

Ethics of Stem Cells

The discovery of stem cells has presented many thorny ethical issues for scientists, most notably the age-old question of when human life begins.

Dr. Renee Reijo Pera, professor and director of the Center for Human Embryonic Stem Cell Research and Education within the Stanford Institute for Stem Cell Biology and Regenerative Medicine in the Department of Obstetrics and Gynecology at Stanford University School of Medicine, painted a vivid picture of the earliest hours and days following fertilization, when a whirlwind of activity sets human life in motion.

Yet Reijo Pera said that, even knowing all that, and even considering herself a Christian, she has weighed the ethics and comes down on the side of using embryonic stem cells for research that could help save lives.

“When I read the bible, I see as much emphasis on helping your neighbor and doing good as there is on sex and pregnancy,” Reijo Pera said. “It’s a simple decision. We allow *in vitro* fertilization. Embryos are being thrown away. What is the best use? There is a potential to really help that offsets, for me, the moral dilemma of those first few days.”

When the first *in vitro* fertilization baby, Louise Brown, was born in 1978, Reijo Pera said, “It was not universally heralded as something that was desirable.” In 1995, Congress passed the Dickey Amendment, prohibiting federal funds on embryo research.

She said that 1.5 million embryos are produced in *in vitro* fertilization clinics each year, and 400,000 to 500,000 are “destined to be thrown away. Is this our best use? I think not.”

“We have a solution that doesn’t serve the right to life community very well, and it doesn’t serve women very well,” Reijo Pera said.

Society is comfortable with *in vitro* fertilization, she said, so it should be comfortable allowing the unused embryos to go to research. “They have to be used responsibly for research that is well-regulated and conforms to ethical principles,” she said.

“It’s not a decision I came to easily,” said Reijo Pera.

The California Institute for Regenerative Medicine maintains a working group of 19 prominent ethicists, scientists, and patient advocates to wrestle with issues of standards and ethics in stem cell research, according to Dr. Gilberto R. Sambrano, PhD, the senior officer in charge of peer review for CIRM. All researchers in California who receive grants from CIRM have to participate in ethical training regarding stem cells.

Dr. Mary Devereaux, PhD, a bioethicist in the Research Ethics Program at the University of California, San Diego, addressed the ethical challenges of stem cell therapy in a lunchtime talk.

Among the challenges, she said, is where researchers will get their materials -- namely, oocytes, or human eggs. Like Reijo Pera, she sees a bright spot in the embryos left over from *in vitro* fertilization, saying their use in science “solved an ethical dilemma for couples who don’t want to freeze them, throw them away, or give them to someone else.”

The eggs could be donated, but that’s tricky, she said. “Under what conditions is it okay to ask a young healthy woman to undergo the process of giving eggs for *in vitro*

fertilization?” Devereaux asked. “To get oocytes, you have to hyper-stimulate a woman’s system, and she has to undergo surgery.” Complications can arise.

And when scientists want to test their findings in humans, the early trials will carry risks. “We can’t eliminate all risks,” she said.

Scientists need to follow basic ethical principles in human experimentation, she said:

- Respect for people, through informed consent.
- The basis for all medicine: “Do no harm.”
- Fairness, or justice. “Make sure, in the therapies we develop, that the risks are fair.”

Another dilemma are criteria of inclusion and exclusion – “who can and can’t participate,” Devereaux said, “and the issue of which diseases we’re going to turn to first. That’s an ethical question and a scientific question. It depends on the fruitfulness of particular kinds of research.”

Even patients who already have a disease are entitled to the utmost respect and ethical considerations.

“When people volunteer for clinical trials, they have the view that it’s going to help them, even in Phase I and Phase II trials,” she said. “They’re generally not going to get any therapeutic benefit.”

They might get a psychological boost from feeling that they’re contributing, but the odds are they won’t truly benefit.

Still, doctors have “an assumption that we can’t make a person who’s dying any worse off, and that’s not true,” she said. “If you have to spend the last six months of your life in a hospital, getting infusions, then you can reduce the quality and quantity of life.”

In experimenting with cellular therapy, doctors have a whole new realm of sticky issues. “If I give you a new drug and it makes you nauseous, you’ll be uncomfortable for a few hours,” but it can be treated, Devereaux said. “If I put in a mechanical heart and it makes you uncomfortable, I can take it out. It’s not trivial, but it can be done.”

But if a doctor gives a patient an experimental cellular therapy, what, Devereaux asked, is the exit strategy?

Doctors also need to be sure to get donors to sign consent forms that will give the doctors the ability to go back and get more information later on. If your cells are donated to someone, and you later find that you had a genetic disorder, shouldn’t the person who received your donated cells know that?

“It’s imperative that scientists look ahead,” Devereaux said. “The pace of research is very fast. Sometimes it’s better to get these issues resolved in advance. Without that, you get confusion, and you may even get delays in your research.”

On the issue of whether the tiny cells represent human life, Devereaux, like Reijo Pera, has thought long and hard.

“We develop as human beings not just as biological persons, but also as moral persons,” she said. With cells, “you have something that cannot perceive, cannot feel, and is not conscious. Many Americans have decided that destroying early cellular life is not permissible.

“I ask you to try an experiment. Imagine you have somebody doing embryonic stem cell research. They have 1,000 embryos, sitting on a bench. Suddenly, there’s a smoke alarm. Everybody runs out. An asthmatic person is in there and passes out.

“A firefighter comes in and sees these 1,000 blastocysts. If it’s true that each of those are human souls, which do you save?”

“I hold a developmental view of personhood,” Devereaux said. “As we develop, we become more and more what it is we are as persons.”

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