Subcellular**	**Nucleus**	**Ribosomes**	**Mitochondria**	**Cell membrane**
Cytoplasm	**Genes**	**Chromsomes**	**Eukaryotic**	**Resolution**	**Objective**	**Sub-cellular**	**Magnification**	**Chloroplasts**
Cell wall	**Vacuole**	**Image size**	**Actual size**	**Standard form**	**Estimation**	**Adaptation**	**Specialised**	**Multicellular**
Cell	**Tissue**	**Organ system**						

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.