Cloning issue breeds questions about medical advances, ethics

by Jacqueline M. Kocinski

In 1997, a group of veterinary researchers in Scotland announced that after hundreds of attempts, they had successfully cloned a sheep. As photos of the young lamb named Dolly made their way across the globe, what had once been the stuff of science fiction suddenly became real. The question that followed was how long before humans were next?

Indiana Sen. Patricia Miller recalls introducing legislation to ban human cloning that year. "They said I was premature, that it would not come to human cloning, at least not for years to come, and of course it's become very apparent that that isn't the case. It is here now," she says. Recently, unsubstantiated claims by researchers saying they have cloned a human embryo have been reported in the news. Miller, a Republican from Indianapolis, reintroduced legislation this year that would ban human cloning and prohibit public funds from being used for cloning activities. Although it passed the Senate, the bill never got a hearing in the House.

The U.S. House passed a measure last year prohibiting the creation of cloned embryos for any purpose. It would also make it unlawful to import products derived from cloning embryos. Not content to wait for the U.S. Senate to follow suit, however, state lawmakers have moved quickly to address the issue, with half of the states considering some sort of cloning-related legislation this year.

So far this year, Iowa is the only state in the Midwest to have emerged with a new cloning-related law. Sen. John Redwine, a family practice physician, introduced a measure in that state addressing not only reproductive cloning (that intended to produce another human being) but also so-called therapeutic cloning. With therapeutic cloning, the goal is to facilitate research, such as pharmaceutical discovery, or to produce a healthy copy of a sick person's tissue or organ for transplant.

In 1998, scientists at the University of Wisconsin-Madison used human embryos donated by couples who had sought infertility treatments and became the first researchers to successfully isolate and culture human embryonic stem cells. These are the undifferentiated cells that exist in the earliest stage of development (arising when an embryo is less than a week old) and which go on to become any of the more than 220 types of cells that exist in the tissues and organs of the body.

The medical hope is that stem cells' ability to develop into a variety of more specific cells can be harnessed to yield treatments for many debilitating and life-threatening illnesses such as diabetes, Parkinson's disease or spinal cord injury. Starting with an embryo that is the clone of a patient, experts say, could also mean the tissue rejection common in organ transplants might be avoided.

The vast majority of Americans are united in their belief that reproductive cloning should not be allowed. Debate in Iowa, as it has in other states, centered instead on whether the cloning of human embryos for uses other than reproduction should be allowed. Ultimately, a compromise measure that bans human cloning, but makes no mention of research, was approved by both chambers and signed by the governor in late April.

Redwine believes the argument over definitions or intent misses the point. His concern with therapeutic cloning is that once stem cells are removed, an embryo is destroyed. "It is not ethical to sacrifice one human being for the good of another, and that, I believe, is what is happening when you destroy a living human embryo that has a full complement of chromosomes," says the Republican from Sioux City.

Miller concurs: "This truly is a life issue, it's a moral issue, it's an ethical issue."

Different perspective

For those who are moved by the promise of medical miracles, the argument goes another way. They point to the groups of ethicists and leading scientists who have come out in support of embryonic stem cell research.

Wisconsin Senate Majority Leader Chuck Chvala believes the ethical issues have been addressed both "thoroughly and appropriately," and he challenges those who consider embryonic stem cell research the killing of a human. "They're out of place in this sense. They haven't recognized that the destruction of many lives." Chvala, a Democrat, co-sponsored legislation banning human reproductive cloning that passed the Wisconsin Senate this January. Another cloning-related measure introduced in that chamber this year, which would have made it a felony to perform human cloning or human embryonic stem cell research, did not win approval.

A strong supporter of the research taking place in his hometown of Madison, Wis., Chvala further insists: "A cell cluster of 16 cells does not a human make. We don't want to have cloning that will go so far as to recreate a human being, but I think people recognize that taking a few cells at an early stage in order to vastly improve people's lives is certainly something that will pay great benefits."

Those who oppose therapeutic cloning have called into question whether the promise it holds for curing disease or developing new drugs is not overstated. Both Miller and Redwine agree that it is. They further argue that the use of adult stem cells, harvested from sources such as bone marrow or umbilical cord blood, are more than sufficient for scientific study. However, researchers point out that because adult cells are already specialized, their potential to regenerate damaged tissue is very limited. Absent in many vital organs, adult stem cells also lack the potential to repair these organs.

Chvala maintains that arguments against the viability of embryonic stem cell research can be made only while such scientific investigation remains in its infancy. "They're saying we don't see an end result here yet which can be useful, therefore we shouldn't do the research to get to an end result," he says. "You won't have that end result until you do the research." He further points out that University of Wisconsin scientists are, in fact, making progress in their work, having recently created blood cells from embryonic stem cells.

Last August, President George W. Bush declared a moratorium on federal funding of embryonic stem cell research on any cell lines obtained after his announcement. In mid-April, he came out in favor of a total prohibition on all types of human cloning. Chvala fears what a total ban would mean for medicine, the country and his state.

"It sends the wrong signal to researchers across this country and to companies that will be investing in this research," he says. "It retards the development of programs that can save lives and improve lives. People should also recognize that if this research is not done here in the United States, it will be done elsewhere. And the great medical innovations that come from it, the companies, the profit, the employment, the growth and the cures for disease will be lost. Do we really want to fall behind that curve?"

Wisconsin Sen. Mark Meyer was the main sponsor of the cloning ban that won Senate approval this session. Of the current debate, the Democrat from La Crosse says: "There's not been a time in our history when it's been within our grasp to cure many of the diseases that have plagued mankind throughout the ages. We ought not be trying to tie the hands of researchers."

Culture trays containing human embryonic stem cells are kept in heat-controlled storage and studied by the research lab of developmental biologist James Thomson at the University of Wisconsin-Madison. (photo: University of Wisconsin-Madison)