

Thinking about stem cell ethics

Original publication:

Situated stem cell ethics: beyond good and bad

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Stem cell science is global but it is practiced everywhere in local contexts. While strongly held ideas circulate regarding what constitutes 'good' and 'bad' science, these are not necessarily self-evident or universal. Thus, the way to practice 'good' science emerges within specific contexts and draws upon numerous factors.



What questions & challenges are raised?

Using examples from the United States, the United Kingdom, China, and Taiwan, Dr Jennifer Liu from University of Waterloo highlights how different cultural contexts and the complex interaction of societal elements impact the definition of 'good' ethical science. In her commentary, Dr Liu presents both philosophical perspectives and examples from recent history to probe the question of what defines 'good' science in relation to stem cell research and regenerative medicine. Of note is Dr Liu's point that differences in this ethical definition may shift over time, sometimes leading to regulatory gradients, and at other times leading to ethical regulatory convergence. Thus, notions of 'the good' may not be stable and may not, in fact, be the best approach to thinking about medical and scientific ethics in a global frame.

What insight & direction does this give for research policies?

Dr Liu's commentary raises the point that there is a large spectrum of social values that impact how different populations evaluate the ethics of stem cell research policies. In fact, looking beyond strict moral principles and labels of 'good' and 'bad' will help policy makers better understand underlying social and cultural values, and to balance these values with the aims of scientific advancement. Such an awareness of multiple and competing values can help avoid irresponsible policies and unjust negative stereotypes of nations or regions. Dr Liu recommends that governments and organizations promote discussions between policy makers, experts and the broader public on a regular and ongoing basis to create successful and ethical scientific governance.

What background and point are discussed?

Dr Liu uses the story of Dr Jamie Grifo and his work involving nuclear transfer to highlight the narrowing of ethical gradients between countries and asks how society evaluates the ethics of stem cell research. Nuclear transfer is the transplantation of one cell's genomic DNA (a cell's chromosomes) into another cell lacking genomic DNA. In Dr Grifo's case, this was being done with fertilized human eggs in hope of allowing women with damaged eggs or mitochondria (but healthy DNA) to use healthy donor eggs.

Essentially, a child born this way would have 3 biological parents; the father and mother supply the genomic DNA and the donor supplies the egg. With events such as the ban on funding for human embryonic stem cell (hESC) lines by US President Bush in 2001, it was clear to Dr Grifo that this research was not going to be allowed in the US much longer, so he transferred the research to collaborators in China. Two years later they showed the method was successful but the research was deemed too controversial and was shut down. In 2015 two medical techniques based on this research were approved in the UK for preventing serious mitochondrial diseases in children. Following this, a couple from Jordan, who carried the genetics for a mitochondrial disorder preventing them from having a healthy child, went to Mexico with a medical team from New York to carry out the procedure outside the US. In 2016, a healthy baby was born to the parents - the world's first nuclear transfer baby. This story poses questions of ethical restraint versus medical progress. In the end, the researchers developed methods that will save lives and have advanced research, but does that justify their willingness to circumvent ethical boundaries? Dr Liu points out that the first "test tube baby" also raised a great deal of alarm in 1978, but in vitro fertilization (IVF) is now considered a common infertility treatment. Dr Liu explains that researchers and their work are influenced and guided by their own values and those of the society they work in. To exemplify this, Dr Liu discusses her decade worth of research on stem cell-based sciences and their social considerations in Taiwan. Her interviews and research showed that people's perspectives were diverse and defined 'good' science in different ways. Some individuals thought that hESC lines should be developed to adequately represent Taiwanese genetics in stem cell research. Others completely switched their research to induced pluripotent stem cells (iPSCs). Even some Buddhists thought hESC research was temporarily permissible because of its possibility to alleviate human suffering. Consultations between the public, experts and policy makers allowed Taiwan stem cell policies to at least partially reflect this broad diversity of perspectives. Additionally, Taiwan has participated in global discussions to help develop the guidelines for the International Society for Stem Cell Research (ISSCR). The inclusion of such a diversity of people, ethical values, and interests in discussions of policy has led to Taiwanese regulations that are, in Dr Liu's opinion, moderate - being neither too restrictive nor too permissive. To her, "It looks like good science".