

2.1.6 Cell division, cell diversity and cellular organisation

- (a) the cell cycle
- To include the processes taking place during interphase (G₁, S and G₂), mitosis and cytokinesis, leading to genetically identical cells.
- HSW8
- (b) how the cell cycle is regulated
- To include an outline of the use of checkpoints to control the cycle.
- (c) the main stages of mitosis
- To include the changes in the nuclear envelope, chromosomes, chromatids, centromere, centrioles, spindle fibres and cell membrane.
- HSW8
- (d) sections of plant tissue showing the cell cycle and stages of mitosis
- To include the examination of stained sections and squashes of plant tissue and the production of labelled diagrams to show the stages observed. **PAG1**
- (e) the significance of mitosis in life cycles
- To include growth, tissue repair and asexual reproduction in plants, animals and fungi.
- HSW2
- (f) the significance of meiosis in life cycles
- To include the production of haploid cells and genetic variation by independent assortment and crossing over.
- HSW2, HSW5
- (g) the main stages of meiosis
- To include interphase, prophase 1, metaphase 1, anaphase 1, telophase 1, prophase 2, metaphase 2, anaphase 2, telophase 2 (no details of the names of the stages within prophase 1 are required) and the term *homologous chromosomes*. **PAG1**
- HSW8
- (h) how cells of multicellular organisms are specialised for particular functions
- To include erythrocytes, neutrophils, squamous and ciliated epithelial cells, sperm cells, palisade cells, root hair cells and guard cells. **PAG1**
- (i) the organisation of cells into tissues, organs and organ systems
- To include squamous and ciliated epithelia, cartilage, muscle, xylem and phloem as examples of tissues.
- (j) the features and differentiation of stem cells
- To include stem cells as a renewing source of undifferentiated cells.
- (k) the production of erythrocytes and neutrophils derived from stem cells in bone marrow

2.1.6 Cell division, cell diversity and cellular organisation

- (l)** the production of xylem vessels and phloem sieve tubes from meristems

- (m)** the potential uses of stem cells in research and medicine.

To include the repair of damaged tissues, the treatment of neurological conditions such as Alzheimer's and Parkinson's, and research into developmental biology.

HSW2, HSW5, HSW6, HSW7, HSW9, HSW10, HSW11, HSW12