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# The Chimeras Are Coming

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For some time now ethicists have warned that the development of real animal-human combinations — known as chimeras — was nearing on the horizon. Now, according to some reports, the future has arrived.

As William Saletan reports in *The Washington Post*:

*We've been transplanting baboon hearts, pig valves and other animal parts into people for decades. We've derived stem cells by inserting human genomes into rabbit eggs. We've created mice that have human prostate glands. We've made sheep that have half-human livers. Last week, Britain's Academy of Medical Sciences reported that scientists have created "thousands of examples of transgenic animals" carrying human DNA. According to the report, "the introduction of human gene sequences into mouse cells in vitro is a technique now practiced in virtually every biomedical research institution across the world."*

Human stem cell research is driving this latest push, since therapies for use on humans must first be tested on animals. This means far more than the use of a pig valve. This means tampering with combinations at the level of cells, genes, and chromosomes.

Look closely at how Saletan updates the research:

*So far, our mixtures are modest. To make humanized animals really creepy, you'd have to do several things. You'd increase the ratio of human to animal DNA. You'd transplant human cells that spread throughout the body. You'd do it early in embryonic development, so the human cells would shape the animals' architecture, not just blend in. You'd grow the embryos to maturity. And you'd start messing with the brain.*

*We're doing all of these things.*

Got your attention? These things are being done now. The British report reveals that “researchers have constructed ever more ambitious transgenic animals” — and this is just the start.

The scariest part of this research is directed at work done in hope of curing or treating diseases of the human brain. Scientists have already produced humanized mice with symptoms of Alzheimer's disease. Now, scientists at Stanford University propose to put human brain cells in mouse brains in order to replace dying neurons. In reality, that would mean a human/mouse brain.

Saletan reports that ethicists at Stanford at first rejected the proposal, but have since come to approve it, allowing the researchers to produce mice with “some aspects of human consciousness or some human cognitive abilities.”

This raises the frightening prospect of a human brain within an animal species. The proposed research at Stanford would not reach that point, but granting a mouse brain “some aspects of human consciousness or some human cognitive abilities” should be enough to set off the ethical alarms.

At present, there is no set of firm ethical guidelines to regulate this research.

Writing in 2003, Dr. Nancy L. Jones of The Center for Bioethics and Human Dignity and the Wake Forest University School of Medicine warned:

*The creation of animal-human chimeras as a means of deriving human tissue and organs highlights the deeper issues facing our generation: the new biological genomic revolution and the resultant power that may permit scientists to redesign various species and biological life. We must not allow such an ability to outstrip the ethical analysis that must accompany it.*

She also considered how Christians should think about the development of transgenic animals (chimeras):

*What principles may Christians invoke to guide them in formulating a response to the possibility of such animal-human chimeras? Some concern should certainly be expressed for the experimental animal's suffering; however, Christians do believe that they have been given stewardship over animals and are permitted to use them to benefit humanity. Another concern would be zoonotic transmission of disease, which occurs when pathogens cross the traditional species barriers of disease transmission. When human and animal tissues are intertwined so closely, potential mutations of once species-specific pathogens may gain a unique ability to infect organisms of other species. A more fundamental Christian concern involves violation of the divinely created order. The Bible tells us that God designed procreation so that plants, animals, and humans always reproduce after their own kind or seed. (Gen 1:11-12, 21) In the biblical view, then, species integrity is defined by God, rather than by arbitrary or evolutionary forces. The fusion of animal-human genomes runs counter to the sacredness of human life and man created in the image of God.*

Dr. Jones' assertion that "species integrity is defined by God, rather than by arbitrary or evolutionary forces" is crucial to our understanding of this issue. Any effort to violate species integrity — no matter how noble with respect to medical treatments — must be seen as suspect in this light.

We need a set of rules and policies in force right now — before a mouse really does come up and ask for a cookie.

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SEE ALSO: Nancy L. Jones, "Could Animal-Human Chimeras Be on the Way?," The Center for Bioethics and Human Dignity, January 9, 2003.

Another version of William Saletan's article is available at Slate.com [see [here](#)].

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