Embryonic, Fetal, and Post-Natal Animal-Human Mixtures: An Ethical Discussion

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Issues:  
Biotechnology  
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Overview: The potential power of embryonic and fetal inter-species mixtures became clear about a decade ago in a series of dramatic experiments in which small sections of brains from developing quails were taken and transplanted into the developing brains of chickens. The resulting chickens exhibited vocal trills and head bobs unique to quails, proving that the transplanted parts of the brain contained the neural circuitry for quail calls. It also offered astonishing proof that complex behaviors could be transferred across species.¹

Although moral intuitions about the creation of animal-human mixtures, especially at the embryonic and fetal level, may vary, it is subject to deep ethical concern to many for whom the creation of animals with certain kinds of human characteristics or with human brain and reproductive cells, would be offensive.

In a report published in 2004 and entitled Reproduction and Responsibility: The Regulation of New Biotechnologies², the President's Council on Bioethics of the USA indicated that in the context of procreation - of actually mixing human and non-human gametes or blastomeres³ at the very earliest stages of embryological development - the ethical concerns raised by violating the animal-human species barrier were especially acute. Thus, the drawing of clear lines limiting permissible research in this area should be specifically considered.

In this respect, the President's Council recommended that one bright line should be drawn at the creation of animal-human embryos, produced by the fertilization of human eggs by animal (for example, chimpanzee) sperm (or the reverse). This is because the Council accepted that society should not be put into a position to judge the humanity or moral worth of such ambiguous hybrid entities (for example, a "humanzee," the analogue of the mule). Moreover, the Council stated that it did not want to see the possibility of a human being having other than human progenitors
Accordingly, the Council recommended that the US Congress should draft legislation to address these biological possibilities and make it illegal to cross this line.

But in a report entitled *Human Reproductive Technologies and the Law* prepared in 2005, the UK House of Commons Science and Technology Committee went a lot further than the US President’s Council. For example, it indicated that the fertilization of animal eggs with human sperm should continue to be legal in the UK for research purposes and the time limit extended before they are destroyed.

**Recommendations of the Scottish Council on Human Bioethics:**

1. National Ethics Committees of the Council of Europe member states should initiate, as soon as possible, an extensive consultation and reflection relating to the complex ethical questions arising from the creation of animal-human mixtures.

2. The Parliamentary Assembly and the Steering Committee on Bioethics of the Council of Europe should address the ethical issues arising from the creation of animal-human mixtures, as soon as possible, in a Recommendation and/or a legally binding Convention.

3. The creation of animal-human transgenic animals in which some foreign human genes are deliberately inserted into the genome of animals should only proceed with extreme caution.

4. The placing of a live human embryo into an animal should be prohibited.

5. The placing of live human sperm into an animal should be prohibited.

6. The placing of a live animal embryo into a woman should be prohibited.

7. The placing of live animal sperm into a woman should be prohibited.

8. The insertion of a human cell nucleus or chromosomes into a non-human egg enabling an embryo to exist should be prohibited.

9. The insertion of a human cell nucleus or chromosomes into a non-human egg stripped of its chromosomes enabling an embryo to exist should be prohibited.

10. The mixing of animal and human gametes should be prohibited.

11. Xenotransplantation should only take place if the procedure respects all national and international legal instruments such as the Council of Europe Recommendation (2003) 10 of the Committee of Ministers on Xenotransplantation.

12. The incorporation of human pluripotent stem cells into post-natal animals should proceed with extreme caution. Moreover, such a procedure should only take place if it can be proven that the cells cannot contribute to the germline or give rise to ‘higher-order’ brain functions in the animals.

13. Because pluripotent stem cells might be expected to participate in the tissue of the germline
and in the brain, the incorporation of (1) human pluripotent cells into post-blastocyst stages of non-human embryos and (2) non-human pluripotent cells into post-blastocyst stages of human embryos should be prohibited until it can be proven that such possibilities cannot take place.

14. The incorporation of (1) human pluripotent stem cells into a non-human blastocyst or its preliminary embryonic stages and (2) non-human pluripotent stem cells into a human blastocyst or its preliminary embryonic stages should be prohibited.

(Editor's Note: On September 1, 2005, the Scottish Council on Human Bioethics released an in-depth report on the issue of animal-human mixtures. The above material represents an overview and a list of recommendations from the report. The full report is available in PDF here.)


4 blastomere: a single cell in an embryo just after fertilization.

http://www.publications.parliament.uk/pa/cm200405/cmselect/cmsctech/7/70...

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