

it could never be ethically justified to experiment on creating a human clone, due to the unquantifiable risk of serious harm in those first attempts. One cannot 'put down' a deformed cloned baby the way one might a suffering lamb.

What about Cloned Human Embryos for Research?

But if reproductive cloning of people is wrong, what about medical applications – so called 'therapeutic cloning'? The huge numbers of human eggs needed to extract stem cells from cloned embryos to produce genetically matched replacement cells for degenerative diseases ('therapeutic cloning') means that it is unlikely to be useful in routine therapy. Some forms of cloning in research could help throw light on cell and embryo behaviour; fertility and mitochondrial disease. Cloned embryos might be used in research to create stable lines of disease state cells to research motor neurone disease. For some, all embryo research is unethical. But even for those not opposed to using IVF embryos, applications which use cloned embryos raise serious ethical questions. We explore these further in our leaflet 'Embryonic and Adult Stem Cells: Ethical Dilemmas'.

Conclusions

The increase of scientific possibilities underlines the urgent need to have an enforceable UN ban on reproductive human cloning, for which the Church of Scotland General Assembly called in 1997. Without this in place, the use of cloned embryos for research risks leaving the door open to maverick scientists to abuse the technology for their own ends.

Questions

- Should a body such as the UN push for an international ban on human cloning?
- Should a distinction be made between 'therapeutic' cloning (where the embryo is only allowed to develop for a few days) and 'reproductive' cloning (where the intention is that a fully formed baby is produced)?
- Would human cloning always be wrong? Could there ever be a reason to allow people to be cloned?
- Is cloning people any different from cloning animals such as cows or dogs?
- 'We are all unique in God's eyes'; 'People are more than simply their genes'. We know from work with animals that clones often have different temperaments or 'personalities', so would a clone really be just a 'carbon copy' of their 'parent'?

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Human Cloning: Ethical Issues



Discussion Points



'The LORD ... [said] ... Before I formed you in the womb I knew you, before you were born I set you apart.' Jeremiah 1:4-5



Human Cloning: Ethical Issues

In 1997 Dolly the cloned sheep caught the world's imagination and caused a media sensation. Despite hoaxes and speculations, no one has yet cloned a human being.

Aside from the hype, what are the real issues? Why would it be wrong to clone human beings?

What's the Church Doing Here?

In the mid-1990s, the Church of Scotland's Society, Religion and Technology Project (SRT) ran an expert working group to examine the ethics of genetic modification and cloning in animals and plants. Leading scientists discussed issues with specialists in ethics, theology, sociology and risk. These included Professor Ian Wilmut, who led the Roslin team that created Dolly the cloned sheep. So when Dolly hit the headlines in February 1997, SRT was immediately in a position to offer a balanced and informed view on an issue which reverberated round the world. In May 1997 the Church of Scotland General Assembly was one of the first organisations in the world to give a formal view on human and animal cloning, later quoted by UNESCO. Ever since, the SRT Project has been engaged in UK and international ethical discussions about cloning and the related issues of embryonic stem cells. To help shed light on these confusing and often misrepresented matters, we have produced information sheets on human cloning, animal cloning, cloned embryos, and embryonic stem cells.

What is Cloning?

The word 'clone' comes from a Greek word for taking a cutting from a plant. To clone is simply to make an exact genetic copy of an existing organism. It happens naturally in many plants

(if you bury a potato it makes clones of itself), and even in a few animals. But it does not normally happen in mammals and humans, except for 'identical' twins (which, as we shall see, is very different from cloning when it comes to the ethical aspects). Dolly was a biological revolution – a sheep created by taking cells from the udder of a ewe and reprogramming them to generate a new embryo, which was implanted in another ewe. It had been thought impossible to grow a mammal from body tissue. But if this 'nuclear transfer' cloning was possible in sheep (and now in many other animals), could it be done in humans? And if it could be, should it be?

What are the ethical objections to cloning human beings?

The overwhelming reaction from most people was that it should not be done, but many feared that someone might try. Statements opposing cloning human beings have issued from numerous national and international organisations, including the UN, the Council of Europe, the European Parliament, the European Commission's ethical advisors, the UK Human Fertilisation and Embryology Authority, many professional medical bodies, and also the scientists at Roslin who cloned Dolly. The UK and many other Governments have now banned reproductive cloning. But what exactly is wrong with human cloning? It is not enough to say that it is unnatural; much medical treatment is also unnatural. The key question is should we respect a biological distinction or celebrate our God-given capacity to override it? Four basic reasons have emerged: control, instrumental use of other humans, risk and relationships.

Control and Instrumentality

In one sense, cloning runs counter to the evolutionary need to maintain a level of genetic diversity, and to the variety God has created in nature. But we don't regard 'identical' twins as any less human for being genetically the same. We often say how different each is, because humans are far more than just genes. But the mere existence of such twins does not justify the practice of cloning. Ethically, twinning and cloning are very different. When an embryo splits spontaneously to make two genetically identical twin babies, their genetic composition is new, never existing before. It is random,

uncontrolled. Cloning would select the genetic composition of an existing person and try and make another individual with the same genes. It is an intentional, controlled act to produce a specific, known end. Not only is the clone born with someone else's genes, but a third party has predetermined what his or her genetic make up shall be. This control is an inevitable result of cloning. The most basic ethical case against human cloning is that no human being should have their complete genetic make up pre-determined by another human. Of course, parents influence their children in numerous ways socially, and children can accept or reject these influences, but they cannot change their genes. And in most speculated uses of cloning, the clone would not be created for its own benefit but for another's. This is too instrumental: humans are more than means to someone else's ends.

Risk and Relationships

To clone one member of a couple to solve infertility would not only be instrumental, but would also raise other profound problems. No one knows the psychological effects of discovering one was the twin of one of one's 'parents', biologically the child of one's grandparents. Would I feel I'm not really me but a 'copy' of someone else? What would be my relationship to them? Since we have no sure way of knowing in advance, we surely do not have the right knowingly to inflict that risk on another person.

Lastly there is the physical risk, in the light of the animal cloning experience. Major pregnancy difficulties are often a feature of cloning in sheep and cattle. Cloned mice have been found to die younger. Much of the basic science of nuclear transfer is still uncertain. No one knows how to guarantee that the cell reprogramming process would not lead to serious abnormalities in the offspring or danger to the mother. To translate such risks into humans would be utterly unethical medically. In each different species, cloning is a first of a kind. No matter what advances were made in animal cloning,