



Subject: Year 7 Cells

Prior knowledge from Key stage 2			
Plants - identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers			
Animals and Humans - identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. Identify that humans and some other animals have skeletons and muscles for support, protection and movement			
Overarching Topic: Cells			
<p>Why is this topic being studied at this time?</p> <p>How does it fit into the wider subject curriculum?</p>	<ul style="list-style-type: none"> In 1665, British scientist Robert Hooke peered through a microscope at a paper-thin slice of cork and saw it was "all perforated and porous, much like a Honey-comb." He named the structures "cells," and revolutionized the study of life on Earth. Although cells can take on innumerable shapes and functions within an organism, they all perform the basic roles of energy absorption and production, cellular maintenance and reproduction. Without cells, life cannot exist, which shows the overall importance of cell types in life. The topic of Cells is important as it draws on ideas developed in the key stage 2 programme of study. It is the building block of all fundamental biology topics Keeping healthy, Micro-organisms and communicable diseases , reproduction, Variation, inheritance and classification'. Students will learn how observations made with a microscope helped ideas about the structure of living things to develop, learn to use a microscope safely and effectively, make observations using a microscope and record these in drawings, compare and interpret information from microscopic observation, draw conclusions from observations and explain these using scientific knowledge and introduces to the importance of sampling in biological investigations. As one of the fundamental principles of Science, cells fits into all aspects of future KS3 and KS4 content. 		
	Essential	Core	Ambitious
<p>The Big Questions (What questions will students be able to answer upon mastery of the topic?)</p>	<p>What does organelle mean? What is a cell? Can you name three parts of the cell that are found in both animal and plant cells. Can you name three parts of the cell that are found in only plant cells?</p>	<p>Can you describe the function of each organelle found in plant and animal cells? How do you use a microscope to identify and compare different types of cells? How are uni-cellular organisms adapted to carryout functions that in multi-cellular organisms are done by different types of cell? How is the structure of specialised cells related to their function?</p>	<p>L1) What impact have microscopes had on our scientific understanding? L2) How can improving the resolution of a Microscope image advance our scientific understanding? How are cells different to particles? Are they solids, liquids or gases? Design your own cell – what characteristics make it great at its function? Why are cells alone not enough for multicellular organisms to live?</p>
The Key Skills/ Techniques	The sophistication and application of skills will become more advanced as students' progress through the essential, core and ambitious knowledge		
	Skill/Technique	How will this skill be developed?	
	1. Graphing & Drawing	Draw graphs with suitable scales, axes and units. Correct line of best fit. Appreciation of anomalies and processed data. Scientific drawing of cells, concepts and scientific equipment.	
	2. Variables	Identify independent, dependent and control variables and devise experiments to include these to ensure valid results. Appreciation of uncertainty.	
3. Data Analysis	Describe, explain and predict trends. Graph and table data interpretation. Identify links and patters within and between topics. Statistical analysis of data to include mode/median/mean/range determination. Drawing justified conclusions from presented data.		

	4. Application	Apply known and taught theory in unfamiliar contexts. Making links to taught theory and extracting key ideas. Communicating using correct scientific terminology.
	5. Working Scientifically	Identify hazards and planning to limit risk. Describe how to improve accuracy/precision/repeatability/reproducibility/validity. Evaluate reliability of methods and investigations, taking in to account data analysis.