

Exam questions: Stem cells

1. Read the information about stem cells.

Stem cells are used to treat some human diseases.

Stem cells can be collected from early embryos. These stem cells have not begun to differentiate, so they could be used to produce any kind of cell, tissue or organ. The use of embryonic stem cells to treat human diseases is new and, for some diseases, trials on patients are happening now.

Stem cells can also be collected from adult bone marrow. The operation is simple but may be painful. Stem cells in bone marrow mainly differentiate to form blood cells. These stem cells have been used successfully for many years to treat some kinds of blood disease. Recently there have been trials of other types of stem cell from bone marrow. These stem cells are used to treat diseases such as heart disease.

Evaluate the use of stem cells from embryos or from adult bone marrow for treating human diseases.

You should give a conclusion to your evaluation.

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**(5)**

(Total 5 marks)

2. Stem cells from human embryos are used to treat some diseases in humans.

Explain why.

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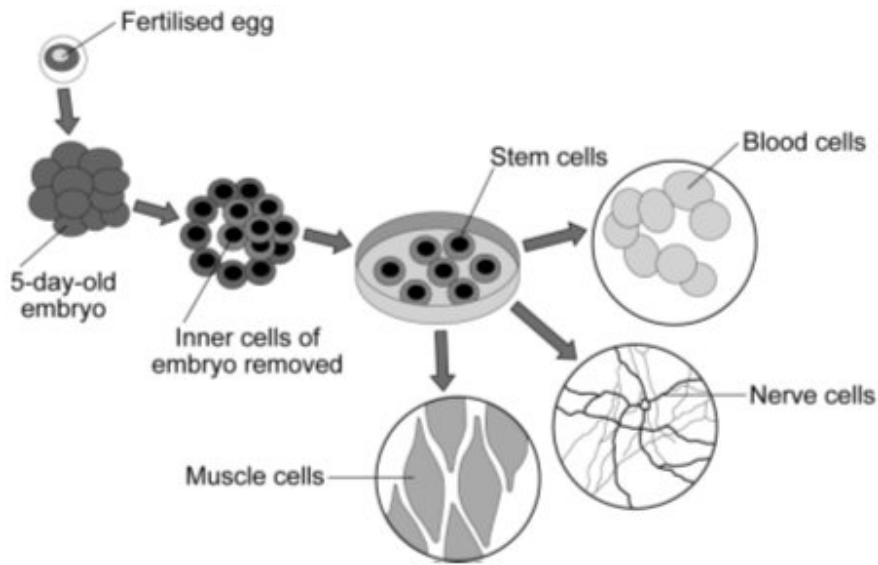
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(2)

3. The diagram shows one way that stem cells can be produced from human embryos.



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(a) Stem cells can be used to treat a condition such as paralysis.

Explain why.

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(2)

(b) During pregnancy, an umbilical cord and a placenta join the embryo to the mother. At birth the umbilical cord is cut.

Stem cells can be obtained from the umbilical cord.

Many people think that the stem cells for treating human conditions should be obtained from umbilical cords rather than human embryos.

Suggest **one** reason why.

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