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Problems with New Human Cloning Proposals

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Hard on the heels of the news that South Korean scientists have produced cloned human embryos (see SRT Comment), Roslin scientist Ian Wilmut proposes, in an article in the New Scientist, the production not only of cloned embryos for various types of research, but also of cloned babies under some circumstances. He declares that he is still implacably opposed to reproductive human cloning, in the sense of producing a new individual who is the genetic copy of a person who already exists, but describes future circumstances under which he would advocate using the technology of cloning to produce babies without genetic disease.

Dr Donald Bruce, Director of Society Religion and Technology Project of the Church of Scotland, who has been in the forefront of ethical evaluation of cloning since 1996, says "It is already highly controversial to advocate the use of cloned human embryos in research, but I am concerned that this new suggestion causes at least as many ethical problems as it might seem to solve. It needs to be thought through more carefully in ethical terms. It would be illegal in many countries, including the UK, and runs contrary to worldwide opinion."

Cloned Babies to Avoid Inherited Diseases

Professor Wilmut proposes a rather complex procedure. Suppose a couple are carriers of a serious genetic disease which they do not wish to pass on to their children. They pursue Pre-Implantation Genetic Diagnosis (PGD), but fail to produce an embryo which is free of the disease gene. He proposes that they might take stem cells from one of the 'faulty' IVF embryos, have the gene 'corrected' in these cells, then create a cloned baby from the genetically corrected cells. Strictly speaking this is not a cloned baby in the way the term is normally used - of being a genetic copy of an existing adult or child. It would be a clone of a (modified) embryo created by its parents' IVF procedure, with its own unique set of genes. Whilst it would overcome our objection to creating a baby who will have been given someone else's genes by a third party, it would not overcome the less specific concerns of others that cloning was incompatible with human dignity.

It would run other very substantial ethical problems. The main justification Ian gives is that the couple could thereby avoid a second round of invasive IVF treatment. This justification is far out of balance ethically. To offer this convoluted procedure would run all the enormous risks that currently exist with cloning (and these may be insurmountable in the case of humans). He is of course well aware of the risks, and offers this somewhat hypothetical scenario strictly on the condition of a postulated future situation where these were overcome. Under these conditions cloning risk would be less of an issue, but one has to ask how one would reach a situation where one would be sure one could indeed safely produce a cloned baby. If it relied upon already having created cloned babies, then obviously this would fall foul of existing ethical objections to cloning, in addition to the ethical problems posed by embryo

cloning in the research phase. If on the other hand this was to be the first case of attempting human cloning, it is unlikely this would be medically justified against the option of the couple having a second round of PGD, or alternatives such as surrogacy or opting for adoption.

Lastly, the step of 'correcting' the genetic defect in the stem cells amounts to genetic engineering of the human germline, in other words it would make an irreversible change which was passed on to all future offspring. 'Germline' modification has been performed in animals, including cloned animals, such as Roslin's GM cloned sheep Polly, Holly, Ollie and their successors. To do so in humans, however, is as ethically controversial as cloning itself, if not more so, in terms both of the risks and the ethics of permanently altering the genome of future generations. It could also in principle open the door to human genetic enhancement for non-medical reasons. For these several reasons, the claim that this "would not create the same ethical and social problems of reproductive cloning" does not represent an adequate ethical evaluation. And as already said, it is illegal in the UK to implant a cloned embryo in a woman's womb.

I attended the meeting of the American Association for the Advancement of Science in Seattle, where the Korean group presented their cloned embryo results, to considerable scientific acclaim, but they made a clearcut statement against reproductive uses of human cloning. Now that human embryo clones have just been created, against a climate of global opinion already very nervous about the irresponsible uses of the technology, it seems most unwise to be speculating of distant future circumstances when cloned babies might be advocated. It could unfortunately fuel the fire for maverick scientists who attempt to perform cloning for their personal notoriety, to attract members to their cult, or just to make money. In May 1997 the Church of Scotland were amongst the first to call for a global ban on reproductive human cloning. The sooner this is now done the better.

Therapeutic Cloning

Professor Wilmut's discussion on creating cloned embryos for stem cell therapies covers much discussed issues. So-called therapeutic cloning is formally legal in the UK but ethically controversial, especially in Europe where the European Commission's ethical advisory group recommended it should not be pursued and the European Parliament has several times voted against it. Its primary advantage is normally stated as overcoming a patient's rejection of cells derived from IVF embryos. But this is seriously undermined by the lack of a known supply of the enormous number of human eggs which would be needed to make the technique useful for the hundreds of thousands of sufferers of the range of degenerative diseases about which claims are made. Ian asserts that this could be overcome, but his solutions include the use of cow eggs as an alternative. As we have also pointed out elsewhere, this fundamental admixture of human and animal cellular and genetic material raises as many ethical problems as it might solve. The Chief Medical Officer's committee of 2000 recommended "The mixing of human adult (somatic) cells with the live eggs of any animal species should not be permitted." This view was subsequently endorsed by the UK Government who promised primary legislation and "calls upon bodies funding research to make it clear that they will not fund or support research involving the creation of such hybrids."

Realistically, Ian concludes that “therapeutic cloning is unlikely to be practical for routine use”. Unfortunately this then leaves another serious ethical concern that, despite all the claims being made for it, therapeutic cloning would not then be a medical breakthrough for humanity as a whole but only a technique for those rich enough to afford it. This concern was raised some years ago by the ethical advisory board of the Geron Corporation which used to fund some of Roslin’s research in this area, and it has yet to be satisfactorily addressed. If this more sanguine view is taken, then the ethical justification for cloned embryo research for therapy seems weak, compared with using stem cells from more readily available spare IVF embryos.

Cloning Embryos for Research

A substantial part of the article advocates using cloning technology to create disease state cells, for example to study motor neuron diseases. This is not therapeutic cloning as normally conceived, but it still requires creating cloned embryos, which then have to be destroyed because they are cloned embryos. It is an interesting case, but the 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.” It requires a careful medical evaluation including what are its realistic expectations and why this radical method would represent the best way to understand and address this serious disease by comparison with any other options. At present it is not clear whether this case would be justified.

There are some other basic research uses which might be easier to justify, but with these and all the applications I would turn the question round. Instead of asking how cloning technology might be used for therapeutically, I would ask what is the best way to address the relevant medical problems, considering the scientific, medical and ethical ramifications. I do not think that for any of the examples given has the article given enough substance to justify its opening claim that “cloning promises such great benefits that it would be immoral not to do it”. Such a sweeping claim seems premature, and I am by no means alone in thinking that.