

Bioethical Activity

The Decision

A discussion activity for Advanced Higher Biology students on the ethics of stem cell therapy

Bioethical Activity

Acknowledgements

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Teachers Notes

Overview

In this activity a situation is set up whereby an ethical review committee (ERC) have been called in to decide whether a young man, Russell Sherman, should be allowed to take part in a Stem Cell therapy trial. Students are given roles either as members of the ERC or as people called to give evidence to the ERC. The dilemma is outlined in the 'The Scene' sheet. Students are divided into groups and each group takes on one of the roles. Groups are given preparation and discussion time before the ERC questioning time. During the question time each of the 'witnesses' (students may want to come up in pairs rather than facing the hot seat alone) are questioned and must make the best argument they can to support the opinion they have been given.

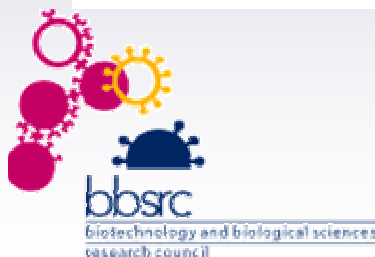
After the questioning has taken place the ERC must decide whether or not they are going to allow the trial to go ahead. Following this All of the students **regardless of which group they were in** are invited to make their own decision as to whether they believe the trial should be allowed or not. The activity is finished off by an announcement of the whole class verdict and a final discussion time. The activity timeline is shown on a separate page.

Aim of Activity

The activity is designed to help students explore some of the legal, moral and ethical implications of stem cell therapy.

Preparation

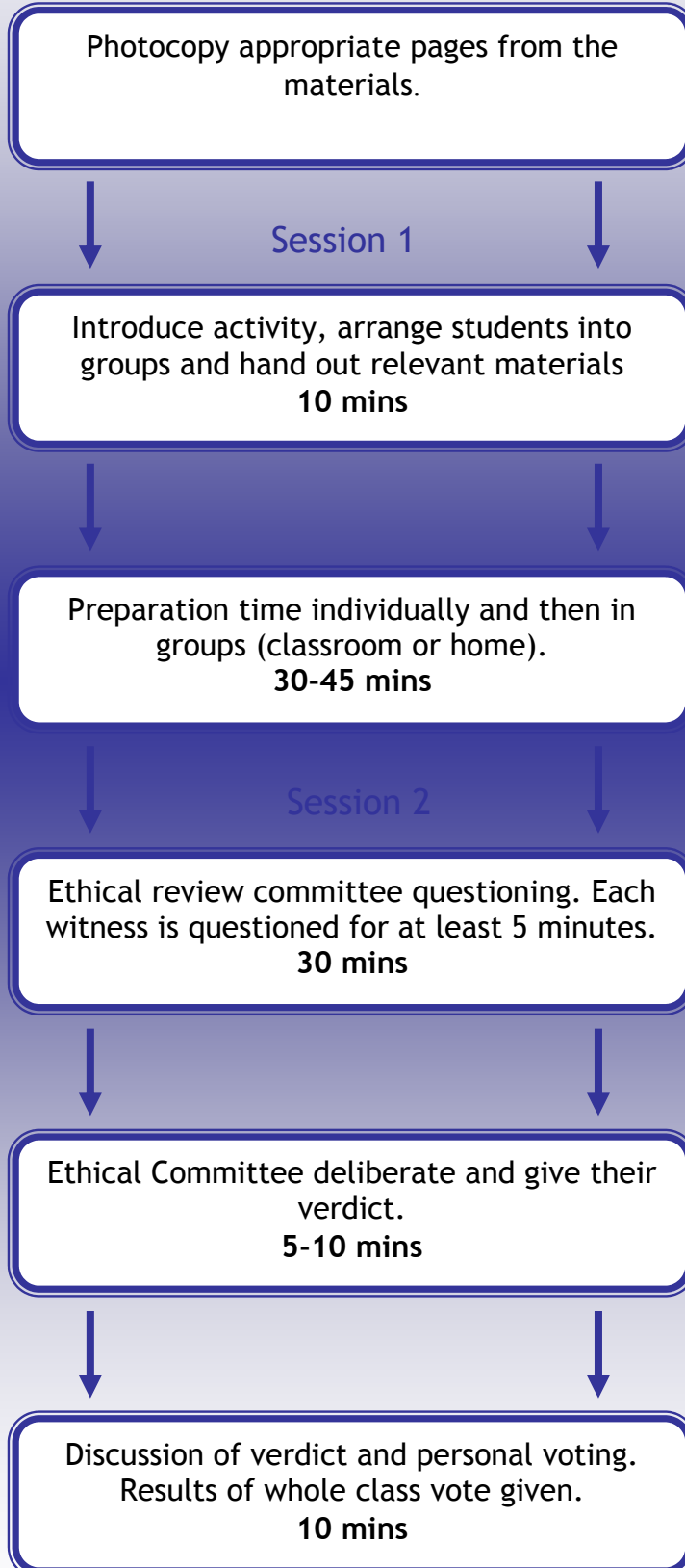
The appropriate pages from this resource will need to be photocopied in advance of the activity.



Teachers Notes

Activity Timeline

The activity can be conducted in two sessions. Part of the preparation can be carried out as homework but groups will need sometime together to discuss their viewpoint.



The Scene

Stem Cells Ethical Activity - The Decision

The Scene

Russell Sherman (now 27yrs old) was badly injured in a car accident 5 years ago. He suffered extensive damage to his spinal cord and is now paralysed from the neck down, except for his left arm which has retained some movement. He cannot walk. He cannot breathe without help. He cannot feed himself. He has been told that with current medical assistance these things will never change. Russell has been approached by a company (StemGen) which is conducting research into therapeutic cloning. StemGen state that they have used therapeutic cloning to reverse paralysis in sheep. They now wish to trial their technique in humans. The trial involves the use of Embryonic Stem cells (rather than adult stem cells). The nucleus from a cell from Russell will be injected into an egg. An embryo is allowed to develop and totipotent cells will be collected from the embryo. These cells (which are genetically identical to Russell) will be differentiated into nerve cells which will then be transplanted into Russell.

Russell has agreed to take part in the trial, however as this is the first trial of its kind in the UK, the Government has requested that it undergo review by an ethical committee. The committee will question the main parties involved and selected experts. They will then decide whether or not to allow StemGen to go ahead with the trial.

You will be divided into six groups:

Group 1 - Ethical Review Committee

Group 2 - Russell Sherman

Group 3 - The company StemGen

Group 4 - A Pro-Life Group

Group 5 - A Medical Geneticist

Group 6 - A parent of Russell Sherman's.

Each group will have some time to think about their viewpoint and find some information which will support their viewpoint. A representative (or representatives) from each group will be called forward for questioning by the Ethical Review Committee.

Ethical Review Committee

Ethical Review Committee

You have to read the general information on therapeutic cloning. You must then think up two questions to ask each of the people giving evidence.

During the questioning stage you will ask these questions to each of the groups. You are allowed to probe each witness a bit further if you are not satisfied with their answer. Once the questioning time is over, you have 3 minutes to decide whether the trial should go ahead or not. Be prepared to give a few reasons for your recommendation.

As a government appointed committee you must think about the future implications of your decision. Once this has been done once it will be hard to stop any future trials. What restrictions are you going to put on this kind of research? However, if the trial is successful you must think about all the future generations of people who might be helped. Also StemGen is a profit-making organisation, what will they do if the trial is successful? Will Britain see the good of this research or will they patent the procedure and make it very expensive? What are the risks of this procedure?

WHAT NOW? Read over some of the background materials (or search the internet) and decide on the questions you wish to ask each person.

Russell Sherman

Russell Sherman

Your group is taking the viewpoint of Russell, he wants the trial to go ahead despite the risks. He wants to get out of his wheelchair and has pledged to himself that he will walk again before he is 30 yrs old. He is very emotionally involved with this and might not be thinking clearly. However Russell knows that he must show the review committee that he understands what the therapy involves.

WHAT NOW? Discuss this viewpoint and conduct some research, using the resources provided or the internet, to support this viewpoint. You may want to take some notes. Elect a spokes person(s) who will be questioned by the Ethical Review Committee.

StemGen

StemGen

Your group is taking the viewpoint of StemGen, you obviously want the trial to go ahead. Russell is an ideal candidate, he is young and strong and importantly is desperate to go ahead with the trial. You have been working towards this trial for 15 yrs. The recent success of using therapeutic cloning to cure paralysis in sheep means that you can now consider conducting a human trial.

As a member of the research team, you know that the procedure is not without risks, Russell could lose the use of his left hand and there is the risk of cancer (57% of the animals from the sheep trial developed cancer). You have learnt from the sheep trial and believe that the benefits outweigh the risks. If the trial is successful your company will patent the procedure, you will become very rich. You know that the company is in negotiations to merge with a huge American medical research company. If the trial is successful then StemGen will most likely move to America and continue its work from there. You are, after all, a company, you must make money to survive. Making money from something does not wipe out the benefits that this kind of therapy will have for thousands of people.

WHAT NOW? Discuss this viewpoint and conduct some research, using the resources provided or the internet, to support this viewpoint. You may want to take some notes. Elect a spokes person(s) who will be questioned by the Ethical Review Committee.

Pro-life Group

A Pro-life group

Your group is taking the viewpoint of a pro-life group. You are not a fantastical, bomb planting group, just a group of determined citizens. You are opposed to the Human Fertilisation and Embryology Act 1990 because it allows the creation, manipulation and destruction of early human life. You believe life begins at conception and that we as a society have a responsibility to protect that life. You are completely opposed to using human embryos in research regardless of the medical benefits which could be gained from that research. Furthermore, you believe that the use of Embryonic Stem cells carries serious and unpredictable risks, such as cancer.

The techniques used in StemGens therapy trial will create an embryo asexually. If this practice becomes common place what affect will it have on our society and the relationships we form? Therapeutic cloning and reproductive cloning both use the process. How can we ensure that this technique will not be used to clone humans? Why not focus our efforts on adult stem cell research?

WHAT NOW? Discuss this viewpoint and conduct some research, using the resources provided or the internet, to support this viewpoint. You may want to take some notes. Elect a spokes person(s) who will be questioned by the Ethical Review Committee.

Medical Geneticist

A Medical Geneticist

Your group must take on the viewpoint of a medical geneticist who is wholly in favour of the trial. You believe that research into therapeutic cloning could result in cures for many serious diseases. These diseases include Parkinson's disease, strokes, heart attacks, diabetes, osteoarthritis, cancer (e.g. leukaemia), severe burns and muscular dystrophies. It is wrong to allow suffering to continue when we could do something about it.

Whilst you know that adult stem cells could be used for some research and medical purposes, embryonic stem cells offer much more opportunities. This is because adult stem cells are multipotent but not pluripotent or totipotent, that is they can produce only limited cell types. It will be many years before scientists are able to manipulate adult stem cells such that they behave like embryonic stem cells, although you do believe that this will eventually be a possibility. Until this time embryonic stem cells are our only chance.

Therapeutic cloning does involve nuclear transfer, however there is no possibility of the techniques being used for reproductive cloning as this is illegal. Using nuclear transfer is an important part of the process as it means that the patient will not reject the transplant.

WHAT NOW? Discuss this viewpoint and conduct some research, using the resources provided or the internet, to support this viewpoint. You may want to take some notes. Elect a spokesperson(s) who will be questioned by the Ethical Review Committee.

Parent

A parent of Russell Sherman

Your group must take on the viewpoint of a parent of Russell who is against this trial. You love your son dearly and are afraid that this trial will do more damage than good. You feel that Russell will have a good life without this therapy and you are quite happy to continue caring for him 24hrs a day. You do not understand all of the science but you are worried that the risks are too great.

WHAT NOW? Discuss this viewpoint and conduct some research, using the resources provided or the internet, to support this viewpoint. You may want to take some notes. Elect a spokes person(s) who will be questioned by the Ethical Review Committee.

Voting Slip

The trial should be allowed to go ahead.

Agree

Disagree

Don't know

Give reasons for your answer.

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Voting Slip

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Disagree

Don't know

Give reasons for your answer.

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Information Sources

Information Sources

'Stem Cells - Science and Ethics'. A booklet produced by the Scottish Institute for Biotechnology Education. Email sibe@ed.ac.uk to obtain a copy of this booklet.

Web Links - If no specific page is given then you are expected to do a search on the site for 'Stem Cells; to find information.

Institute for Stem Cell Research

www.iscr.ed.ac.uk/stemcells.html

Science Technology and Religion Project

<http://www.srtp.org.uk/>

Biotechnology and Biological Sciences Research Council (BBSRC)

<http://www.bbsrc.ac.uk/society/Welcome.html>

University of Wisconsin-Madison, US

www.news.wisc.edu/packages/stemcells

Institute of Biology

www.iob.org

The Human Fertilisation and Embryology Authority

<http://www.hfea.gov.uk/Home>

Nuffield Council on Bioethics

www.nuffieldbioethics.org

Progress Educational Trust (PET)

www.progress.org.uk

The Wellcome Trust

www.wellcome.ac.uk

New Scientist sites

www.newscientist.com

National Institute of Health sites

<http://stemcells.nih.gov/>

Stem Cells: Scientific Progress and Future Research Directions

<http://stemcells.nih.gov/info/scireport>

Information

Appendix 1: The Law in Britain (www.iscr.ed.ac.uk/stemcells.html)

The Human Fertilisation and Embryology Act 1990, which was amended by both Houses of Parliament in 2001, strictly regulates the isolation of stem cells from human blastocysts.

The use of embryos in stem cell research can only be carried out with authority from the Human Embryo and fertilisation Authority (HFEA). Licences are only granted if the Authority is satisfied that any proposed use of embryos is necessary for the purposes of the research.

Licensed research can only take place on embryos created in vitro. That is, embryos which have developed from eggs fertilised outside the body. Most embryos used in stem cell research are embryos that were initially created for the use in IVF treatment, but not used. These “surplus” IVF embryos can only be used for research if they are donated with full consent of the parents.

In vitro embryos also include those created by cell nuclear transfer (the cloning technique used to produce Dolly the sheep).

Licensed research can only take place on embryos up to 14 days (or before the ‘primitive streak’ has developed). Stem cells are isolated from the blastocyst, an early stage embryo that is 5-6 days old. The blastocyst cannot develop into a fetus unless it is implanted into a woman.