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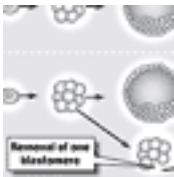
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**[Ethical debate undeterred by  
new research  
Studies show embryos remain  
intact, but critics are  
unswayed](#)**

- [Carl T. Hall, Chronicle Staff Writer](#)

Monday, October 24, 2005



Most scientists would like nothing better than to tone down some of the controversy surrounding human embryonic stem cell research. But some of their latest efforts in that direction appear to be having the opposite effect.

New laboratory results were reported last week showing how it might be possible to generate embryonic stem cells without destroying any embryos. But the reaction made it clear there's no end in sight to the stem cell debate.

Leading bioethics experts, including David Magnus at Stanford University and Arthur Kaplan at the University of Pennsylvania, promptly blasted the latest exercise as "scientific pandering" aimed at critics who are unlikely ever to be satisfied.

"When you look at the ethics it's not clear there's any advance here at all," Magnus said during an interview. "There's not going to be any technology that everybody accepts."

One idea, involving a modified cloning method known as "altered nuclear transfer," seeks to generate stem cells from a nonviable entity -- something like an embryo but without the potential to develop beyond the early stage at which stem cells appear.

Conservative critics of human embryonic stem cell research said they welcomed the effort but are hardly convinced.

"Any way human embryonic stem cells can be created without destroying embryos is a good thing," said William Saunders, a senior fellow and director of the Center for Human Life and Bioethics at the Family Research Council. "The question is whether it's an embryo or not. It looks like a damaged or handicapped embryo to me. It's an embryo, but because of the way it was engineered, maybe it just lacks something that will allow it to continue to live past a certain point. If I could be convinced it never was an embryo, I wouldn't have a problem."

Separately, a new plan was announced last week to create an independently financed global stem cell enterprise based in South Korea, which might render the endless wrangling over stem cell financing in the United States at least partially beside the point.

But Dan Perry, president of the Coalition for the Advancement of Medical Research, an alliance of about 95 patient-advocacy groups that favor expanded stem cell research, said the South Korea initiative dramatizes how scientific leadership may be slipping away from the United States because of federal research restrictions.

"The irony is that the United States is the world leader in biomedical research, but we're essentially on the sidelines in all of this," Perry said. "Americans are on the outside looking in."

Stanford stem cell pioneer Irving Weissman said it's "a mark of what our political process has done to intervene in scientific and biology research. ... What we have lost is America's competitiveness."

In 2001, President Bush ruled out federal support for any work involving the destruction of embryos. He also supports a ban on producing cloned embryos for stem cell derivation. A spokesman at the White House last week said the latest news has not changed the president's mind.

The South Korea announcement also highlights another looming battle: The recruitment of women to donate their eggs for research cloning experiments.

DNA donated by someone with a disease of interest can be inserted into these eggs, which then can be coaxed into producing stem lines carrying the donor DNA -- creating a new type of laboratory model of human disease.

Pacific Fertility Center, a private San Francisco in vitro fertilization clinic, has offered to handle the egg procurement on behalf of the South Korea project. Dr. Philip Chenette, one of five physicians at the center, said about 20 egg donors would be recruited per year, each contributing about enough eggs, 10 to 15, to initiate one line of stem cells.

"In a lot of ways this gets around a lot of the ethical objections related to stem cell research," Chenette said. "In this system we are not creating embryos. We aren't really cloning. We are making stem cells from an egg and donated DNA. But there's no conception. It's not a fertilization in the traditional manner."

That's not how many moral critics see it, however.

Although research cloning to make a line of stem cells doesn't seek to clone babies, the early steps in the process are identical to those that would be used in a reproductive cloning experiment. In fact, of all the various types of stem cell research, cloning is considered one of the most controversial.

The clinic expects to follow its usual recruiting methods and medical procedures, which typically involve use of hormones to stimulate a woman's ovaries and entail some risk. A special review is planned to make sure such matters as informed consent and donor expense reimbursement are handled appropriately, Chenette said.

Two big questions exist: Who will do this review and how transparent should that process be?

Any research involving human subjects requires the consent of an institutional review board, which medical centers routinely set up to monitor research projects. It's still unclear which California center will be part of the South Korea hub, although speculation focuses on California Pacific Medical Center in San Francisco.

UCSF and Stanford have declined to get involved so far. California Pacific officials declined to comment.

Besides the expected review, a separate evaluation is likely to be done by a more specialized "Embryonic Stem Cell Research Oversight" committee, which has yet to be established. Creation of these so-called "ESCRO" committees was a central recommendation in April of a National Academies advisory panel trying to create a set of uniform standards for stem cell research.

Chenette insisted that the procedures will be done in strict accord with those new standards. He argued that nuclear transfer creates something that isn't designed to be implanted in a uterus, as happens in normal development leading to a birth.

"We are trying to find a middle pathway that allows us to pursue this research in a way that will satisfy most people," he said.

Predictably, a lot of people aren't satisfied at all -- and viewed the South Korea effort with

considerable trepidation.

"Obviously it's all a bit vague right now," said state Sen. Deborah Ortiz, a Sacramento Democrat who chairs the Senate Health Committee.

A big supporter of stem cell research, Ortiz also was chief sponsor of recent legislation aimed at strengthening legal protections for egg donors in stem cell research. The bill was vetoed by Gov. Arnold Schwarzenegger, for reasons unrelated to the egg-donor rules, and another attempt is expected in 2006.

Ortiz said the prospect of a global cell-cloning consortium operating in California raises an immediate concern that researchers are getting too far ahead of the rulemaking.

"If the governor needs one more reason to sign a bill protecting women, this is it," Ortiz said.

The latest opinion sampling shows Americans are deeply conflicted on embryo politics on both ends of the spectrum.

About half of all self-identified evangelical Christians, for example, said they support human embryonic stem cell research, although many of these research advocates harbor ethical qualms about it, according to a survey of about 2,200 U.S. adults in September, done by the Genetics and Public Policy Center at Johns Hopkins University.

Fewer than 22 percent said they supported the current restrictive policy against federal grants, and 69 percent favored a more permissive policy.

About 6 percent seem to be firmly and consistently opposed to any human embryonic stem cell research, said Kathy Hudson, director of the center. That appears to be roughly equal to the percentage of those at the other extreme, who seem to attach no moral status whatever to an early stage embryo containing only a few undifferentiated cells.

But the poll numbers closer to the middle of the political divide can shift considerably depending on how a question is asked and what assumptions survey respondents are given.

Predictably, a laboratory finding of a bona fide cure reduces opposition to federally backed research. Conversely, people become less tolerant of destroying embryos if they are asked to assume that stem cells might be derived in some other way, such as the new methods described last week.

The results revealed "flexibility and receptivity on the part of the public to adapt to

advances in the science," Hudson said. "There's some malleability in there."

The survey also showed a high level of sophistication on the part of the general public, despite all the confusing debates about moral status of microscopic biological entities.

"We are seeing really high levels of public attentiveness and awareness about embryonic stem cell research," Hudson said. "When you are considering those who don't support it, it would be a mistake to believe they aren't supporting it because they are ignorant."

Some of the apparent confusion stems from ambivalence, Hudson added.

"We're in this polarized policymaking environment, but when you ask real live Americans, it turns out that a majority wants to proceed with the science, and a majority holds some concerns about it. So it's not just those guys on that side, and us on this side. For most Americans, it's a lot more complicated than that."

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## New recipes

Two new methods of creating embryonic stem cells have been demonstrated in mice.

1 One technique involves producing a stem cell line from a single cell, taken from the early embryo at the eight-cell stage, apparently without damaging the embryo.

2 Another creates the cells from a genetically modified "nonviable entity," which some argue shouldn't be equated to an "embryo." But most bioethics specialists said the developments don't end the debate on stem cells. Here's how the new methods are designed to work, based on mouse studies reported last week in the journal Nature:

### Normal fertilization

#### Standard derivation method

Embryo is destroyed once the inner cell mass is removed.

Fertilization - 8-cell stage - Blastocyst - Implantation in uterus OR Embryonic stem cell line

#### 1 Single-Cell Method

Scientists pull out one cell, called a blastomere, when an embryo is at the very early eight-

cell stage, and turn that single cell into a line of stem cells. But the question remains whether this might somehow damage the embryo.

Removal of one blastomere - Implantation in uterus AND New embryonic stem cell line

Cloning

Somatic Cell

Nuclear Transfer

Nuclear transfer - 8-cell stage - Blastocyst - Possible Implantation in uterus? OR  
Pluripotent stem cell line

2 Altered Nuclear Transfer

Scientists alter a gene that prevents the cloned entity from developing normally. But some opponents argue this still creates an embryo, just one that is disabled.

Donor DNA gene modified to make nonviable embryo - Specific gene re-activated -  
Pluripotent stem cell line

Source: Nature

*E-mail Carl Hall at [chall@sfchronicle.com](mailto:chall@sfchronicle.com).*

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