

WJEC Wales Biology GCSE

2.2 (e) to (f) - Stem Cells

Flashcards

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What are stem cells?



What are stem cells?

Cells that are unspecialised and capable of differentiating into a range of different cell types



What is meant by 'differentiation'?



What is meant by 'differentiation'?

- The process by which stem cells become specialised (have a specific function)
- Some genes switch on or off, determining cell type



Why is cell differentiation important?



Why is cell differentiation important?

Enables the formation of specialised tissues with specific functions e.g.
muscle tissue



What are embryonic stem cells?



What are embryonic stem cells?

Stem cells found in very early embryos that are unspecialised and capable of differentiating into any cell type



What is the function of embryonic stem cells?



What is the function of embryonic stem cells?

Enable the growth and development of tissues in human embryos



Where can embryonic stem cells be collected from?



Where can embryonic stem cells be collected from?

- Donor stem cells removed from embryos grown in vitro
- Patient's own stem cells removed from the umbilical blood before birth



What are adult stem cells?



What are adult stem cells?

Stem cells that can differentiate into a limited range of cell types e.g. bone marrow stem cells



What is the primary function of adult stem cells?



What is the primary function of adult stem cells?

Replacement of dead cells e.g.
replacement of red blood cells which
only live for 120 days



Describe the potential uses of stem cells
in medicine



Describe the potential uses of stem cells in medicine

- Treat disease e.g. heart disease, type 1 diabetes
- Used to repair damaged tissue e.g. brain damage
- Used in scientific research
- Growing organs for transplants



What are the ethical issues related to the use of stem cells in medicine?



What are the ethical issues related to the use of stem cells in medicine?

- The embryos used to provide stem cells are destroyed which is seen as unethical and a waste of potential human life
- Could lead to the 'farming' of embryos for stem cells
- May lead to the reproductive cloning of humans



Where are stem cells found in plants?



Where are stem cells found in plants?

Meristems



Where is meristem tissue found?



Where is meristem tissue found?

In regions of the plant where cells are continuously dividing e.g. root tips, shoot tips

