



MEMORANDUM

TO: 110th Congress
FROM: Jonathan Moreno and Sam Berger
RE: Newly Discovered Stem Cells Will Not Replace Embryonic Stem Cells
DATE: January 8, 2007

Scientists [announced yesterday](#) that they had found stem cells in the amniotic fluid of pregnant women that have similar characteristics to embryonic stem cells. While these new stem cells hold great promise, they will not replace embryonic stem cells:

- There are questions over whether the amniotic-fluid stem cells can differentiate into as many types of cells as embryonic stem cells, thereby limiting their medical application.
- It is unlikely that amniotic-fluid stem cells will be as useful as embryonic stem cells for studying early human development, one of the most promising areas of stem cell research.
- Scientists already know that stem cell research is not “one-size-fits-all”; different types of stem cells will be necessary to treat different types of injuries and diseases, so while these new stem cells will be medically useful, they will likely not replace embryonic stem cell research and therapies.
- It will take years for other scientists to reproduce these results, then try to convert them to materials that could be used first in animal models of human disease, and then test them in a few people for safety. Meanwhile, we already know how to obtain embryonic stem cells, while the research continues to advance rapidly,
- Prominent stem cell scientists agree that the amniotic-fluid stem cells will not replace embryonic stem cells:
 - Dr. Robert Lanza, chief scientist at the stem cell company Advanced Cell Technology, [said](#) “[these new stem cells] can clearly generate a broad range of important cell types, but they may not do as many tricks as embryonic stem cells.”
 - Dr. George Daley, a Harvard University stem cell researcher, [said](#) “While the [new stem cells] are fascinating subjects of study in their own right, they are not a substitute for human embryonic stem cells, which allow scientists to address a host of other interesting questions in early human development.”
 - Dr. Larry Goldstein, a professor of cellular and molecular medicine at UC San Diego, [said](#) the absence of tumors in the new stem cells might signal a limitation. “It makes me wonder how pluripotent they are.” Though the cells might prove useful in some circumstances, Goldstein said, they aren’t

a substitute for embryonic stem cells. “They built a screwdriver here, but I need a wrench.”

- Dr. Anthony Atala, director of the Institute for Regenerative Medicine at Wake Forest University School of Medicine and the leader of the group of scientists that discovered the amniotic-fluid stem cells, [commented](#) that the new stem cells would not replace embryonic stem cells
- Researchers have used embryonic stem cells in laboratory animals to treat [paralysis](#), slow [vision loss](#), and reverse some of the symptoms of [Parkinson’s disease](#). They have also used human embryonic stem cells to create [cardiovascular precursor cells](#) that could lead to treatments for heart diseases, [T-cells](#) that could lead to a cure for AIDS, and [insulin-secreting cells](#) that could lead to a cure for diabetes.

While these new stem cells will not replace embryonic stem cells, the discovery does demonstrate the potential in basic research on stem cells from various sources, and the need to pursue stem cell research on all fronts and from all sources. Congress needs to give our scientists access to the best tools available in the race for life-saving cures, and it can take the first step this week by passing the Stem Cell Research Enhancement Act of 2007.