Researcher sees continued need for embryonic stem cells

SAN FRANCISCO – Human embryonic stem cells will play a role in stem-cell research for years to come as scientists try to confirm a promising technique that reprograms adult cells to mimic embryonic stem cells, according to the interim chief of California's state-funded stem-cell research institute.

The November announcement that two groups of researchers had created stem cells without destroying human embryos appeared to herald an imminent end to the moral dilemma that has split some scientists and the church.

The Catholic Church teaches that embryos at any stage are human beings and that no potential medical benefit justifies destroying them.

But Richard Murphy, interim president of the California Institute for Regenerative Medicine in San Francisco, said cells created by the reprogramming technique must be tested to make sure they are safe and effective. He said the testing will involve a detailed comparison of the genetic makeup of reprogrammed cells to that of human embryonic stem cells.

Human embryonic stem cells will be necessary for this work because they are the "gold standard" of a quality called pluripotency, he said. They are called pluripotent because they can mature into any other type of human cell.

"What this new research does is really reinforce the need for these," Murphy told Catholic San Francisco, the archdiocesan newspaper. "Unless we understand what goes on in a human embryonic stem cell, which is totally pluripotent, we are not going to be able to understand whether these induced pluripotent cells are as important as we hope they are."

He said the reprogrammed skin cells reported by two research teams in November have 1,000 fewer genes than the 30,000 genes in embryonic stem cells.

"That's 3 percent, and we really don't know what those 1,000 genes do," Murphy

said. “It could be that they are really critical. Work on human embryonic stem cells is clearly needed to figure that out.”

Father Tadeusz Pacholczyk disagrees. The education director for the National Catholic Bioethics Center in Philadelphia warned in a Dec. 1 commentary that, although reprogramming promises to end the ethical and scientific issues over stem cells, there are voices in the “bioindustrial complex” pushing to expand destructive human embryo research.

In an interview with Catholic San Francisco, he said he was not surprised by Murphy’s remarks about the next phase of research. “The claim that (human embryonic stem cells) are absolutely necessary is, of course, an exaggerated claim,” he said.

“When he refers to them as a gold standard, that’s a play on words,” he said. “The real gold standard is the type of stem cell you get from mouse embryos, which are much better characterized and the science is much further along.”

A “sliding scale” that defines human embryos as less valuable than adult humans is immoral, Father Pacholczyk said. “I always tell people I’m an embryo that grew up,” he said. “That’s a hard biological fact that advocates of Prop. 71 are doing their best to dance around.”

Voters created the California Institute for Regenerative Medicine when they passed Proposition 71 in 2004. The act amended the state Constitution to establish a right to conduct stem-cell research involving adult stem cells, cord-blood stem cells and pluripotent or progenitor cells.

Murphy said he could not say how much of the research funded by the institute involves human embryonic stem cells. He said the institute wants to broadly fund stem-cell research.

“What we see in California is parallel tracks of research,” he said. “We think they’re all important. We’ve got years more research to be able to understand whether these reprogrammed cells are as important as we think they are.”

James J. Walter, chairman of the Bioethics Institute at Loyola Marymount University

in Los Angeles, told The Tidings, Los Angeles archdiocesan newspaper, in an e-mail interview that biochemical reprogramming would "resolve most but not all the ethical concerns about pluripotent stem-cell research."

At the time of the Nov. 28 interview, Walter was at Japan's Ryukoku University where he was delivering a paper on "Human Embryonic Stem-Cell Research: A Catholic Christian Perspective."

"Surely, the moral issue of creating and then destroying embryos or using existing embryos to derive these cells is resolved. Also, the need for (human) eggs and the payment of women to sell their eggs are likewise resolved by this research. However, there is still the moral issue of safety, but hopefully the safety issue will be resolved as well by further research," said Walter.

"We must proceed carefully so that we do not experiment on humans until we are as sure as we can be that this research will not do more harm than good to patients," he added. "More basic research is needed before clinical trials can even begin.

"However," Walter said, "this is a significant scientific discovery, and hope to overcome these terrible diseases may be on the horizon without all the moral issues connected to it."

Contributing to this story was Paula Doyle in Los Angeles.