nature genetics

A clone in the hand…

"And now, science has presented us with a hope called stem cell research, which may provide our scientists with answers that have so long been beyond our grasp. I just don't see how we can turn our backs on this."
—Nancy Reagan

On June 2nd, the Genetics Policy Institute cosponsored a one-day conference at the United Nations to address the current misconceptions regarding stem cells and cloning that could have a potentially devastating impact on researchers' ability to pursue somatic nuclear transfer techniques for research and future disease therapy. At the conference, distinguished scientists from around the world put forth a unified case in favor of allowing somatic nuclear transfer (therapeutic cloning) and the use of embryonic stem cells in research. Equally important, they encouraged the UN's member states to enact an outright ban on human reproductive cloning.

At stake are two resolutions at the UN. The first, sponsored by Belgium, would ban all reproductive cloning and allow the individual member states to make their own laws regarding somatic nuclear transfer for research and therapeutic purposes. The second, sponsored by Costa Rica and backed by the US, would ban the use of all forms of human cloning, including therapeutic cloning. Last fall the UN voted, by a narrow margin, to put the two resolutions aside for a year, despite the fact that they had been considering the issue since 2001. An opportunity to make it an international crime to implant a cloned human embryo was squandered, not because of scientific uncertainty, but because of disagreements over when the life of a human starts.

The UN is not the only political body caught in the headlights on the stem cell issue. The UK, Italy, France, Germany, Australia, Israel, Japan, Russia, South Korea and Switzerland have banned the implantation of cloned human embryos, but the US currently has no law against it. The US senate has balked at President Bush's original call for a ban of both reproductive and therapeutic cloning, and thereby missed an opportunity to prevent the irresponsible from attempting to create a cloned human.

Most scientists are well aware of the fact that President Bush was mistaken in his assertion that more than 60 embryonic stem cell lines are available for research purposes. Nancy Reagan and several influential Republican leaders have now denounced the President's position that no more lines should be created. Regardless of the outcome of the election, the president can show moral strength by rejecting reproductive cloning and show wisdom by allowing stem cell research to proceed.

Public discussion and appropriate government oversight are essential, to ensure that scientists are acting within an acceptable ethical framework. Equally, we must not let our political leaders limit scientific achievement by giving priority to fear over facts. Creating pluripotent stem cells from gametes and nuclei donated by informed adults promises new but resolvable ethical concerns and many benefits. Culturing stem cells from extra embryos after *in vitro* fertilization procedures will require specific consent, but such zygotes are now routinely discarded or frozen. In contrast, reproductive cloning is dangerous for both baby and mother, is morally reprehensible and serves no vital health need.

Walking into the science and technology area of the Smithsonian National Museum of American History in Washington, D.C., one cannot help but notice the looped testimony of scientists before Congress in 1976 regarding the regulation of recombinant DNA. The display warns how close we came to limiting scientific discovery. Luckily, none of the 16 bills introduced into Congress to limit the use of recombinant DNA passed. Had our leaders banned the use of recombinant DNA based on cries that it was unethical and dangerous, the explosion of biological research afterward would not have happened.

Today, we are faced with a similar challenge regarding embryonic stem cell research. To us, the moral imperative seems clearer than ever. Scientists must contact their political leaders and urge them to allow research on embryonic stem cells to continue and to impose strict penalties on those who would dare to implant a cloned embryo into a human body to produce a human being. ■