# R483 Entry Level Science Resources – Topic B1

These resources are aimed at Entry Level Science students. They have been adapted from the legacy R591 resources published by OUP to meet the requirements of the R483 Entry Level Science specification.

They could also be used as a starting point and a recap of Key Stage 3 content for your lower attaining students studying GCSE Combined Science. OCR Entry Level Science is mapped to both OCR GCSE Combined Science A and OCR GCSE Combined Science B.

The table below shows this mapping for Topic B1.

| **Entry Level ref** | **Entry Level statement** | **GCSE (9–1) Gateway A combined science ref.** | **GCSE (9–1) Gateway A combined science statement** | **GCSE (9–1) 21st Century Science B combined science ref.** | **GCSE (9–1) 21st Century Science B combined science statement** |
| --- | --- | --- | --- | --- | --- |
| ELB1a | Recall the life processes: movement, respiration, sensitivity, growth, reproduction, excretion, and nutrition |  |  |  |  |
| ELB1b | Be able to name the body systems involved with these life processes: circulatory, respiratory and digestive. | B2.2c | describe the human circulatory system to include the relationship with the gaseous exchange system, the need for a double circulatory system in mammals and the arrangement of vessels | B5.1.3 | describe the human circulatory system, including its relationships with the gaseous exchange system, the digestive system and the excretory system |

| **Entry Level ref** | **Entry Level statement** | **GCSE (9–1) Gateway A combined science ref.** | **GCSE (9–1) Gateway A combined science statement** | **GCSE (9–1) 21st Century Science B combined science ref.** | **GCSE (9–1) 21st Century Science B combined science statement** |
| --- | --- | --- | --- | --- | --- |
| ELB1c | Be able to label the nucleus, cytoplasm and cell membrane of an animal cell. | B1.1b | explain how the main sub-cellular structures of eukaryotic cells (plants and animals) and prokaryotic cells are related to their functions to include nucleus, genetic material, chromosomes, plasmids, mitochondria (contain enzymes for cellular respiration), chloroplasts (contain chlorophyll) and cell membranes (contain receptor molecules, provides a selective barrier to molecules) | B1.1.1a | explain how the nucleus and genetic material of eukaryotic cells (plants and animals) and the genetic material, including plasmids, of prokaryotic cells are related to cell functions |
| ELB1d | Know that the nucleus controls the cell; the membrane allows some chemicals to pass in and out, and the cytoplasm is where useful chemical reactions take place. | B1.1b | explain how the main sub-cellular structures of eukaryotic cells (plants and animals) and prokaryotic cells are related to their functions to include nucleus, genetic material, chromosomes, plasmids, mitochondria (contain enzymes for cellular respiration), chloroplasts (contain chlorophyll) and cell membranes (contain receptor molecules, provides a selective barrier to molecules) | B1.1.1a | explain how the nucleus and genetic material of eukaryotic cells (plants and animals) and the genetic material, including plasmids, of prokaryotic cells are related to cell functions |
| ELB1e | Know that cells get substances in by diffusion, and active transport [No knowledge of the process is required]. | B2.1a | explain how substances are transported into and out of cells through diffusion, osmosis and active transport to include examples of substances moved, direction of movement, concentration gradients and use of the term water potential (no mathematical use of water potential required) | B3.2.2a | explain how substances are transported into and out of cells through diffusion, osmosis and active transport |
| ELB1f | Know that new cells are made when cells divide. | B2.1b | describe the process of mitosis in growth, including the cell cycle to include the stages of the cell cycle as DNA replication, movement of chromosomes, followed by the growth of the cell | B4.3.1 | a) describe the role of the cell cycle in growth, including interphase and mitosis b) describe how to use a light microscope to observe stages of mitosis *Learners are not expected to recall intermediate phases* |
| ELB1g | Know that new body cells are needed for growth and repair. | B2.1b | describe the process of mitosis in growth, including the cell cycle to include the stages of the cell cycle as DNA replication, movement of chromosomes, followed by the growth of the cell |  |  |
| ELB1h | Know that cancer can be caused when cell division is out of control. | B6.3o | describe cancer as the result of changes in cells that lead to uncontrolled growth and division | B4.3.2 | describe cancer as the result of changes in cells that lead to uncontrolled growth and division |
| ELB1i | Know that bigger organisms have cells that are adapted for different roles to include nerve cells/root hair cells/red blood cells. | B2.1c | explain the importance of cell differentiation to include the production of specialised cells allowing organisms to become more efficient and examples of specialised cells | B4.3.5 | explain the importance of cell differentiation, in which cells become specialised by switching genes off and on to form tissues with particular functions |
| ELB1j | Know that stem cells are cells that can change into other cells. | B2.1d | recall that stem cells are present in embryonic and adult animals and meristems in plants | B4.3.4 | describe the function of stem cells in embryonic and adult animals and meristems in plants |
| ELB1k | know that stem cells can be used in medicine to repair the body. | B6.3p | discuss potential benefits and risks associated with the use of stem cells in medicine to include tissue transplantation and rejection | B4.4.1 | discuss potential benefits, risks and ethical issues associated with the use of stem cells in medicine |

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