




‘An ambitious curriculum that meets the needs of all’
Medium Term Planning - Topic: Cells

Curriculum Intent	
Skills/National Curriculum Links	<p align="center">In addition to working further on objectives from KS2, pupils will be taught, following National Curriculum guidelines, the following this topic:</p> <p>Cells and organisation</p> <ul style="list-style-type: none"> • as the fundamental unit of living organisms, including how to observe, interpret and record cell structure using a light microscope • the functions of the cell wall, cell membrane, cytoplasm, nucleus, vacuole, mitochondria and chloroplasts • the similarities and differences between plant and animal cells • the role of diffusion in the movement of materials in and between cells • the structural adaptations of some unicellular organisms
Spiritual, moral, social, and cultural development	<p>SMSC: Enable students to develop their self-knowledge of their own body.</p> <p>PSHE/British Values: Chemical reactions occur in all forms of life such as toothpaste and bee stings. Students will complete teamwork, leadership and put science into everyday situations. They will show mutual respect during classwork.</p> <p>Skills Builder: Listening (Receiving, retaining and processing info), Speaking (The oral transmission of info and ideas), Problem solving (Find a solution to a situation or challenge), Creativity (imagination and generation of new ideas), Staying positive (The ability to use tactics and strategies to overcome setbacks), aiming high (Set clear and tangible goals), Leadership and teamwork</p>
Numeracy	Simple magnification calculations
Literacy	<p>Vocabulary Tier 2: observation, substance, irregular, barrier, transfer, component, function, firm, prefix, permanent, rectangular, layer, surface, sweep, absorb, structure,</p> <p>Vocabulary Tier 3: microscope, observation, organism, lens, magnification, focus knob, eyepiece lens, objective lens, stage, method, nucleus, cell membrane, cytoplasm, mitochondria, respiration, cell wall, vacuole, chloroplast, structural adaptation, specialised cell, nerve cell, red blood cell, sperm cell, leaf cell, root hair cell, ciliated, mucus, uni-cellular, amoeba, euglena, flagellum, binary fission, engulfing.</p> <p>Reading: Following a written method and read risk assessments. Students may be directed to the textbook; this could be in lesson or at home on Kerboodle.</p> <p>Writing: Describing and explaining scientific phenomenon, free response writing for describing precautions taken, use of word mat to promote sentence formation.</p> <p>Oracy: inclusion of BEST resources which are research evidence on common misunderstandings in science, effective diagnostic questioning and formative assessment, constructivist approaches to building understanding, and effective sequencing of key concepts that promote metacognitive talk and dialogue.</p>
Becoming future ready	<p>Careers/Employability:</p> <ul style="list-style-type: none"> - <i>Endocrinologist</i> - <i>Biologist</i> - <i>Science writer</i> - <i>Lab technician</i>
Adaptation	Throughout this topic, quality first teaching will provide differentiation:
QFT/SEND Provision	<p>By product: Linear assessments and differentiated practical work.</p> <p>By resource: Lessons are differentiated per class and students, worksheets are coloured blue if support and assessments are linear.</p> <p>By Intervention: by providing different levels of supervision and support</p> <p>By Progressive Questioning: exploring pupils’ understanding through interactive dialogue.</p> <p>By Grouping: according to prior attainment, gender, social preference, preferred learning style.</p> <p>By Task: Pupils should be involved in the identification of targets which are meaningful to them and in the selection of an appropriate task from the given range.</p> <p>By Offering Optional Activities: In class or as homework, to extend learning.</p> <p>This QFT/SEND provision will be explicit within the lesson-by-lesson schemes of work.</p>

Implementation Curriculum Delivery	To be able to:
Learning Outcomes (Core Knowledge)	<p><i>Know</i></p> <ul style="list-style-type: none"> - State what a cell is. - Describe how to use a microscope to observe a cell. - Use a microscope to observe a prepared slide, with assistance. <p><i>Apply</i></p> <ul style="list-style-type: none"> - Describe what a cell is. - Explain how to use a microscope to observe a cell. - Use a microscope to observe a prepared slide and state the magnification. <p><i>Extend</i></p> <ul style="list-style-type: none"> - Explain what all living organisms are made of. - Explain what each part of the microscope does and how it is used. - Use a microscope to observe a prepared slide calculating a range of magnifications.
	<p><i>Know</i></p> <ul style="list-style-type: none"> - Identify one similarity and one difference between a plant and an animal cell. - Match some components of a cell to their functions. - With support, prepare and observe a microscope slide safely. <p><i>Apply</i></p> <ul style="list-style-type: none"> - Identify and compare the similarities and differences between plant and animal cells. - Describe the functions of the components of a cell. 1–3 - Prepare and observe cells on a microscope slide safely. <p><i>Extend</i></p> <ul style="list-style-type: none"> - Explain the similarities and differences between plant and animal cells. - Explain the functions of the components of a cell by linking them to life processes. - Prepare and observe cells on a microscope slide safely, using scale and magnifications.
	<p><i>Know</i></p> <ul style="list-style-type: none"> - Identify substances that move into or out of cells. - State simply what diffusion is. - Make sets of observations or measurements of diffusion of tea from a tea bag. <p><i>Apply</i></p> <ul style="list-style-type: none"> - Describe the process of diffusion. - Collect data of diffusion of tea from a tea bag, choosing appropriate ranges, numbers, and values for measurements and observations. - Explain why multi-cellular organisms need organ systems to keep their cells alive. <p><i>Extend</i></p> <ul style="list-style-type: none"> - Explain which substances move into and out of cells. - Explain the process of diffusion. - Choose and justify data collection methods of diffusion tea from a tea bag that minimise error, and produce precise and reliable data.
	<p><i>Know</i></p> <ul style="list-style-type: none"> - Name some examples of specialised animal cells. - Name some examples of specialised plant cells. - State structural adaptations of plant and animal cells, summarising this in a table or as a model. <p><i>Apply</i></p> <ul style="list-style-type: none"> - Describe examples of specialised animal and plant cells. - Suggest what kind of tissue or organism a cell is part of, based on its features. - Describe structural adaptations of plant and animal cells, summarising this in a table or as a model. <p><i>Extend</i></p> <ul style="list-style-type: none"> - Describe examples of specialised animal cells, linking structure and function. - Describe examples of specialised plant cells, linking structure and function. - Compare and contrast structural adaptations of plant and animal cells, summarising this in a table or as a model.
	<p><i>Know</i></p> <ul style="list-style-type: none"> - Name an example of a uni-cellular organism. - Identify some structures in an amoeba. - Identify some structures in a euglena. - Select the appropriate apparatus to observe an amoeba and a euglena cell. <p><i>Apply</i></p> <ul style="list-style-type: none"> - Describe what a uni-cellular organism is. - Describe the structure of an amoeba and a euglena. - Explain how uni-cellular organisms are adapted to carry out functions that, in multi-cellular organisms, are done by different types of cell. - Select the appropriate magnification to observe an amoeba and a euglena cell through a microscope.

	<p><i>Extend</i></p> <ul style="list-style-type: none"> - Explain what a uni-cellular organism is and give detailed examples. - Describe the structure and function of an amoeba. - Describe the structure and function of a euglena. - Give justifications for the choice of magnification when observing an amoeba and a euglena cell through a microscope. 	
Current learning to be developed in the future within:	<p>Once the musculoskeletal system and its taught gross anatomy have been taught, we move to a microscopic level and study cells. This topic needs to be understood as it forms the basis of a large portion of the Key Stage 4 GCSE course. Learning the skills of both using the light microscope and preparing slides of plant and animal cells brings high levels of engagement to lessons. This topic builds on prior KS2 knowledge of <i>Living things and their habitats</i> – their similarities and differences including microbes, plants and animals. It also introduces some key vocabulary whilst studying the role of the different subcellular structures</p>	
Assessment	<p>Refer to assessment maps for formative and summative assessment opportunities.</p>	
Impact	<p>Attainment and Progress – Refer to assessment results / data review documentation.</p>	