



Year: 11

Topic 4.2 CELL DIVISION AND STEM CELLS

Knowledge and Understanding to be developed

Cells need to divide to grow and also to provide cells for sexual reproduction. This topic covers the processes by which these occur. There is also consideration of how uncontrolled mitosis can result in cancer. The use of stem cells in replacing damaged tissue is also discussed.

There are opportunities within this topic to explain technological applications of science in the use of stem cells. This can also be used to consider the ethical issues arising from the use of embryos in obtaining stem cells.

Key Terms to be learned this topic:

Chromosomes genes mitosis

Meiosis stem cells embryonic

**Learning Objectives and Outcomes:
Students should be able to :**

- (a) chromosomes as linear arrangements of genes, found in pairs in body cells
- (b) the functions of cell division by mitosis and meiosis
- (c) the outcomes of mitotic and meiotic divisions and be able to compare these
- (d) the fact that if mitosis is uncontrolled, cancer can occur
- (e) stem cells: the cells in mature tissues have generally lost the ability to differentiate; some cells, in both plants and animals, do not lose this ability and these are called stem cells
- (f) the potential of both adult and embryonic stem cells to replace damaged tissue