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Chimeras

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Greek mythology defines a "chimera" as an animal with the forepart of a lion, the middle or a goat, and the tail end of a serpent - a melding of species.

Most people have no problem contemplating a chimera as a mythological creature; indeed I read and enjoyed the Greek myths in junior high school. But driven by NBIC (the coming together of the previously disparate fields of **N**anotechnology, **B**iology and medicine, **I**nformation sciences, and **C**ognitive sciences), a different form of chimera is already very much a reality. Unlike the mythological chimera, today's chimera is a combination of mouse and human - a mouse body with a human brain!!

Already Real!

Actually, this is not the first real chimera on the scene. For example, pigs with human blood running through their veins have been born. There are also sheep whose livers are 80% human (those livers are being considered for eventual human liver transplant stock). And we've already seen mice whose brains are 1% human. Also, many humans are already technically chimeras after having their heart valves replaced with those from pigs.

But now, according to the March 12, 2005 UK Newspaper The Telegraph, Stanford University scientists led by Prof. Irving Weissman are planning, and the university has sanctioned, a project to use human stem cells to give a mouse not a 1% human brain, but a brain that is 100% human!

The goal of this work is not to bring Mickey to life; indeed the very limited size of a mouse's skull should prevent any such outcome (and in the most unlikely event of any indications of human behavior or cognition, the chimera would be destroyed). The goal instead is to provide a valuable research vehicle to potentially develop cures for devastating human brain diseases such as Parkinson's and Alzheimer's, and more.

The Ethics. The ETHICS!

Needless to say our new abilities to custom make life - to be able to do things that have been solely in Nature's province since the beginning of time - bring incredibly complex and significant ethical issues. For example, what if

the human stem cells spread beyond the mouse's brain - how human could this chimera become? If the seat of human consciousness is the brain, would a mouse with a completely human (if terribly small) human brain be a "person" in any legal (and protected), or ethical sense? What might be the result if two such mice with human brains were to mate? And these thoughts just begin the list.

Yet the other side of the coin, the potential for using such capabilities to cure terrible scourges of the human race, is not to be ignored. Imagine if our worst diseases could be banished. Imagine it very personally - suppose that the results of such research were to save your life, or prevent the suffering of your mother or father from Alzheimer's, or prevent your wife or kids from dying from brain cancer?

We Have *ALWAYS* Fought To Improve Our Lot.

The quest to control our environment, including ourselves, is hardly new. Medicines since ancient time have allowed us to change the course of illness and death. We've used various animals to create new drugs and manufacture existing ones (think, for example, of flu vaccines which are created through the use of eggs.) The principle of using "life" to improve our lot is well established.

But there's little argument that these new capabilities, and their certain successors as NBIC continues its double-exponential growth, represent a significant quantum leap in our capabilities. And perhaps in our very evolution.

These concerns are very real and very important, because creating merged-species chimeras are only the beginning of this journey. Less ethical scientists, somewhere, will surely push any and every frontier that our new sciences enable, for both good and for ill - such is the continuous history of our race. But could these new capabilities lead to the realization of science fiction and fantasy results like Isengard's Uruk-hai orc soldiers in *The Lord of the Rings?*

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Or modified human "super soldiers"?

Or, what if we eventually learn to build humans with significantly greater intelligence and capabilities than ourselves?

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Might we unintentionally "put *OURSELVES* out of a job"? Remember that various science fiction ideas are already becoming science fact seemingly every day...

The Largest Lesson.

Regardless of the ethical or therapeutic outcomes of these early experiments, I believe that the most important lesson that we can learn from this and similar work is that *OUR* brains are capable of virtually anything - from writing poetry, to building buildings, to putting Man on the moon - and now to creating completely new races.

We're already bringing some of the ancient myths, literally, to life. And there are many, many more myths yet to go...

Don't Blink!

This essay is original and was specifically prepared for publication at Future Brief. A brief biography of Jeff Harrow can be found at our main Commentary page. Other essays written by Jeff Harrow can be found at his web site. Jeff receives e-mail at jeff@theharrowgroup.com. Other websites are welcome to link to this essay, with proper credit given to Future Brief and Mr. Harrow. This page will remain posted on the Internet indefinitely at this web address to provide a stable page for those linking to it.

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