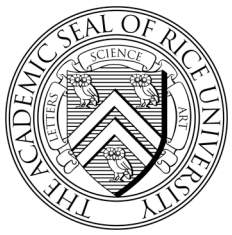

The James A. Baker III Institute for Public Policy
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Hot Topic: Stem Cell Controversy: Are Human Skin Cells Really the Breakthrough?

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On Nov. 20, 2007, two research labs announced the creation of embryonic stem-like cells from human skin cells. This remarkable work showed that these cells could be reprogrammed, effectively turning a normal cell into an embryonic stem-like cell with the ability to become almost any cell in the human body. Since the announcement, several newspaper articles have claimed that this discovery would end all ethical dilemmas surrounding stem cell research, implying that embryonic stem cells (those created from a five-day-old fertilized egg) would no longer be needed. Not only is this idea naive, it also ignores technical and scientific challenges facing these new cells.

There are several scientific and medical concerns associated with this breakthrough. The method used to create the embryonic stem-like cells, known as induced pluripotent stem (iPS) cells, involved the introduction and subsequent promotion of four genes in skin cells. The consequences of promoting these particular genes – one of which is known to cause cancer – are unknown. Furthermore, the method researchers used introduced the genes randomly into the chromosomes of each cell, with little or no knowledge of the effect this might have on the further development and function of the cells. A particularly bad insertion could cause a genetic mutation, turning a normal cell into a cancerous cell.

This new line of research, though promising, represents only the first of a long line of experiments, which need to be reproduced by other investigators and perfected. There are potentially dozens of challenges scientists have to overcome. As noted by James Thomson, whose lab was responsible for one of the two independent research papers reporting the new discovery, it is premature to halt research on embryonic stem cell lines created from human fertilized eggs despite the promise of iPS cells. The further understanding of normal human development, especially the comparison of normal cells to diseased cells, requires the use of embryonic stem cells as a complement to the research on iPS cells or embryonic stem-like cells created by other methods.

This work represents an important breakthrough, one that has gotten the attention of the public and the media and re-energized the public dialogue about embryonic stem cell research. It offers a great opportunity to have a much-needed discussion about stem cell regulation. The U.S.

medical research community currently operates within a large assortment of differing federal and state policies that need to be connected and regularized through an overarching, cohesive federal plan. We now have an opening for scientists, ethicists and policymakers to come together and determine how best to provide that kind of oversight – oversight that will encourage the most promising research while guarding against ethically unsound practices, such as the cloning of a human being.

For more information on stem cell research policy and the Baker Institute's International Stem Cell Policy Program (part of the Science and Technology Policy Program), please see our Web site at http://www.science.bakerinstitute.org/.