

Dear Sir/Madam,

We are making a submission to this inquiry as two scientists with forty years of biological research experience between us. In general we agree with the recommendations of the report.

Our first point refers to section 2.23C. We agree that embryo splitting is a procedure that leads to ethical problems with the potential for cloning human beings and with other issues concerning what happens to the cell clones which have the potential to form a human being. However, the procedure also allows genetic testing of the embryonic material for disease because some of the cells produced from the embryo can be screened for an inherited genetic problem prior to implantation with ART to produce a normal offspring. Therefore, this technique can be used to directly benefit the potential human the embryonic cells represent.

Our second issue concerns the recommendation outlined in section 1.22 on Page 5. We think that the ethical issues should be resolved before further research is carried out. What is the point in putting resources (money, time, skill etc) into developments which may never be used as a result of ethical considerations. Establishing the primate facility virtually pre-supposes that research demonstrating success in "cloning techniques and research using embryonic stem cell lines....to produce tissues or organs" would be applied to humans. We think it highly likely the public would object. At the very least the public would wish for some debate on the ethical issues. Shouldn't this be done before resources are poured into the research?

Finally, is using embryos as a source of tissue for human beings treating the embryo with respect? If we limit this type of research it is true Australia will lag behind in that area of research in the international arena. However, there are multiple avenues of investigation to explore and the resources which would have been applied to this type of research could equally be applied to building expertise in another area. We might be backward in a fashionable field of research but we think we would be more advanced in our ethics.

Our work in molecular and cell biology showed that the protein, tubulin, previously known for its role in mitosis, or cell division, was also involved in the process by which mammalian cells die, apoptosis. We believe that this work serves to highlight a truth that is too often ignored in the endless search for 'better' human health, and that is, that humans, and indeed, cells, are complex beyond our comprehension. A mammalian cell carries out 7 trillion biochemical reactions per minute, all of which involve highly orchestrated actions of multiple proteins. The simplistic notion that one gene=one protein=one reaction=one disease that underpins much of molecular biological research is patently not true, and we found it disturbing that this report contains this implicit assumption. We feel that recognition of the complexity underlying mammalian cell function must be made, even at a philosophical level, before using the techniques of molecular biology to engineer our species. In the current climate of excitement regarding molecular and cloning technologies it is salient to recall the directions in which other, seemingly beneficial discoveries, have been used.

We feel that although cloning technologies may produce beneficial results, their application really must be considered in broader terms. We are already genetically restricting and altering the parameters of our food and animal supplies and now, are considering the possibility of altering human genetic composition. We must be made aware of the detrimental effects to any species of removing the randomness and plasticity inherent in genetic makeup to produce 'better' crops, animals or humans. We have absolutely no idea of the longterm effects of such changes, but reducing the genetic variability of any species makes it much less adaptable when faced with bacteria and viruses, for example, that face no such genetic restraints.

In conclusion, we applaud the existence of this inquiry, but call for much broader, more public examinations of the consequences, not only of human cloning, but of all genetic manipulations of our biological resources.

Thanking you,
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