

Cell division

by **George J. Annas, 4/21/2002 in Boston Globe**

Delegates from around the world met at the United Nations recently to begin preparing an international treaty to outlaw the reproductive cloning of humans. Representatives from countries as diverse as Brazil and Sweden, Uganda and China, Japan, Germany, and France all strongly support a treaty to ban reproductive cloning.

No country wants to allow use of the "Dolly the sheep" cloning technique - the one since used to create mice, pigs, cows, and most recently, rabbits and a kitten - to make a human child. Virtually every nation agrees that children should not be commodified like barnyard animals or pets, even like beloved cats or dogs.

The powerful global consensus that human reproductive cloning should be outlawed provides an unprecedented opportunity for the world to take united action on a bioethical issue that could profoundly affect the future of our species. It would be a tragedy if this opportunity were lost because the United States refuses to support a ban.

The United States has, nonetheless, threatened to take its ball and go home if the world community does not give in to its demands to outlaw not just reproductive cloning but also research cloning. (Sometimes called "therapeutic cloning" - though no therapies have been produced - research cloning involves making human embryos by somatic cell nuclear transfer with the goal of deriving stem cells for medical research.) This all-or-nothing, take-it-or-leave-it approach is the same position taken by the House of Representatives last August, and repeated this month by President Bush, who has urged the Senate to join the House in outlawing both reproductive and research cloning.

The Senate will debate the ban soon. Observers think the outcome is too close to call, but unless a compromise can be reached so that outlawing reproductive cloning is not held hostage to banning research cloning, the likely outcome is that no law will pass. Without congressional action banning reproductive cloning in the United States, it will likely be attempted by its radical proponents - Panos Zavos, a specialist in turkey sperm, and the Raelians, a Canada-based group that believes humans were created by extraterrestrials - long before any UN treaty comes into force. Zavos's partner, Italian physician Severino Antinori, announced recently in Abu Dhabi that a patient of his is eight weeks pregnant with a human clone. Even though this is almost certainly untrue, Antinori and Zavos seem determined to try to produce the world's first human clone regardless of world opinion and the overwhelming scientific evidence of likely serious physical harm to the child. Can a compromise be found that can stop the renegades while permitting legitimate medical research?

The first step toward a solution is to understand the Bush administration's position. Leon Kass, its intellectual architect and the head of the president's newly formed Bioethics Council, has argued eloquently and passionately that if you oppose creating a child by cloning, you must also oppose creating human embryos for research by cloning. This is because, he says, if research cloning is permitted, it is inevitable that someone will try to implant one of the cloned embryos in a woman, and once this occurs, no government would ever force the woman to abort the clone. Moreover, he argues, research cloning would result in private industry stockpiling human embryos, and mining,

exploiting, and selling them. Opponents of research cloning are already running radio ads warning of "embryo hatcheries" and "embryo farms." A ban on implanting these embryos, Kass says, would require the government to destroy cloned embryos rather than preserve and protect this form of nascent human life, action that would be repugnant to many.

Kass reiterated this position in January when he opened the first meeting of the Bioethics Council with a discussion of Nathaniel Hawthorne's "The Birthmark." In the story, a scientist, Alymer, marries a beautiful young woman, Georgiana, who has a small handlike birthmark on her face. Alymer becomes obsessed with removing it, and the potion he ultimately creates to successfully remove it also kills her. Imperfection, of course, is an inherent characteristic of humans, and attempting to make the perfect human is certainly dangerous, and ultimately impossible. Kass takes the story as a cautionary tale that science's attempt to perfect humans by, among other things, changing our basic sexual nature (as by making sexual reproduction optional) could have deadly consequences.

I am sympathetic to Kass's slippery slope argument, and have even gone further than Kass by suggesting that by combining cloning technology with genetic engineering, we would inevitably put ourselves on the eugenics road not just to "designer babies" but to attempting to create perfect humans as well. If we fail, the consequences would be felt primarily by the children created in the failed experiments. But if we succeed, the consequences would be even deadlier, since the "improved" posthumans would inevitably come to view the "naturals" as inferior, as a subspecies of humans suitable for exploitation, slavery, or even extermination. Ultimately, it is this prospect of what can be termed "genetic genocide" that makes cloning combined with genetic engineering a potential weapon of mass destruction, and the biologist who would attempt it a potential bioterrorist.

So Kass (and Bush, and the United States at the United Nations) is right to caution us about the limits of our technology and the slippery slope. Alymer was wrong to see human perfection through scientific technique as a reasonable human goal, and "The Birthmark" rightly warns us about that nightmarish eugenic goal. But is Kass right to oppose research cloning aimed at finding cures for devastating human diseases and alleviating severe human suffering, historically both important and completely legitimate goals of medical research? I don't think so, at least not if we can take effective regulatory steps. And this points the way to a possible political compromise.

There are two basic ways the Senate could act to stop baby-making cloners without outlawing research on cloned embryos. The first is to put a moratorium on research cloning until the use of adult stem cells is fully explored, and/or until research using stem cells from "spare" or leftover embryos created at in vitro fertilization clinics is demonstrated to be of therapeutic value in tissue regeneration.

The second, and I think better and more permanent, solution is to create a regulatory framework that would make the administration's dreaded commercial stockpiles (and farms) of cloned embryos and the initiation of a pregnancy with one of them virtually impossible.

Regulation would be a challenge. Historically, embryo research has never been regulated, primarily because the US government has never funded it. Nonetheless, Congress has the authority to regulate all such research, not just publicly funded research, if it wants to. In particular, Congress could greatly improve the overall ethics of now wholly unregulated research with cloned human embryos, permitting the science to proceed, and at the same time virtually guarantee that no cloned human

embryo lawfully made would be implanted - or even have to be ordered destroyed by the government.

Here's how it would work. Ideally, Congress would create a federal oversight authority (similar to England's Human Fertilization and Embryology Authority) that would have exclusive authority to approve any proposed embryo research project, including those in the private sector. Approval would only be granted for those projects soundly designed to address a compelling medical need that could be successfully addressed no other way.

To prevent the horrors envisioned by Kass and the administration, specifically the stockpiling and commercial use of cloned research embryos and the implanting of a research embryo to start a pregnancy, at least three prohibitions are required:

The freezing and storage of cloned embryos should be outlawed. Cloned embryos would be created solely for use in approved research projects, and there is no reason to "store" or "stockpile" them since the research embryos are destroyed in the research process. A strict limit of seven days should be placed on the length of time any cloned human embryo can be maintained.

The purchase and sale of human eggs and human embryos should be outlawed. This would help to eliminate the increasing commercialization of embryo research and the commodification of both human eggs and embryos.

All individuals, including physicians, scientists, and biotech companies who have not been approved to do research cloning must be prohibited from making or possessing cloned embryos. In addition, all in vitro fertilization clinics and physicians and embryologists associated with them would be specifically prohibited from doing research on cloned embryos - making it virtually impossible for a cloned embryo to ever be used to initiate a pregnancy.

Alymer's real crime was that he was unable to separate his love for his wife from his love of science, and in joining them, he killed her. Combining bans on both reproductive and research cloning in one bill is likely to kill the anticloning legislation as well. And since reasonable compromise is available, this lethal outcome is unnecessary.

We can sketch a parallel from another regulatory realm that helps demonstrate that the law can effectively ban one activity without banning two related activities. There is a reasonable argument that an effective ban on offensive biological weapons research requires a ban on defensive biological weapons research as well. Nonetheless, it would be self-defeating and irrational to refuse to support a ban on offensive weapons research solely because defensive research was not banned simultaneously. Defensive biowarfare research can be used to make an offensive weapon, of course, but this requires both a much greater volume of toxins as well as their introduction into a delivery system.

Likewise, cloned embryos could be used to make babies, but we are much more likely to prevent this eventuality with a ban on implanting human cloned embryos, such as that proposed by Senator Edward M. Kennedy, (coupled with regulation of embryo research) than with no regulation of cloning at all. It's time for Congress to pass a ban, and for the United States to support the treaty banning reproductive cloning. We can outlaw cloning to engineer children without outlawing cloning to engineer medicines.