

AQA Biology

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B2.4

The future of stem cell research

Specification references

- B1.2.3 Stem cells

Aims

Stem cell research has many benefits but it is controversial. This exercise will develop students' abilities to examine the pros and cons of stem cell research and using stem cells. Based on the information they research, students then answer the questions that follow, forming and expressing their own opinions.

Learning outcomes

After completing this worksheet, students should be able to:

- describe some benefits and drawbacks of therapeutic cloning
- identify practical risks and benefits of stem cell research
- recognise ethical and religious concerns.

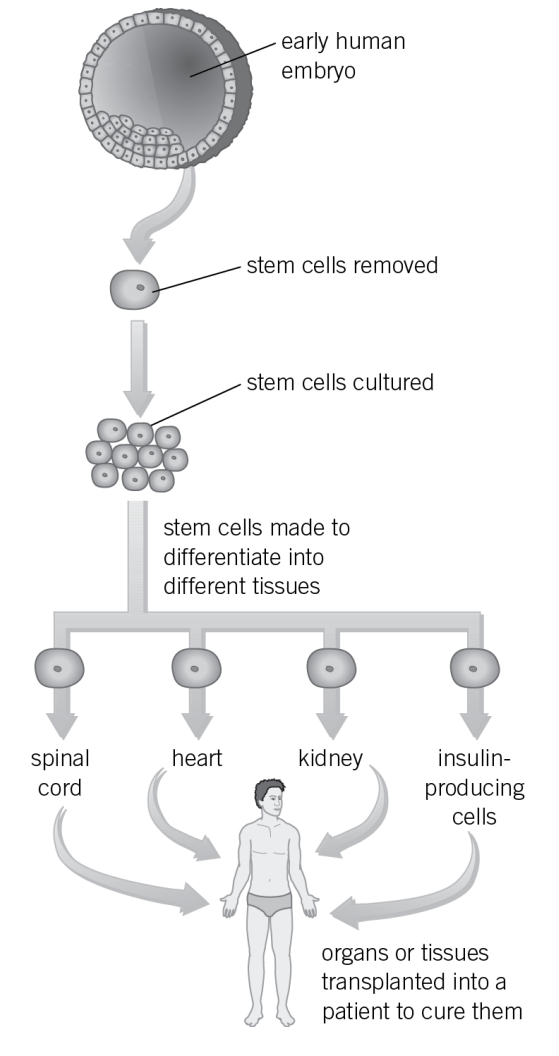
Teaching notes

First ensure that students have read B2.3 *Stem cells* and B2.4 *Stem cell dilemmas* in the student book. A class discussion prior to the exercise will be useful. They can use the information they find in the text plus any independent research to fill in the boxes.

Answers to questions

1

Process of therapeutic cloning



Features of stem cell

- 1 Undifferentiated
- 2 Fast reproduction rate

Potential sources of stem cells

- 1 Aborted embryos
- 2 Spare embryos from IVF
- 3 Bone marrow
- 4 Umbilical cords
- 5 Amniotic fluid
- 6 Cloned adult cells

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Procedural problems

- 1 Progress is slow
- 2 Process is difficult
- 3 Incomplete knowledge and understanding
- 4 Hard to control (legislative problems)

Dangers to patient of using stem cells

- 1 Viruses
- 2 Cancer
- 3 Immune response

Ethical and religious financial objections

- 1 Wrong to use one human for the benefit of another
- 2 Embryos unable to give assent (human rights)
- 3 Interference with human reproduction
- 4 Issue of at what age a human is an individual

Financial objections

- 1 Process is expensive
- 2 Money better spent elsewhere

3

My opinion (6 marks)

Level 3 (5–6 marks): Well developed description of students' opinion, justified with information gathered in the main task. Conclusions from evidence are relevant and detailed.

Level 2 (3–4 marks): A brief but clear description of students' opinion with evidence gathered in the main task used to support the conclusion.

Level 1 (1–2 marks): Simple description of concluding opinion. Little attempt at justifying conclusion with information gathered. Conclusions drawn may be confused but there is some relevance.