



The General Assembly of the Church of Scotland in 2006 resolved to “oppose the creation for research or therapy of parthenogenetic human embryos, animal-human hybrid or chimeric embryos, or human embryos that have been deliberately made non-viable”.

### Cloning Embryos for Research

The primary use of cloned human embryos is unlikely to be for routine therapeutic use to treat degenerative disease. The main uses might be in research, for example to make disease state cells, to study motor neuron disease or diabetes. Cloned embryos would be created from a patient’s cells, and stem cells taken from them to generate a continuous supply of the diseased cells. Would this be justified?

A House of Lords select committee concluded that cloned embryos "should not be created for research purposes unless there is a demonstrable and exceptional need which cannot be met by the use of surplus embryos." Speculative research is not enough justification. Are these exceptional cases? It is generally difficult to keep disease cells alive which are taken directly from patients, and some processes of extraction of cells are extremely difficult. Some researchers would claim that embryonic stem cell cloning techniques would overcome such problems. These claims require a careful medical evaluation of the realistic expectations by comparison with other options, such as induced pluripotent (IP) stem cells or umbilical cord blood cells. We would urge that care should be taken in any decisions which result in making cloned human embryos.

Credits. Thanks are due to the following artists for their artwork facilitated under Creative Commons. Human Human embryo1 =Yorges Nikos. Wellcome images. Human embryo=Euthman. Human egg=Remolacha.net.fotos. Stem cell=Katjaja.

### The Society, Religion and Technology Project



The Society, Religion and Technology Project, (SRTP ) was set up by the Church of Scotland in 1970 to examine vital issues in the intersection between science, technology and religion. Its multidisciplinary working groups provide a forum for interaction between scientists and specialists in ethics, theology, sociology and other fields to look at the wider dimensions of emerging technologies.

### 40th Anniversary in 2010

A series of events are planned to celebrate the 40th anniversary of the project. If you want to be updated please email [srtp@cofscotland.org.uk](mailto:srtp@cofscotland.org.uk)

### The Church and Society Council

The Church and Society Council’s remit is to continue the tradition of engaging on behalf of the Church, in the national, political and social issues affecting Scotland and the world today – from asylum seekers to ecological concerns. We can provide speakers on many current topics for your congregation. To receive our monthly e-newsletter please email

[churchandsociety@cofscotland.org.uk](mailto:churchandsociety@cofscotland.org.uk)

Our website is available at [www.churchofscotland.org](http://www.churchofscotland.org).

Themed Blogs are available at [www.endoflifeissuesdebate.blogspot.com](http://www.endoflifeissuesdebate.blogspot.com)  
[www.ecocongregationscotland.blogspot.com](http://www.ecocongregationscotland.blogspot.com)  
[www.addictedlifestyles.blogspot.com](http://www.addictedlifestyles.blogspot.com)

SRTP  
40th Anniversary 2010



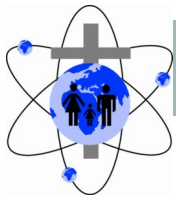
## Ethical Issues in Cloned Embryo Research



Society, Religion and Technology Project  
[www.srtp.org.uk](http://www.srtp.org.uk)

Church and Society Council  
121 George Street, Edinburgh EH2 4YN  
Telephone: 0131 225 5722  
Email: [srtp@cofscotland.org.uk](mailto:srtp@cofscotland.org.uk)

Leaflets can be downloaded from [www.churchofscotland.org.uk](http://www.churchofscotland.org.uk) or requested by phone



The creation of the first cloned human embryos was announced by Korean scientists in early 2004- though these claims were later shown to be false. Research using cloned human embryos is formally legal in the UK but remains ethically controversial. The European Commission's ethical advisory group considered it premature and the European Parliament has voted against it. The Society, Religion and Technology (SRT) Project has been at the forefront of ethical debates on cloning since 1996, because of its long standing engagement with researchers in the field. This information sheet evaluates some of the issues.

## Use of embryos

There are 2 main experimental uses of cloned embryos: therapeutic or reproductive.



'Therapeutic' cloning refers to the generation of early embryos with the intention that these should not develop beyond 14 days in order to use them for stem cell research.

These cloned embryos are created from a patient's own body cells and could then be a source of stem cells to make genetically matched replacement cells therefore avoiding the possibility of rejection. Research proposals involving therapeutic cloning cite as part of their justification that they could eventually lead to treatments for degenerative diseases.

However, cloning techniques could equally be applied to 'reproductive' human cloning, which is intended to result in the birth of a baby. This is illegal in the UK. The Church of Scotland was

among the first to call for a ban on human reproductive cloning in May 1997 and continues to do so.

## Problems with 'Therapeutic' Cloning

Substantial doubts have, however, been raised by leading UK scientists about the expense and practicability of applying therapeutic cloning in routine clinical practice. If the method were to benefit a wide range of diseases it would require large numbers of donated human eggs in order to create hundreds of cloned embryos. The donation of intimate tissues by an invasive, painful and sometimes dangerous procedure on such a scale is without precedent. It also raises concerns about the pressures that might be put on women to donate eggs. Therapeutic cloning on such scale seems impractical for routine use.

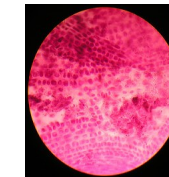
On the other hand if therapeutic cloning is done in a reduced scale the knowledge derived would benefit only those rich enough to afford it. The case for cloned embryo research for therapy is thus dubious, compared with using stem cells from more readily available spare IVF embryo which may otherwise be destroyed.

## Cloning using Cow Eggs and Human Cells

Due to the practical difficulties of obtaining suitable human eggs, it has been proposed that an alternative source of embryonic cells should be cytoplasmic hybrids, also known as cybrids. This technique, carried out at the University of Newcastle, involves making cloned



embryos using material from human cells and eggs from cows -or other mammals. This practice also raises ethical problems. The Chief Medical Officer's committee on human embryo stem cell research recommended in 2000 that *"the mixing of human adult somatic cells with the live eggs of any animal species should not be permitted."* This view had previously been endorsed by the UK Government. However, following intense pressure from some members of the scientific community, the position of the government was reversed. The Human Fertilisation and Embryology Act 2008 allows for the creation of human - animal cybrids.



## Parthenogenetic Embryos

Another suggested alternative is the creation of parthenogenetic human embryos as sources of stem cells. This involves chemically inducing an unfertilised human egg cell to divide as if it were an embryo. Some argue that this would overcome the ethical problems with stem cells derived from normal human embryos, because these parthenogenetic embryos would not be able to produce viable human offspring.

Others see this as a very dubious argument. Many would hold strong objections to the use of a method which deliberately created human embryos which are so highly defective that they would not be viable. It could also be argued that the creation of inherently unstable and defective embryos is inconsistent with the concept that the embryo has a 'special status', upon which the Human Fertilisation and Embryology Act was based.