

Grace for the Day

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Human Hybrids

By Rev. Peter Eng

British scientists receive approval to insert human genes into cow eggs. If this experiment is successful, this will be a human-cow hybrid with 99.9 percent human gene developing in the egg of the cow.

Is this a solution to a need or an ethical crisis?

How can we look at the stem cell research controversies? What does the Bible say about human-animal hybrids?

Stem cell research is the new frontier in biomedical research. It is based on the hypothesis that stem cells hold the key to curing a spectrum of diseases and injuries for which we have no solution.

The person who has a severed spine may be able to regenerate nerve cells. People with degenerative brain diseases may reverse their condition. A person with a damaged kidney or liver may have the capacity to regenerate the damaged cells. These tantalizing promises make us want to say "Yes" to everything stem cell research has to offer. For many, the only question is, "Can the research go faster?"

The original ethical issue

It is hard to imagine that something with so much potential for good can have ethical issues. The issue has little to do with the reproduction of cells that can replace damaged ones. No one is saying that we should not try to have the capacity to regenerate cells for different parts of our body. After all, that is what the healing process is all about. The body replacing damaged cells with healthy ones in the process of healing.

The issue has been human embryonic stem cells (emcells). These stem cells are harvested from human embryos (usually the excess from IVF procedures). The special promise of these emcells is that they hold the promise of being pluripotent (can develop into any cell), as opposed to other types of stem cells which are not pluripotent. Armed with this thought process, scientists began experimenting with

human emcells. This requires the destruction of the human embryos.

Therein lies the issue. Should human embryos be destroyed in the research for cures for diseases?

Most evangelical Christians oppose human emcell research because it destroys human embryos. Supporters of human emcell research argue the morality of the destruction of human embryos mainly on the grounds that the embryos are excess embryos from IVFs, and that they will eventually be discarded.

They also add that many of these IVF embryos are misshaped or deformed without any real potential of developing into life. There is not much said with regard to their underlying assumption that a human embryo isn't really a person so the destruction of embryos is like the destruction of other cells, like cutting your hair or clipping your nails.

In earlier articles I have explained why we cannot destroy human stem cells in the name of healing diseases. Even secularists who have no concept of our value as humans see the moral issue of taking one life to make another better. This is seen in the countless science fiction representations of clones bred to supply body parts to their human parent.

While the original moral issue will persist, I get the sense that this moral issue with regard to stem cell research may soon lose its importance.

There are two reasons for this potential shift: (1) Recent stem cell research has shown that non-emcell therapies have enjoyed a good measure of success. (Non-emcells are mainly umbilical cord cells and bone marrow cells.) The options with less ethical issues would naturally be the preferred option.

(2) There is now a shortage of human emcells. Despite the claim that human emcell research utilizes these enormous amounts of leftover embryos from IVF procedures, there is a growing shortage of donors. This shortage of human emcells steers researchers into two options: (a) create human emcells for research purposes (which remains repugnant to most)

or (b) create human hybrid emcells where no human emcells are destroyed. This is the focus of this article.

The current ethical issue

There is another ethical issue that has gone unnoticed by many. This issue did not originate as a human emcell issue. It involves the genetic modification of plants and animals by splicing the gene from one species and inserting it into another to create certain desirable traits.

This matter started as an issue with genetically modified food. Scientists would use recombinant DNA to insert a fish gene into tomato to make it sweeter, or an insect resistant trait for one plant into a food crop to make it more pest resistant. The human growth gene was successfully inserted into the fresh water carp making it grow four times bigger than the regular carp.

In the quest for cures, a new set of activities are now being done to human genes in relation to other living things.

In 2003, Chinese scientists in the Shanghai Second Medical University fused human cells with rabbit eggs, producing the first human-rabbit chimeras. They were destroyed after a few days. In 2004, scientists in the Mayo Clinic in MN created pigs that had human blood flowing through them (*National Geographic News*, Jan 25, 2005). At the end of 2005, Weissman of Stanford University managed to insert human emcells into mice (*Washington Post*, Dec 13, 2005, A03).

In Nov 2006 British scientists applied for permission to replace cow eggs with human genes.

Preliminary approval was given on Sep 5, 2007. If the experiment is successful, this will be a human-cow hybrid with 99.9 percent human gene (non-embryonic source) developing in the egg of the cow. This experiment is done under the commitment that the embryos will be destroyed after 14 days. The motivation for this experiment is the shortage of human emcells. With this move, human-cow hybrid emcells can be produced in quantity. In addition, Reuters reported that 61% polled would support the experiment if the human-cow hybrids helped in understanding some diseases, but only 35% would support it for non-specific research. (Reuters & AP, Sept 5, 2007).

This recent development brings two issues together. The ethics of human emcells and the hybridization of humans. The destruction of human emcells is already addressed. But in the process of preventing the destruction of human emcells, can we create human hybrids? This question itself has two components. Should we create hybrids, and if hybrids are permissible, should *human* hybrids be created?

It is clear that the Bible was not written to address questions about interspecies reproduction or human hybridization. What we can do is to ask about divine intention. What was God's intention? To answer this question we look at the processes he set in place in nature.

God's Intention

God's intention, as demonstrated in nature, generally suggests interspecies reproduction is not the norm. It is almost always not possible.

There is a very limited possibility of interspecies breeding. We see the cross of lions and tigers, horses and donkeys, and some plant species. The offspring of such interspecies reproduction (F1 hybrids) are almost always sterile, and if they are able to reproduce, the second generation loses that capacity.

In the case of hybrid seeds, it is also apparent that the farmer who uses the hybrid seeds, produced by controlled pollination, is unable to produce a good yield from seeds he saves from his crop. At the same time, these genetically challenged hybrids can have a negative impact on the seed quality of neighboring farms.

According to the process of speciation, one species can naturally subdivide into two species. But these two new species are not able to interbreed once speciation has occurred. The natural tendency is towards the maintenance and diversity of species, not the consolidation of species.

There is very little to suggest any justification from the observation of nature that interspecies breeding is biologically desirable. It may be argued that a mule is economically desirable, but its biological lack of desirability is evidenced in the mule being sterile. The same is true of plants.

Hybridization of plants can be environmentally harmful. As these hybrids cross-pollinate with natural plant stock, the natural stock becomes contaminated.

(There is a constant stream of discussion about the issues related to the genetic modification of food. Your search engine will locate these easily.)

There is nothing in Scripture to suggest we cannot improve seed or livestock quality through controlled breeding. But it is apparent that such selective breeding are fundamentally natural processes. There is also nothing in Scripture against some level of human intervention in crossbreeding as long as it falls within certain limits.

At the creation, God commanded each living thing to reproduce after its own "kind."

"The land produced vegetation: plants bearing seed according to their kinds and trees bearing fruit

according to their kinds." (Gen 1:12). "Let the land produce living creatures according to their kinds: livestock, creatures that move along the ground, and wild animals, each according to its kind." (Gen 1:24).

While we can debate what "kind" means, whether it is species, genus, or family, the message is clear enough. In his creative process, God set forth reproductive limitations on a maintenance or diversification mode.

While different strains of corn or apples may be produced from cross-breeding, the process is natural. This stands in contrast to hybridization which uses pathogenic organisms in the process of genetic splicing, with an unknown level of risk.

The hybridization of plants through controlled pollination is nothing compared to genes sliced from a fish and inserted into a tomato to make it sweeter, or human genes spliced into a fish to make it grow bigger.

There is no moral-ethical objection to humans trying to cultivate desirable traits in plants or animals. In fact, it should probably be seen as good stewardship of God's creation. But when the process is questionable and the actions tend towards the merging of disparate species which can never reproduce under normal circumstances, that line of bioethics has been crossed.

Even without reference to human hybrids, I believe we need to adopt a conservative approach towards all processes of hybridization.

Special regard should be given to the issue of human hybrids. The proposed experiment by the British scientists will produce a being / creature with 99.9% human genes. The good thing is that human life is not lost in the process. But the problem this process creates is no less than the process it seeks to replace. The process is basically a human clone hosted by a cow's embryo.

Some have called this a potential chimera. This does not adequately bring out the moral issue, though it suggests biological aberration. The proposed process is commonly said to create a human hybrid. On account of this being 99.9% human gene, perhaps it is more the dreaded frontier of the human clone rather than a hybrid.

Despite assurances that this hybrid / clone will be destroyed after 14 days, this process should be viewed as a step towards a certain direction. If this clone can be utilized up to 14 days, is there any qualitative moral difference if we were to keep it for 28 days before using it? Can we also not keep it for 9 months, or 9 years? I don't normally talk about the danger of a slippery slope. But in this instance, it is truly difficult to see any qualitative difference between a 1-day clone and a 10-year clone.

Conclusion and Disclaimer

I must reiterate the fact that I am not a scientist and wish I know and understand more than I do. At the same time, some of the basic data are secure and these data are very troubling.

I write to you as a student of the Bible applying the Word of God in momentous times. You may be in a position of strength to act on what is right. On my part, I seek only to bring these to your attention so you can act on them.



See article: [Embryonic Stem Cells](#)

For the theological discussion on when a person has a soul, see: [Origin of the Soul](#)

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Rev. Peter Eng is an ordained minister from the Reformed Tradition, but he is truly global in perspective. He served the Lord in various capacities starting from his teenage years in the 70s. His undergrad studies were done in Singapore, his grad studies in the USA, and post-grad studies in the United Kingdom, with additional post-grad research in Germany.