Scottish Council on Human Bioethics

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Regulation of Hybrids and Chimera Embryos

Additional Written Evidence from Dr. Calum MacKellar:

1. In response to the question from Dr. Turner relating to what constitutes a person, the following definitions may be helpful:

   Dignity: Relates to notions of honour, value, worth and respect.
   Being: An existing entity.
   Person: A being invested with absolute and irreducible dignity by at least one other being through the means of a relationship.
   Human Being: A being consisting of a distinctive human biological nature.
   Human Person: A person consisting of a distinctive human biological nature.
   Human Dignity: Dignity which is invested into a human person.

   In this respect, a being does not need to be 'human' to be a person. For example, if a chimpanzee was to become self-aware (through biological modifications) then many would consider this chimp as a 'chimpanzee person'.

2. During the evidence session of the 5th of February, it was emphasised that it was impossible to know whether or not a research proposal was efficacious unless the research was carried out. This is true, but it still does not mean that the research should go ahead. Having been on an NHS Research Ethics Committee for a number of years, I can assure the Select Committee that research applications get turned down every week, in the UK, because they are not considered ethical. It is not because a procedure may eventually save lives or be useful that it automatically becomes ethical!
   The ***Nuremberg Code of Ethics*** was drafted after World War II in order to prevent unethical biomedical research. In addition, Article 2 of the ***Council of Europe Convention on Human Rights and Biomedicine*** indicates that:

   The interests and welfare of the human being shall prevail over the sole interest of society or science.

3. With respect to the moral status of early human or animal-human embryos, scientific aspects are important but cannot give a final and convincing answer. Indeed, even within the development process of a human being, it is impossible to indicate a non-arbitrary point of transition from human non-person to human person. As a result there is no social consensus about the extent to which the embryo is to be protected, and about when and why and at what stages of embryonic development legal protection is required.

4. Accordingly, millions of people over the whole of the UK believe that human embryos cannot just be considered as piles of cells. Instead, they believe that they are invested with either full human dignity or a special status. For these people, the creation of embryonic animal-human combinations for destructive research would give rise to entities of uncertain moral status. However, if these entities were given the benefit of the doubt with respect to this status, then the creation and destruction of these embryos would be considered as extremely offensive. Something similar to the creation of human infants for destructive biomedical research.
   Thus, from an ethical perspective, the deep offence arising in these millions of people in the UK by the creation and destruction of these entities could not be compensated by the possible advantages

perceived by those who believe that such research may, or may not, give rise to treatments for biological disorders.

5. In this regard, Parliament has always had a responsibility to protect some sections of society from what they consider to be deeply offensive even though others may not find such a situation or behaviour to be problematic. For example, this happened with the recent ***Gender Recognition Act (2004)*** which provided transsexual people with legal recognition in their acquired gender. Another example is the prohibition of animal-human sexual relationships in Section 69 of the ***Sexual Offences Act (2003)***[1]***.***

6. It is because the creation of human or animal-human embryos for destructive research is considered to be deeply offensive and unethical in almost all continental European states that scientists undertaking such research would, most probably, end-up in prison in countries such as France, Germany and Italy.

7. Concerning the possibility of creating new inter-species diseases from embryonic animal-human combinations, one of the points which I was trying to make during the Select Committee meeting was that some of these combinations would not automatically be destroyed at the proposed 14 days limit. This is because some of the embryos may come under animal and not human legislation.
   For example, if a chimpanzee-human chimeric embryo was created through the combinations of five totipotent chimpanzee cells and three totipotent human cells, then it would be possible to consider this embryo as coming under animal legislation since it consisted of a majority of animal cells. As a result, this experiment would only need a licence from the Home Office to go ahead. In addition, the embryo would not have to be destroyed and could possibly give rise to a live birth (a humanzee). All the risks of inter-species diseases, such as the existence of endogenous retro-viruses would then also be present.

8. I would also like to question the claim given to the Select Committee on Wednesday 31st of January 2007 that it was impossible to obtain motoneurons from an adult source. Indeed, in a relatively recent paper, motoneurons were differentiated from neural precursors obtained form the noses of a 34 year old patient and a 96 year old cadaver[2].

9. Finally, I would like to emphasise that it is unclear whether the mitochondria from the donor cell would remain in a developing cybrid embryo. Indeed, two recent research papers have indicated that the percentage of mitochondria originating from the donor cell dropped sharply in contrast to that of the recipient egg cell at the blastocyst stage of the embryo which is formed 5-6 days after the beginning of embryonic development[3,4].

[1] Sexual Offences Act 2003, Section 69, http://www.opsi.gov.uk/acts/acts2003/30042--b.htm#69

[2] Xiaodong Zhang et. al., Role of Transcription Factors in Motoneuron Differentiation of Adult Human Olfactory Neuroepithelial-Derived Progenitors, Stem Cells Vol. 24 No. 2, February 2006, pp. 434-442.

[3] Cai-Xia Yang et. al., Quantitative analysis of mitochondrial DNAs in macaque embryos reprogrammed by rabbit oocytes**,** Reproduction (2004) 127 201-205.

[4] Chang KH, et. al., Blastocyst formation, karyotype, and mitochondrial DNA of interspecies embryos derived from nuclear transfer of human cord fibroblasts into enucleated bovine oocytes, Fertil Steril., 2003 Dec;80(6):1380-7.