

SCIENCE

A Biotech Roadblock

Activists turn to the patent office to stop chimeras

BY MARY HAGER AND ADAM ROGERS

IN GREEK MYTH, THE CHIMERA WAS A part lion, part goat, part dragon that terrorized the country of Lycia; in real life, it's an animal customized with genes from different species. But where the mythic Chimera got taken down by the warrior Bellerophon, the biotech version faces platoons of lawyers, bioethicists and biologists. Stuart Newman, a cell biologist at New York Medical College, has applied for a patent on ways to make human-animal chimeras. Newman doesn't want to do it. He just wants to make sure no one else does, either. And, with the help of anti-biotechnology activist Jeremy Rifkin, Newman is hoping to drum up a good controversy, too.

Chimeras are doable; a decade ago, biologists created a goat-sheep cross called a "geep." But no one has ever used human DNA as an ingredient. Newman and Rifkin want to keep it that way. Rifkin, head of the Foundation on Economic Trends, opposes human interference in evolution, and Newman decries the increasing commercialization of science. "We demonstrate that [chimeras are] scientifically feasible, usable by the medical community and viable," says Newman, "but down the road it could be a disaster for culture and civilization."

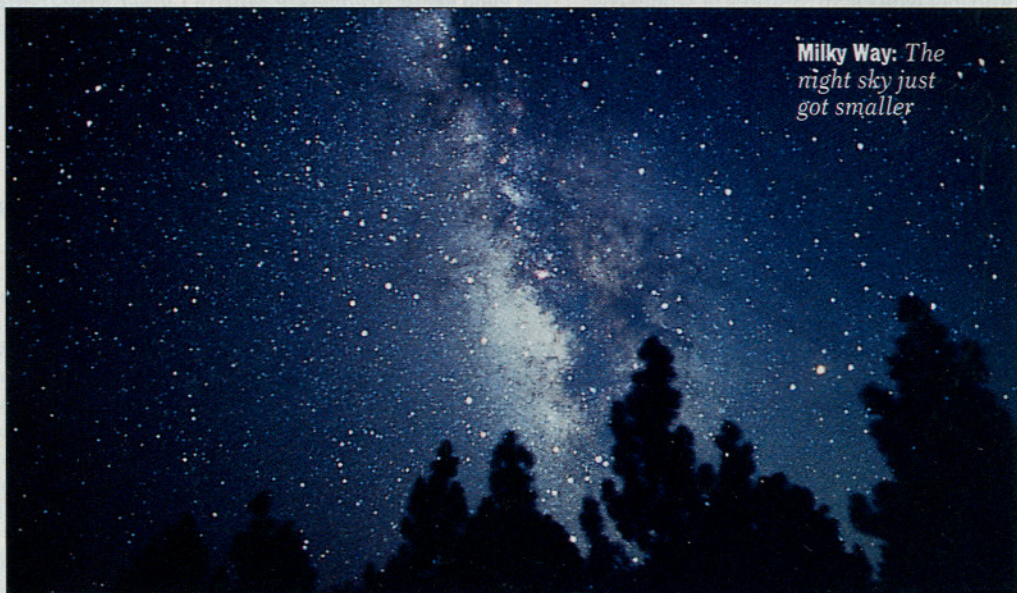
In 1980, the U.S. Supreme Court ruled that biologist Ananda Chakrabarty could patent microbes he bioengineered to clean up oil spills. Since then, scientists have patented genes, cell lines and genetically remodeled animals from mice to abalone. A human-animal chimera, as Newman and Rifkin point out in their application, could potentially be used to study tissue growth and organ transplantation, among other possibilities.

But things get complicated once human DNA enters the picture. While the 13th Amend-

ment to the Constitution, which abolished "involuntary servitude," can be interpreted as supporting a ban on patenting human beings, the legal situation is murky. Rifkin and Newman are concerned about reports in Britain that the researchers who cloned Dolly the sheep have applied for a patent that covers cloning human embryos (applications are confidential). And what about a mouse with a human gene? Or a 50-50

split? "How far do we want to go politically, legally, ethically and morally?" Rifkin asks. "Regardless of the patent, we're going to have to deal with this sooner or later."

The two activists hope that a patent would give them the legal means to block scientists from using any of the three methods they lay out in the application, though Rifkin admits he doesn't know what penalties a "renegade" researcher would incur. Action on patents usually takes about six months, but a recent glut of biotech applications means a more prolonged process, and decisions can be appealed all the way to the Supreme Court—a prospect that delights Rifkin and Newman. Bioethicists say that the ensuing court battles may force the first real legislation on what constitutes a human. Even Bellerophon might find that a tough fight. ■



Milky Way: The night sky just got smaller

SPACE

Does Size Really Matter?

HERE'S A GALACTIC REALITY CHECK. New calculations announced at the National Astronomy Meeting in Britain last week suggest that our galaxy, the Milky Way, might be quite a bit smaller than we thought it was. Seems like someone would have figured this one out already, but it's a tricky measurement to make; there just isn't a decent way to step back and get a long-distance view of our home territory. The traditional solution is to estimate our distance from the center of the

galaxy—we're out near the edge—but it's hard to get a fix because of all the dust and gas between here and there.

University of Southampton astronomers Michael Merrifield and Robert Olling looked to the stars closest to our own sun for answers. The way they move depends on how far they are from the galactic center. Using the accepted value for our distance from the middle—about 28,000 light-years—Merrifield and Olling calculated what the stars' movement should be, and compared that

with actual observations. They didn't match. "When we cranked the value down," explains Merrifield, "several sets of data came into agreement."

That agreement knocked 10 to 15 percent off the size of the Milky Way, and the effects aren't just local. "Error propagates all the way out," says Merrifield, so it's quite possible that the whole universe is smaller than we thought, too. Unfortunately, the downward estimate isn't enough to make intergalactic travel any easier, which probably means that long-distance rates won't be dropping any time soon, either.

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